INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign November, 1983/Vol. 1, No. 1

Our First Issue: Sharing of Ideas

One of the critical elements of development in most countries involves improving the performance of the agricultural sector. This, in turn, requires the transmittal and utilization of knowledge by many people, including small, hard-to-reach farmers.

Continuing concern about this problem has been widely stated around the world. Dr. Clifford Wharton, Chairman of the U.S. Board for International Food and Agricultural Development (BIFAD), recently said: "If there is one area where we have been most unsuccessful, it has been the development of cost-effective and program-efficient models for the delivery of new scientific and technical knowledge to the millions upon millions of farm producers of the Third World. We know how to harness the creative and inventive forces of science and technology in the war on hunger, but I submit that we still have not been fully successful in technology diffusion. . . . I believe that attention in this area is one of AID's and BIFAD's most critical items on their future agendas."

INTERPAKS (International Program for Agricultural Knowledge Systems), a relatively new program at the University of Illinois, is dedicated to improving the transfer and utilization of knowledge in developing countries. From three colleges and six disciplines, it draws faculty who have had extensive involvement in international work.

This newsletter is one component of the overall program. Its purpose is to share useful information with leaders of knowledge transfer systems in other countries and to establish a dialogue with them for enhancing agricultural development through more effective extension systems, using "extension" in the most comprehensive sense.

It is easy to recount the problems being experienced by formal extension systems at the present time. The list is long, ranging from lack of farmer-ready technology and/or linkage with research to a lack of mobility for field agents. What is needed, however, are examples of success that can point the way for others. Probably every organization involved with knowledge transfer has some areas of success and pride. We hope to learn of them and to help get such experiences shared: for example, techniques for involving the intended audience in program development and evaluation; approaches for linking with research; packaging technology for field use; tracking results and feeding information back to research; performance-based evaluation systems; motivating personnel; selecting effective teaching techniques; making creative use of public and private organizations, local leaders, etc.

If you will share such information with us, we will try to digest it for inclusion in our section, "Around the World." Let us hear from you.

—John B. Claar, Director, INTERPAKS

Worldwide Reevaluation

Both national practitioners and international assistance agencies seem to be reevaluating their experiences and seeking better extension methods.

A recent publication of the U.S. Agency for International Development, **AID Experience in Agricultural Research: A Review of Project Evaluations**, reports that, "In 16 of the (39) mission- and regionally-funded projects, weaknesses in the linkage between research and extension, or in the extension agency itself, limited the dissemination of research findings." A recent Food and Agriculture Organization publication reports that "a system of agricultural extension is being revised in almost all Latin American countries." Likewise, a few months ago, the directors of the international research centers under the Consultative Group for International Agricultural Research (CGIAR) expressed interest in "examining such problems as the most effective mechanisms for transferring the centers' technology."

INTERPAKS is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

Information to Farmers: Directing or Responding?

Governments often do not tell farmers what they want or need to know; rather, they may even tell what is conflict with the farmers' own views. The information gun may be aimed at the right target but loaded with an unwanted message. That figure of speech is apt because the too common practice is "shooting at" rather than "responding to." This is the theme of Michael Laflin, editor of the *Reading Rural Development Communications Bulletin*, in an article, "Is the Information Community Serving Farmers' Needs?," (*Development Communication Report*, March, 1982).

Agricultural information services in Ministries of Agriculture present a common scenario: an operating premise that an approved body of knowledge and practices has to be disseminated and that farmers are willing recipients rather than independent seekers of information. Modernization of backward agriculture gives priority to highly skilled manpower for research stations, while less skilled people become extensionists. Any failure is ascribed to "traditional peasant obduracy or poor extension staff, not to inappropriate informaton." To meet national needs, like earning foreign exchange, farmers are encouraged to grow cash crops as well as subsistence crops, with production for export. Hence the need to disseminate becomes a need to be selective in dissemination, "to steer farmers in a particular direction."

Priority-setting at the national level eventually encounters the fact that "decisions about crops and techniques ultimately rest with the farmer, at least in capitalist-oriented societies." The point to dissemination is to help the farmer make such decisions. It may come as a shock, therefore, to learn that official information sometimes is in conflict with farmers' views, seriously affecting extension's credibility. Research in India compared the farmers' priority on twelve items of information with the views of Village Level Workers (VLWs) and Block Level Workers. In a complete reversal, what the farmers put first (information on "improved seeds"), the VLWs put twelfth and last; and what they put twelfth (information on "water test"), the VLWs put first. Likewise, the "soil test" rated eleventh, or next to the bottom, with the farmers and second, or next to the top, with the VLWs.

If the shift is made to a receptive rather than directive system of information diffusion, the burden on the central information system becomes enormous—when "information must be timely, relevant, comprehensible, complete, and frequent, and . . . farmers do not have time to take in much information that is not immediately useful." Hence the question: "Is it realistic to suppose that a centrally based system can work in any but the smallest and most homogeneous country?"

An agricultural information service also has internal pressures and tensions in defining its audience and its needs: top echelons may favor commercial farmers to maximize production, extension workers may identify with small holders (their own background), and external aid-related forces may promote the poorest of the poor.

If a shift is to be made from shaping actions to serving farmer needs, several implications follow: more awareness of information consumers, recognition of the importance of individual decisions, better storage and retrieval systems, increased research with better access, individualized access to information systems, and personal problem-solving rather than centralized solutions.

"It might prove beneficial to the quality of information if more people viewed information as a commodity, subject to the same market forces as any other. If agricultural information producers were judged on the number of 'sales' that they had made, the delineation of the 'market' would have to be more realistic, the civil service ethos would have to be replaced by greater dynamism, and information quality would have to rise."

Farmer Focus

In its **World Development Report 1982**, the World Bank takes an optimistic approach to meeting the food needs of the developing nations. That is because of farmer resilience and his universal response to appropriate incentives. The focus on all farmers calls for special attention to the small farmer, too.

"All farmers—small, medium, and large—respond to economic incentives. Far from being tradition-bound peasants, farmers have shown that they share a rationality that far outweighs differences in their social and ecological conditions. In largely market-oriented economies such as Brazil and Kenya, as well as in centrally planned economies such as China and Hungary, farmers have responded to economic incentives. In some instances, their response exceeded the expectations of policymakers. Farmers in the irrigated areas of South Asia responded dramatically to the new incentives provided by the Green Revolution.

"Small farmers can be highly productive. Typically, they produce more from each acre than large farmers do, despite the often considerable disadvantages of their limited access to services, markets, and production inputs such as fertilizer. Programs and policies dealing with these problems thus offer substantial economic benefits, as well as increase employment and incomes among the poor.

"The rise in agricultural output over the past two decades has confounded the predictions of widespread famine which were common in the 1950s and 1960s. It has also disproved the Malthusian notion that agricultural growth is subject to iron laws beyond the control of people. If agricultural technologies can be improved, additional resources mobilized, and appropriate policies adopted in industrial and developing countries, then faster agricultural growth will be achieved. Economic development, particularly of the poorer countries, will speed up. And poverty will be reduced."

Problems and Solutions in Nigeria

Extension lessons learned in Nigeria, Africa's most populous nation, were recently presented to the Regional Seminar on Extension and Rural Development Strategies, Serdang, Malaysia, by Professor J. A. Ekpere of the University of Ibadan, Nigeria. He outlined the colonial experience with its pre-extension emphasis on research for production for export, the shortcomings of the conventional extension system within the civil service (i.e., Ministry of Agriculture), and the new and more sharply targeted system within what is now called the "Agricultural Development Project" (ADP).

Although the now-replaced system functioning within the civil service structure relied on education for economic and social change, its "law and order stance . . . infused into it a regulatory and control function to assure the production of standardized produce for export" and the system became "bedevilled by several weaknesses." Among them were ill-defined and poorly understood organizational objectives, inappropriate philosophy of administration, proliferation of programs, poor personnel management, ineffective use of extension methods, too little involvement of clientele, unintegrated research and extension, inadequate planning and logistic support, and shortage of trained staff. The old civil service structure also had several personnel rigidities: unfilled posts, lack of staff mobility, constraint on deployment of staff into priority areas, inadequate staff training and upgrading, and unattractive career prospects creating a disincentive to secondary school graduates.

In view of these difficulties in a system too broad in scope and concept to provide more than "very limited service to the majority of farmers," Nigeria has now adopted the new Agricultural Development Project approach with two objectives: to raise the income of farmers and to produce food and fiber for the benefit of the nation. It requires reorganization, increased trained staff at every level, and the freeing of extension from all its extraneous or non-educational responsibilities. Other characteristics are: a single chain of command, a well-defined geographical boundary for each extension worker, adequate monitoring of performance (with a supervisor ratio of not more than 1:8), short training courses for staff on needed technical messages to be extended to selected contact farmers on a predetermined visit schedule, and adequate transport and logistic support. The operational method thus becomes what Professor Ekpere calls "a modified T and V (Training and Visit) system incorporating the desirable aspects . . . with the proved components of the mini-kit and production-kit demonstration programme earlier perfected in Nigeria."

Among the improvements, in addition to those implied above, are higher competency in the extension workers, closer and more efficient supervision, "the centralization of all adaptive research, technology validation and extension in a single project management unit," and the processing of extension messages through a basic service package and an advanced service package, both geared to the development level of the particular production technology being communicated (i.e., to the needs of the different Nigerian project areas).

Latin American Extension Problems

In his book **Technical Co-operation in Latin-American Agriculture** (1957), Arthur T. Mosher pointed out three special problems in extension education in Latin America which are still relevant today:

"The first of these is that successful extension education frequently requires an intimate knowledge of the values, customs, and habits of a people. . . . (However) more than knowledge of the values and customs of a people is involved in successful extension education, and technicians who have had experience in other countries can contribute much in the way of extension methodology. . . . Frequently, also, local people overestimate the degree to which a cultural trait is unchangeable.

"The second special problem of projects of agricultural extension is their tendency when successful to outrun research. Because so much research has been done on agricultural problems in other countries, and because in a particular country there are so many improved practices not yet generally followed, one very frequently hears the statement, 'We already know so much more than our farmers practice that it will be a long while before extension catches up with the results of research.' It is significant that this statement is rarely heard once an extension program begins to become effective. When an extension project catches on, it very quickly is faced by new unsolved problems unless there is an adequate continuing and expanding research program.

"The third special problem of extension projects is the tendency to spread too thinly over too many interests or over too much territory. . . . (Yet) the territory covered by an extension project does need to contain a reasonable number of immediately responsive farmers with whom each agent can work. Concentration can be carried too far, but the real danger is that it will not be carried far enough."

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Technology and Equality

It is clear that new knowledge and technology sometimes have an independent capacity to produce important agricultural change, quite apart from the diffusion efforts of extension personnel. However, unforeseen social consequences also may cause criticism of extension for its seeming preoccupation with agricultural production and indifference to social equity.

That kind of self-executing technological impact is shown in the following report* on how China's newly developed hybrid rice, yielding from 20 to 30 percent more than the Green Revolution varieties, may worsen rural inequalities:

"Ironically, this miracle rice which man developed and bred in the equalitarian social conditions of China, could worsen agrarian inequalities in already unequal societies of Asia and elsewhere.

"This is because hybrid rice seeds, like hybrid maize seeds, have to be purchased for every sowing. The grains of the hybrid plant are infertile though plant growth and yield is vigorous.

"Many millions of poor farmers in Asia do not purchase seeds or for that matter any other agricultural input for each season; some of this year's grain is kept as next year's seed.

"Because richer farmers tend to use agricultural inputs more than the poorer ones, it is much more likely that hybrid rice seeds too will be used mainly by richer farmers. This could increase further the gap between rich and poor farmers."

*From "New Rice from China," *Agricultural Information Development Bulletin,* United Nations Economic and Social Commission for Asia and the Pacific, Vol. 5, No. 1, p. 23.

Another View of Technology Transfer

While technology may have an impact without extension mechanisms and its "transfer" may be the new buzz-word for "extension," a different perspective on technology and its role is urged by Professor James T. Bonnen of Michigan State University.* For the August, 1983 meeting of the American Agricultural Economics Association, he outlined some historical lessons we have learned, or should have learned, about technology, human capital, and institutions in relation to increased productivity, with their "unavoidable dependence . . . on a consciously managed continuum of knowledge stretching from its creation through application to utilization and back."

New technologies are not just willed, nor created wholly from insight. They depend on other critical factors, particularly the investments in human capital and in institutions. "Even after new technologies are in use they have a potential productivity that generally cannot be realized until combined with 1) some appropriate, complementary improvement in the human agents managing agricultural resources, 2) some adaptive modification in agricultural institutions, and 3) an adjustment in conventional resource combinations." It is a common error to focus exclusively on the role of technology, the most visible factor, in increasing agricultural productivity, neglecting the complementary factors of improved human capital and institutional change. Looking at the interlinkage and mutual reinforcement of basic research, applied research, extension, and farmer education, he concluded: "The creation of knowledge and its development should be managed in an articulated but decentralized system of institutions all the way to its utilization, with feedback problems, failures and successes."

After all this about the sources of productivity, Professor Bonnen then comments that focusing investment on productivity and ever-increasing growth "is not enough today." Distributional issues and "safety, quality of life, stability, and preservation of the environment for future generations" are "becoming as important as productivity."

What we have learned in simpler days now needs to be applied to "today's more diverse institutions of agricultural research and education, including those in the private sector, the non-land-grant university and international research."

*The paper, "Historical Sources of U.S. Agricultural Productivity: Implications for R & D Policy and Social Science Research," will appear in the December, 1983 issue of the *Journal of Agricultural Economics.*

Go Abroad, Young Man (Woman)

All U.S. citizens remember that Horace Greeley, the New York editor, promoted national development a century and a quarter ago by advising "Go West, Young Man." Not known at all is his still more far-reaching advice to youth: "I would not have them, like Geography in our atlases, contemplate that hemisphere in which the greatest advances have already been effected, to the exclusion of that wherein the greatest triumphs yet remain to be achieved." The reason: the next advance in human progress is "not a pushing forward of the vanguard, but a bringing up of the main body."

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Staffing Ratios and Extension Problems

It is interesting to study how nations in different parts of the globe have organized and staffed their extension services to support their development goals. A recent study by INTERPAKS faculty and students at the University of Illinois considered this issue from two points of view:

(1) The staffing of extension services
(2) The major problems confronting extension services

In terms of staffing national extension organizations, one important issue examined was the percentage of subject-matter specialists needed to support frontline extension personnel. The study found that North America and Europe had about 18 percent of their staff in technical support roles, as compared with 6 percent in Africa, Asia, and Oceania. Since subject-matter specialists play an important linkage role between research and extension, these findings have serious implications in terms of their capacity to train and backstop field-level extension personnel. Furthermore, the technical qualifications of subject-matter specialists in most of these Asian and African countries are at the first-degree level (i.e., B.S. degree or equivalent), with limited practical experience. These findings, which are summarized in Table I, suggest that more attention should be given to this category of extension personnel:

Table I: **SUMMARY OF EXTENSION PERSONNEL DATA***

Region	Administrative Personnel	Technical Support Personnel	Extension Agents	Extension Assistants	Totals
AFRICA					
No. of Personnel	1,170	1,368	12,531	9,284	24,353
Percentage (%)	5	6	51	38	100
ASIA & OCEANIA					
No. of Personnel	17,967	12,476	66,054	107,587	204,084
Percentage (%)	9	6	32	53	100
LATIN AMERICA & CARRIBEAN					
No. of Personnel	1,217	2,369	12,271	2,631	18,488
Percentage (%)	7	13	66	14	100
EUROPE					
No. of Personnel	2,409	3,416	11,316	1,446	18,587
Percentage (%)	13	18	61	8	100
NORTH AMERICA					
No. of Personnel	1,448	4,790	12,678	6,164	25,080
Percentage (%)	6	19	50.5	24.5	100
TOTAL	24,211	24,419	114,850	127,112	290,592
PERCENTAGE	8	8	40	44	100

*Source: Swanson, B.E. and J. Rassi, **International Directory on National Extension Systems**, University of Illinois at Urbana-Champaign, 1981, p. 274.

In terms of the major problems confronting extension systems throughout the Third World, extension directors were asked to indicate which problems were serious or somewhat serious in their respective countries. In addition, they were asked to prioritize these problems in order of seriousness. These findings are summarized in Tables II and III respectively:

TABLE II: **EXTENSION DIRECTORS' PERCEPTIONS OF PROBLEMS***

Problems	Category of Seriousness: Serious Problem (%)	Somewhat of a Problem (%)	Not a Problem (%)	Total (%)	Number of Cases
Organizational	36	52	12	100	59
Mobility	41	41	18	100	59
Equipment	39	40	21	100	57
Extension training	34	49	17	100	59
Teaching aids	31	45	24	100	58
Technical training	24	52	24	100	59
Linkage	17	61	22	100	59
Technology	16	60	24	100	58

Table III: **EXTENSION PROBLEMS RANKED IN ORDER OF SERIOUSNESS BY EXTENSION DIRECTORS***

Ranking in Order of Importance of Seriousness	Problems	Mean Ranking[1]
1st	Mobility	3.86
2nd	Extension Training	4.05
3rd	Equipment	4.56
4th	Organizational	4.61
5th	Technical Training	4.91
6th	Teaching Aids	5.37
7th	Linkage	5.75
8th	Technology	5.95
9th	Other Problems	6.00

[1]NOTE: n=50; 1 = most serious, through 6 = least serious

*Source: Sigman, Vickie A. and B.E. Swanson, **Problems Facing National Agricultural Extension Organizations in Developing Countries**, INTERPAKS Publication No. 3 (forthcoming).

In summarizing the overall findings of this second study, the authors reached the following conclusions:

The study of extension directors' perceptions of selected problems tentatively concludes that the eight specific problems examined appear to constrain the effectiveness of most national agricultural extension organizations in the developing world. The relative importance of these problems in differing economic and geographic regions of the world is less conclusive and requires further study.

It appears that the lack of mobility, communication equipment, and extension training, as well as organizational problems, are perceived to be the most serious problems worldwide. Based on the findings of this study, more attention should be given to developing and testing alternative approaches to extension that will increase the efficiency and effectiveness of agents by working more with group and mass-media approaches.

The importance of extension training problems, as compared to technical training problems, indicates a widespread concern for the educational role of extension. It appears there should be a more balanced approach to training, integrating "what" to extend (technical training) as well as "how" to extend it, using appropriate extension methods (extension training).

The observation that certain discrepancies exist in the perceived seriousness of certain problems—particularly problems of technology and linkage—between directors of extension and the literature on agricultural research and extension is provocative. This clearly merits further attention.

Helpful Ideas: Old and New

Bo M. I. Bengtsson, **Rural Development Research and Agricultural Innovations,** Swedish University of Agricultural Sciences, Uppsala, 1983 (377 pages).

While dealing with agricultural research policy for rural development, this book has much to say about extension as a vehicle for innovation and for the application of research to farm problems. The actual changes made and the degree of adoption by different categories of farmers are derived from three case studies in Trinidad/Tobago, Ethiopia, and Sweden. The extension system is criticized as a deficient means of reaching the majority of farmers, and both research and extension have fallen short of special attention to the rural poor, despite the widely avowed acceptance of that group as the priority target. The author concludes that there is need for rural development research that is responsive to the consequences and feedback from such research at the farmer level; that research is needed on better methodologies of agricultural extension; and that studies should be made of comparative worldwide experience in projects since the 1960's. An extensive bibliography from many languages is included. (Distributor: Swedish University of Agricultural Sciences, Department of Plant Husbandry, A-750 07 Uppsala, Sweden. Price 45 kr.)

Joseph J. Molnar and Howard A. Clonts, editors, **Transferring Food Production Technology to Developing Nations,** Westview Press, Boulder, Colorado, 1983 (175 pages).

The Auburn University professor/editors present eleven conference papers on development and technology transfer, macro- and micro-level planning in development, and social and institutional constraints. The authors are professors from prominent development-oriented universities and two top government officials. Extension systems and methods, as such, do not loom large in the volume, but they are illumined indirectly. For example, Nyle C. Brady, Senior Assistant Administrator for Science and Technology in the U.S. Agency for International Development discusses many "constraints," among which are insufficient trained human resources through both formal and non-formal education. He sees need for "a massive 15-25 year effort" for remedy in Africa.

Jeanne M. Moulton, **Animation Rurale: Education for Rural Development,** University of Massachusetts, 1977 (249 pages).

Insights and lessons abound in this book on an extension method used in Francophone Africa, *"animation rurale,"* which has been called "a pedagogy of development" aimed at "induced participation" and at changing attitudes before behavior. Some failures shown in the Senegal/Niger experience are identified as lack of emergence of institutions to implement the rhetoric or ideology; the appearance of self-serving elites as *animateurs;* the lack of profit, savings, and reinvestment concepts; and the misreading of political realities and peasant characteristics. The overall lesson is the "difficulty of applying in practice what we know in theory." Theory needs pre-conditions, and the book sets them forth as hypotheses.

The Cooperative Extension Service: An Adaptable Model for Developing Countries, International Agriculture Publication, INTERPAKS Series No. 1, University of Illinois at Urbana-Champaign, 1982 (27 pages).

This is the first of a series published by the International Program for Agricultural Knowledge Systems. Co-authored by J. B. Claar, D. T. Dahl, and Lowell H. Watts, it is based on the work of the International Task Force of the Extension Committee on Organization and Policy, Extension Service, U.S. Department of Agriculture. It explains the U.S. extension system, with its unique national-state-local collaboration tied to a system of land-grant colleges, and explores what components of that system might be useful or suggestive in other countries, given suitable adaptation. Nine "essential components" of an effective extension system are given, and a checklist of 28 questions is supplied to aid evaluation and planning. *(This publication is available in bulk at 50 cents per copy; single copies may be obtained without charge. Order from the Office of Agricultural Publications, University of Illinois at Urbana-Champaign, 47 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801.)*

Mario A. Habit, **Manual on the Transfer of Improved Technology Based on the Method of Learning by Doing,** Regional Office for Latin America, Food Legume Cooperative Production Programme, Food and Agriculture Organization, Rome, 1982 (111 pages).

This is a supporting document for the promotion of courses on technology transfer, in which researchers, extensionists, and farmers learn and act jointly to bridge the gaps commonly lamented. Experiences are described from soybean production in Panama and Cuba.

Jon H. Moris, **Managing Induced Rural Development,** International Development Institute, Indiana University, Bloomington, 1981 (190 pages).

This is a provocative management-oriented book written from the perspective of the practitioner, the change agent who works in the "population rich but resource poor" countries. It reviews what we know about induced planned change, with an extensive bibliography, and discusses strategies to improve the administration of rural development. The "universalist claims of Western management" are challenged in a chapter on "The Practical Implications of Experience," based on the author's assignments in East Africa. Four accepted themes run counter to realities in many countries: a bias toward commercial/corporate practice; the overcommitment to arbitrary scheduling or "commoditizing of time"; the "uncoupling of management from control" while relying on legal instruments and blaming "the system" instead of personal managerial intervention; and faith in reaching predicted outcomes by the "magic" of procedural or processing sequence in a prescribed lockstep. This analysis leads to a long list of guidelines from the author's experience, in the spirit which pervades the book: "The classic (extension) model rarely performs as expected."

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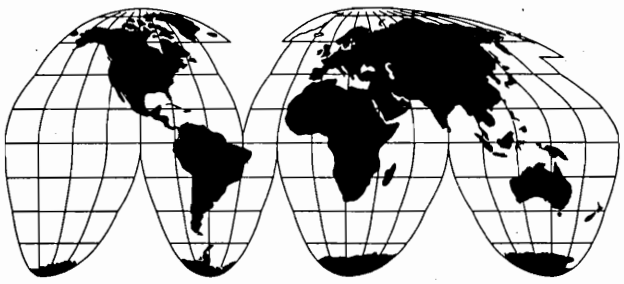

Around the World

Extension Reorganization in Bangladesh

Agricultural extension services in Bangladesh have been reorganized. Six extension units have been merged into a Department of Agricultural Extension (DAE), headed by a Director General and divisional directors. Using the Training and Visit system, a field service division exercises line functions over the field personnel, while the headquarters specialized divisions give technical supervision through subject-matter specialists. The levels of operation are the national headquarters, zone (district), unit (thana), and block (union).

The zone (district) level is the most important focal point for management. In each zone, a deputy director is supported by a team of 10 to 12 supervisors and managerial staff, including subject-matter specialists and training officers. In each unit, a senior agricultural extension officer works with three or four supervisory and subject-matter officers, while the block supervisor provides service to farmers and groups of farmers. All personnel at and below the zone (district) level will receive training in the Training and Visit system.—*from Dr. Anwarul Azim, Deputy Director, Plant Pathology Division, DAE.*

Computerization in Israel

The Extension Service of the Ministry of Agriculture is deeply involved abroad in the "world-wide implementation of the Training and Visit extension system." At home, a state-wide computerized agricultural decision-making system has been set up at extension and field levels.—*from R. Ausher, Associate Director.*

Changes in Costa Rica

Following use of the Training and Visit System, Costa Rica has changed to a new extension system with "a combination of traditional agricultural extension methodology together with some elements of the Training and Visit System that proved useful." New units for training and for information have been created within Agricultural Extension, a part of the Ministry of Agriculture and Livestock.—*from Gilberto Campos Sandi, Director General of Agricultural Extension.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Technical Assistance in Pakistan

INTERPAKS will have a major role in the extension-related portions of a project being undertaken by the Office of International Agriculture, University of Illinois, in collaboration with Southern Illinois University. Funding is from the U.S. Agency for International Development for assistance to the Agricultural University in Peshawar, Pakistan, one large component of which deals with agricultural extension, continuing education, and related staff and student training. The design phase has been completed in Peshawar under the guidance of the team leader, Dr. William N. Thompson, Director, Office of International Agriculture, University of Illinois, and with the participation of several members of the INTERPAKS Committee: John B. Claar, Andrew J. Sofranko, Burton E. Swanson, Sam Johnson III, and Violet M. Malone.

Directorship

Dr. John B. Claar has returned to the Directorship of INTERPAKS, after serving nine months as Acting Dean of the College of Agriculture. During that time Dr. Eldon L. Johnson, Vice-President Emeritus, served as Director.

International Training Course

INTERPAKS will offer a five-week short course for overseas administrators of extension services from September 17 to October 19, 1984. It will be aimed at senior staff (directors, associate and assistant directors, program leaders, supervisors) in extension positions and will treat all aspects of directing and operating extension services, including study of alternative systems and the essential conditions for effectiveness. Practical matters will be emphasized, including class participation in problem-solving analysis of case studies, and field trips in the United States.

The USDA Office of International Training has agreed to coordinate enrollment. Potential funding sources for trainees are the USAID, FAO, The World Bank, and local universities or government agencies. If funding is from AID or FAO, enrollment should be directed to USDA/OICD through normal AID/S&T/OIT and FAO channels. If funding is from other sources, enrollment can be made by cable to Winkelmann, OICD AGRI/WASH 64334.

The teaching staff will be senior personnel from the University of Illinois, representing several disciplines and all experienced in international agriculture. More detailed information will be available later.

New FAO Extension Manual

FAO has entered into contract with INTERPAKS, under the editorship of Associate Director Burton E. Swanson, to revise and rewrite the widely used **FAO Extension Manual,** first published in 1975 and periodically reissued. Authors of different chapters will come from INTERPAKS, from outside institutions, and from Third World countries. Publication is planned for 1984.

Colorado Conference

Representatives of INTERPAKS at the University of Illinois and of international extension at Colorado State University held a joint conference near Steamboat Springs, Colorado, on July 24-26. Topics covered were the state of the art in knowledge transfer matters, the theoretical capabilities of an ideal technology transfer model, and the constraints to success as actually experienced around the world. A publication will follow.

Services Abroad

Dr. John B. Claar, Director of INTERPAKS, recently assisted the U.S. Agency for International Development with extension evaluation in Sierra Leone. Associate Director Burton E. Swanson was a recent consultant for CIMMYT in Mexico, evaluating training programs there.

Malaysian Conference

INTERPAKS Director John B. Claar addressed the International Conference on Extension and Community Development Strategies held at Serdang, Selangor, Malaysia, May 16-20. His topic was "The Cooperative Extension Service of the United States; Transferability to Developing Countries." He also met with extension personnel elsewhere in South and Southeast Asia.

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Contract for Improved Technology Development and Transfer Model

The long-running rumor is true: INTERPAKS and the U.S. Agency for International Development have entered into a major five-year contract totaling $1.7 million that will include approximately 16 worldwide case studies and other analyses aimed at the improvement of the processes of agricultural technology development and transfer. After its consideration and refinement for a period of many months, the new project will proceed under the leadership of Dr. Burton E. Swanson, Associate Director of INTERPAKS and Associate Professor of International Agricultural Education, aided by the INTERPAKS research team at the University of Illinois and an oversight committee in Washington, as determined by USAID. Use will also be made of outside consultants, advisory seminars, and an international conference to help evaluate tentative models for improved technology development and transfer. A plan of work has been organized for the five-year period, which began in February, 1984.

The contracting parties have agreed that a massive backlog of relevant experience now exists worldwide —different systems, different circumstances, different philosophies, and different goals—and that a comparative examination might create a model or options useful to national research and extension practitioners, policy makers, international donors, and farmers.

Dr. Swanson has commented on the project as follows: "We are quite pleased that USAID has approved this research project. We have a very capable, interdisciplinary research team ready to initiate work on this project. One preliminary activity undertaken while waiting for final approval of the contract was the participation of Professors Fliegel and van Es in the International Extension Conference held at the International Agriculture Centre at Wageningen, January 18–20.

"Jane Johnson, our bibliographer-librarian, has already started compiling an extensive bibliography-acqusition list of books, papers, and unpublished documents that we will be collecting and reviewing as part of the review of relevant literature. We will compile and catalogue all of these documents on our IBM-PC, so that other researchers, national programs, and donor agencies can have access to this bibliographic information to conduct their own searches once the bibliographic work is completed. Annotated bibliographies will also be printed for those individuals and institutions who do not have the necessary computer equipment. We welcome research and extension institutions, as well as universities, to send us published and unpublished reports, papers, and other documents that relate to the general problem areas of Technology Development and Transfer. Institutions which cooperate with us in this way will automatically be added to our mailing list for bibliographic information and for the *INTERPAKS INTERCHANGE*, which will give periodic progress reports on the project. Materials should be sent to me at the INTERPAKS address."

T & V: Putting Intentions into Practice*

by Daniel Benor

Research and extension (among other activities such as input and credit supply and marketing) are important for agricultural development, which is itself the basis for economic development in developing countries. Most people are aware of the importance of good extension work, the close linkages needed between research and extension, and the two-way flow of information to and from the farmers. Yet good extension and proper linkages do not exist in many countries, although the good will, intentions, and know-how are there. Why? The main element missing is an organization that is capable of translating the good intentions into practice in the field.

This is what the Training and Visit System of agricultural extension is trying to do: to ensure that extension agents receive adequate training so that they

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

are qualified to meet and advise farmers in a regular, continuous manner, and to bring farmers' problems back to research for solutions. T & V is only one possible way of doing this: there may be others, but the ultimate criteria for the success or failure of any system are the results in farmers' fields—mainly increases in yields and income.

The more effort directed towards improving the organization of agricultural extension and research services, the better are the chances of significant breakthrough in agricultural production. Extension people often emphasize the gap existing between what is known in research and what farmers do. However, we fail to admit that the gap that exists between what is known about effective extension and its implementation in the field is even wider. To overcome this, there is a critical need to develop appropriate extension systems, train more realistic extension leaders, and emphasize the essential role of extension in agricultural (and hence economic) development—and so gain the necessary public and political support to establish strong agricultural extension services that can effectively support farmers.

**INTERPAKS INTERCHANGE* is grateful to Mr. Benor, originator of the T & V System, for this special message from New Delhi, India, where he is on the staff of the World Bank. The Bank's encouragement has led to the implicit or explicit adoption of the T & V System in about 40 developing countries.

Our Problem-Solving Origins

When did agricultural extension service really begin? History seems to give us no incontrovertible answer unless we are precise about our words and arbitrary about our meaning. When does an idea emerge into an institution? The extension idea of applying knowledge to human use is as old as the Renaissance and the rise of science. Putting that idea into an organization with all its accoutrements for some public purpose took a bit longer. And much happened in between.

"Possibly the first, modern, agricultural advisory and instructional *service* was established in Ireland during the great potato famine in the mid-nineteenth century," writes Professor Gwyn Jones of the University of Reading, England.* It began as a pilot scheme in 1847, with ten "instructors" to move in circuits among the areas worst afflicted by the potato blight. It was expanded to a peak of thirty-one instructors and continued for four years.

The impetus came from a remarkable unofficial but suggestive letter from the Earl of Clarendon, Lord Lieutenant of Ireland, to the President of the Royal Agricultural Improvement Society of Ireland. The monumental problem-solving challenge came from the catastrophic social effect of the potato blight during the last half of the 1840's. This "classic document," to use the words of Professor Jones, did contain an amazing variety of the extension elements known to us today. *Objective:* "I consider the means of bettering the condition of the Irish people must . . . be looked for in the improvement of the processes adopted in the cultivation of the soil." *Trained staff:* "a number of persons . . . possessing sound practical knowledge of the most improved systems of agriculture applicable to Ireland." *Skills:* "such general education as may enable them to communicate that information orally in a satisfactory manner . . . and to deliver lectures on practical agriculture to the farming population . . . couched in clear but simple language, and might, in some cases, be usefully illustrated by practical demonstration." *Specialist help:* "your Grace will probably derive assistance from the cooperation of Sir Robert Kane," a distinguished scientist on the panel to investigate the causes and remedies of the potato disease. *Targeted audience:* the poor tenants in "those remoter districts where cultivation is imperfect—where the mind of the farmer is depressed . . ." and "those less favored districts where even . . . imperfect knowledge has not yet made its way." *Finance:* public-private cooperation involving "the noblemen and gentlemen . . . under your Grace's presidency" plus 50 pounds contributed by the Earl himself and, eventually, government assistance covering more than half the cost.

In America, to which many of the afflicted Irish migrated, agricultural societies were also flourishing, lectures were being given to assembled farmers, letters suggesting improvements were being circulated, and governors, legislatures, and colleges were proposing the employment of itinerant purveyors of agricultural knowledge. While this could all be found in some degree before 1845, the country was fortunately spared the catalytic and cataclysmic force that produced in Ireland something more organized, more comprehensive, and more clearly targeted. It was indeed an extension *service*.

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*This account appears in a book co-edited with Maurice J. Rolls, **Progress in Rural Extension and Community Development.**

Transfer by Grapevine

There are all kinds of communications: mass and face-to-face, sophisticated and not-so-sophisticated, and more. What is most likely to attain the desired results?

Experience in the Philippines shows an extreme not covered in most scholarly literature.* It is the practice and possibility of development-related communications through the barrio or village grapevine. If it works for "juicy talk," will it work for development? Studies there show that the most effective way of creating development awareness is personal communication — meetings, house-to-house, and person-to-person approaches. However, when hierarchical authority is used by barrio officials, as it has been with legal and status advantages, meetings are not used at all. Instead, messengers, notes, and the conspicuous posting of information are used, with notes being the most common. Also, the barrio policeman is a vital

link in communications, so recognized by barrio people.

Likewise, the barrio captain is not to be underestimated. He is elected by consensus on his capacity for "doing things" and becomes "big brother and peacemaker." Official communications on development reach him by orders he gets when in town or when municipal authorities send them through the policeman. "Without him it is possible that official communication at the grass-root level may break down and the Manila government may seem as remote as Mars . . ." His competency lies not in his development expertise but in knowing "his people and how to harness their collective strength."

The barrio experience shows that mass media exposure is not enough in many situations; that political differences, if not by-passed informally, may nullify good communications; and that barrio officials can be more helpful if made aware of their duties and role, if somehow trained, and if armed with more basic knowledge of projects and policies.

*See "Working through the Barangay Grapevine," *PCARRD Monitor*, Philippine Council for Agriculture and Resources Research and Development, May, 1983.

Gaps Between Research and Extension Missions

Most countries have units of agricultural research and agricultural extension in their ministries of agriculture. Most countries have a functional gap between the two also, despite the appropriate knowledge and technology for rural development.

Research and extension actually operate in many countries, both developed and developing, with more independence than complementarity. This is illustrated in the following conceptualization* by Dr. J. K. McDermott, Associate Director of the Farming Systems Support Project, headquartered at the University of Florida:

ing process falls in the no-man's land between self-contained research and self-contained extension.

Completing the cycle of the technology innovation process, without such fatal breaks, is the objective of Farming Systems Research/Extension, the latest of many historical efforts to preserve and smooth out the continuum. The "/Extension" part of this systematic approach (what follows after the slash mark) offers challenges, too. Often there is no cooperation with researchers to adopt technology and integrate it into packages because subject-matter specialists are not available, as so often in Africa and Asia. There is no reaching-back mechanism for effective linkage with research or for gaining the confidence of researchers. And as stated above, there is often the erroneous assumption that extension is only the diffusion of technology, simplistically ignoring the human agents, the institutional structures, and the resource components. Extension, then, needs to be defined in each country so that it completes the continuum and interlocks somewhere with research. It must be more, much more, than a mere distribution system that sits and waits for someone else "to turn on the water."

If Farming Systems Research/Extension is to succeed where other attempts have failed, both sides of the equation (or of the slash mark) will have to reach out into the current void, grasp hands, and cooperate. Therefore, on-farm trials become of crucial importance. They may be tests for the researchers, as they will also be tests for the farmers; and if the innovation passes the farmer test, dissemination will have also begun. Such demonstrations are an ideal means of linking research and extension.

Therefore, each extension agency dedicated to improving agricultural production and rural welfare has a dual task ahead: making the right linkages with research and putting and keeping its own house in order through staff development, proper structure, and improved use of specialist staff. Developing countries might well reexamine their separate missions for research and extension to see whether the overriding objective of helping the farmer is being attained, whatever the jargon or self-interests that lie between inert knowledge and its farm application.

World Stock of Knowledge	Research	Technology Development	Technology Testing	Technology Adaptation	(Policy/market/farm systems) Integration	Technology Diffusion	Common Practice

The problem is that research (left) and extension (right) too often work toward the poles of this continuum, with a great gap in between. Without on-farm trials, research stops after "Technology Development" or sometimes slightly into "Technology Testing." Without appropriate extension specialists and on-farm trials, extension starts with "Diffusion," thus leaving neglected the important in-between, linking areas of technological testing, adaptation, and integration. Research units may not accept the priority nor be geared to testing and packaging results for extension or farmer use. Extension units may think of diffusion only—the peddling of handed-down technology on the assumption that farmer-ready technology exists somewhere. It often does not exist because that ready-

This may lead to a better understanding among research and extension directors of their most productive roles, which may become more difficult in the sense of requiring cooperation but also more effective in the sense of serving farmers. How to fill the current gap — to get the interlocking mechanism — becomes the bottom line. In all cases, it will take understanding, goodwill, and cooperation. In some cases, it may take something more: the use of appropriate specialist staff. What works will be the answer.

*This conceptualization is derived from a manuscript entitled, "Issues in Farming Systems Research Strategy."

Job Satisfaction in Trinidad*

This research study was concerned with the identification, analysis, and implications of factors related to the job satisfaction and motivation of extension field staff in Trinidad. Job, job environment, and background factors were investigated.

A self-administered questionnaire developed by the researcher was used to collect data. The study population consisted of all extension field staff in Trinidad. The 141 completed questionnaires collected represented a response rate of 90.9%. Statistical procedures involved the calculation of frequencies, means, and standard deviations on items relating to job and job environment factors. Stepwise multiple regression analysis was used to test the significance of relationships between the background variables and (a) overall job satisfaction and (b) satisfaction with various job facets.

The findings indicated that there was substantial dissatisfaction with the facets (a) promotion and (b) salary and fringe benefits. For both these factors, dissatisfaction was expressed with absolute amounts (inadequate salary, few promotional opportunities) as well as perceived inequities existing within the system. With regard to the latter, staff felt that they were receiving less financial benefit than others in similar organizations with comparable qualifications, training, and job responsibilities.

Regarding the work itself, extension field staff derived substantial personal satisfaction and feelings of accomplishment from those aspects of their jobs which allowed them to interact with farmers and provide needed assistance. Dissatisfying aspects related to factors beyond their control — system factors — which constrain them in their efforts to assist farmers in improving their standard of living. Such factors include inadequate technical backup support for the field staff, the lack of well-defined consistent agricultural policies, and inadequate infrastructural facilities such as access roads and marketing facilities.

Factors that were identified as important in terms of what staff would like to get out of their job include (a) adequate salary, allowances, and opportunities for promotion, (b) personal satisfaction, and (c) recognition from farmers and supervisors. Factors that were perceived to be strongly affected by effort, or how hard the employee worked, were the amount of personal satisfaction derived from the job and the degree of respect from farmers. The degree of respect and recognition given to field staff by their supervisors was perceived to be moderately affected by effort, while promotion and salary were only somewhat affected.

Several background variables were found to be significantly related ($p < .05$) to overall job satisfaction and satisfaction with the various job facets. However, except for satisfaction with competency, the contributions of such variables to the variances in overall job satisfaction and satisfaction with the various facets were generally low (less than 35%).

In the case of competency, background variables accounted for 85% of the variance in satisfaction with this job facet. Those accounting for most of the variance were number of years worked in the extension organization and percentage of time spent in extension education activities. The greater the number of years in the extension organization, the higher the satisfaction with competency; however, the greater the percentage of time spent in extension education activities, the lower the satisfaction with competency.

The findings with regard to competency are to be expected in light of existing circumstances within the extension organization. Pre-service training for most of the field staff consists of a two-year diploma program which, in addition to providing basic training in the physical sciences, covers a wide range of topics related to both crop and livestock production. Orientation and in-service training sessions have not been as regular and/or as comprehensive as desirable. Additionally, extension field staff operate as 'generalists' and are expected to be knowledgeable in a wide range of agricultural practices. For staff involved in routine non-educational service activities, competency is not as salient a factor as in the case of those who are involved in farmer education and are thus expected to disseminate relevant and useful technical information on a regular basis.

The findings suggest that the situation regarding financial rewards and promotional opportunities needs to be closely examined with a view to developing recommendations that are reasonable from the viewpoints of both management and staff. Effective work programming, stronger backup support, and appropriate training will also help considerably in improving the morale and motivation of the extension staff.

*In this article, Dr. Joseph Seepersad, Lecturer in Agricultural Extension, University of the West Indies, Trinidad, summarizes his doctoral thesis recently completed at the University of Illinois at Urbana-Champaign. Copies of the thesis, **Identification, Analysis, and Implications of Factors Related to the Job Satisfaction and Motivation of Agricultural Field Staff in Trinidad,** may be obtained from University Microfilms International, 300 Zeeb Road, Ann Arbor, Michigan 48106.

Appropriate Technology

"You need this year's dogs to hunt this year's hares."—*Niger proverb.*

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Neglecting the Obvious — Women

Too often, women have been neglected both in books and projects related to rural development, despite their large shared role in commercial production and their virtual monopoly in subsistence farming. Much planning and action overlook the obvious — a strange phenomenon when everyone's rhetoric calls for a holistic approach, taking into account "all factors." The implications of that theme were elaborated upon by Elizabeth O'Kelly, a British development specialist, at the 1976 World Food Conference at Iowa State University, with insights no less relevant today.* Her central theme related to intermediate or appropriate technology in economies where women bear the major responsibility for agricultural production, food processing, and family welfare.

"The most powerful argument against the indiscriminate use of mechanization on a large scale," she writes, "is that subsistence farming is largely in the hands of the women and machines are men's business. Mechanization means that the men will have to take over from the women. Superficially, such a change might appear to be beneficial to the women, in view of their very heavy workload, but it would only be to their disadvantage because they would lose the considerable status they enjoy as *de facto* controllers of the land. If they sometimes seem reluctant to cooperate in farming programmes, it is because they cannot afford to experiment on their small acreage unless they can be certain of success. The introduction of a new crop which fails will mean that they and their families will starve. They cannot go out and buy food as we can. Nor can they afford to buy the chemical fertilizers on which the success of the Green Revolution is dependent, but this is not to say that they would not use them if they could afford to do so. The women are seldom slow to adopt anything which they can see is to their advantage, and they are much less conservative than the men. Instead of attempting to change the whole social pattern, we would do far better by introducing simple forms of mechanization which custom would allow women to use, and better hand tools. We might also help women by making it easier for them to gain admission to agricultural colleges and schools and by making the courses less academic and more practical. Few of the women have had the same educational opportunities as the men."

The plea is for consideration of the improvement of existing patterns as an alternative to superimposing new ones — "not to take a sledge hammer to crack a nut." Two dangers are change for change's sake and change "because existing patterns do not conform with our own." Turning the clock back is not the issue; but, rather, whether we look twice before we move it forward. The author then summarizes her convictions: ". . . it is the women in the developing countries who will be the spear head of change . . . I sincerely believe that women are the hope for the future and that anyone planning a rural development programme would be well-advised to base it on them. They will do anything to ensure that their children have a better life than they had . . ."

Therefore, some provocative questions emerge about this loss of the immense leverage that could come from the sheer numbers, from the incentive of "doing everything for the children," and from the conservative step-by-step testing of technology's appropriateness.

*"Intermediate Technology as an Agent of Change," *Proceedings*, pp. 505–513.

Strengthening Extension: An International Quest

These are exciting and somewhat perilous times for organized extension services. There is a general recognition that the systems that were inherited from the colonial period of many countries have serious limitations for the new tasks to be performed under independence. Many countries have improved their extension services a great deal by such things as institution-building or introducing T & V or Farming Systems Research/Extension programs. But there is still a great deal of unrest and concern about how large an extension service some nations can "afford" and whether there are not some workable alternatives to a large publicly supported field system. It is natural to look for low-cost panaceas when funds are tight and a country faces many urgent problems. This is to be applauded, and efforts to maximize the use of mass media and private organizations should continue.

Yet, we are not without information, guidance, and help. Twenty-five years of worldwide experience is at our disposal, as we are reminded in Everett M. Rogers' latest edition of **Diffusion of Innovations.*** This comprehensive overview of change in the international setting has some fundamental things to say about extension problems. For example, it concludes that the adoption of farm practices by farmers was directly related to the number of contacts between the farmer and the change agent. It also points out that the most significant factors explaining the difference in the effectiveness of different agents were whether the agents used a farmer-centered approach and appeared credible to the farmer. That is, those agents were most effective who the farmers felt recognized their situation, were trying to help them, and had information they could trust. On this point, Rogers observed that the use of the demonstration method was especially effective in establishing credibility. The research also suggested that mass media working in parallel with agents who were making direct contacts could be a powerful ally and help to insure the equity of access.

This research, which involved South America, Africa, and Asia and covered a span of over 25 years, has much to say to us as we plan for the future. For example, it suggests criteria for analyzing extension services and predicting their effectiveness, using such

questions as the following:

1. Are the agents able to contact clientele frequently and establish credibility?
2. Are the agents supported, trained, and backstopped by research so that a reputation for being a source of reliable problem-solving information can be developed?
3. Are research and extension integrated laterally so that they and the farmers can interact on the development and testing of packages of technology?
4. Are the agents' assignments consistent with the need to contact farmers frequently and establish a "friend of the farmer" image? Or do they include some functions which destroy this relationship?
5. Is extension forced to have so much of its budget in salaries that it does not have the operating budget that is essential for success?
6. Do mass media function in tandem with extension field operations, or do they operate as separate activities?
7. Does extension have the equipment and funds to make liberal use of demonstrations?

These criteria that suggest how extension should operate to be effective run counter to the *modus operandi* in many developing countries. For example, they suggest that extension must be mobile when there is little transportation; they would have extension use a persuasive approach when the country normally uses authoritarian methods; and they would require an integration of research and extension in an interface with the farmer when lateral contact between organizations is a rarity.

A great many extension organizations are still at odds with the conclusions supported by the research. Yet, exciting progress is being made. Training and Visit Systems have improved extension operations and management a great deal where they have been introduced, and Farming Systems Research/Extension programs are making a major contribution to developing farmer-oriented technology and demonstrating it on farmers' fields. It is important that as extension evolves, every effort should be made to recognize the principles indicated by this research and to retain the real progress that is being made by these two major innovations.

When extension organizations can be brought into better conformance with the requirements for doing their job, discussions about their cost will greatly subside.

*Everett M. Rogers, **Diffusion of Innovations** (3rd Edition), The Free Press, New York, 1983.

Helpful Ideas: Old and New

Gwyn E. Jones and Maurice J. Rolls, editors, **Progress in Rural Extension and Community Development,** John Wiley & Sons, Volume I, 1982 (336 pages).

This is the first volume of an intended series, each to deal with a general theme. The theme here is the interaction of extension work and problems of relative disadvantage or deprivation of rural people. The object is to explore how extension and community development can assist in minimizing social and economic inequalities in rural areas, with a bottom-up approach throughout.

The editors, from the Agricultural Extension and Rural Development Centre, University of Reading, England, have brought together 16 articles of opinion and experience, buttressed by insights, often firsthand, from extension scholars and workers in Europe, Asia, Africa, and Latin America. The central threads are that much extension work has the unintended effect of increasing the economic differences among rural people, leading to further polarization; that extension theory and practice co-exist uncomfortably, often separately; and that the needed changes cannot be simplistic but must cope with the complexity of the "organizational, methodological, and content dimensions." The book will be most useful to academic and administrative personnel.

Daniel Benor, James Q. Harrison, and Michael Baxter, **Agricultural Education: The Training and Visit System,** World Bank, 1984 (96 pages).

This is an updated version of the same titled booklet published in 1977. The historical significance of that first introduction to the T & V System is shown by the wide adoption of the method, with much World Bank support. "The main idea of the system is to have competent, well-informed village-level extension workers who will visit farmers regularly with relevant technical messages and bring farmers' problems to research." This is admittedly "but one of many ways." While satisfaction is expressed in the production achievements in many countries, such assessment is incomplete. Other successes have been the pride engendered in farmers, the respect they enjoy among their peers, the changes in attitude in the extension staff, and the strengthened links with research.

On the basis of experience, the authors conclude that to succeed, the T & V System needs governmental and community understanding and support of the basic philosophy and operational mechanics, undergirding by research, production recommendations that are relevant and economically viable, special training that is timely and specific to need, commitment from a professional extension staff, and concentration of effort on a small number of feasible goals.

INTERPAKS

Around the World

Agricultural Information in Botswana

In a large but sparsely populated country like Botswana, getting useful agricultural information to potential users in remote areas is critical. It is done through the Agricultural Information Service, Ministry of Agriculture, whose history dates back to 1965, even before independence. That agency's main purpose is to support and supplement the extension staff and to interpret priorities and policies of the government. Effectiveness is monitored by an Action Research and Evaluation section, with resulting improvement or termination of programs.

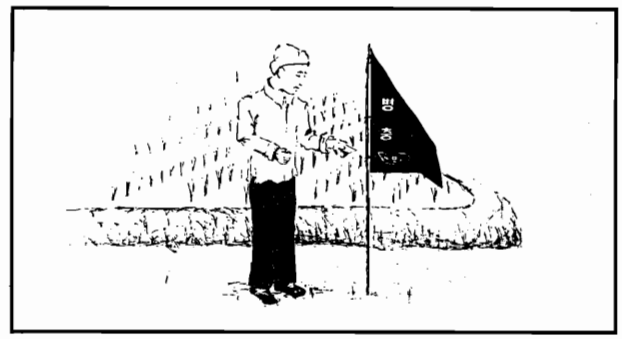
Three types of publication have wide circulation. *Agrinews*, in English, sends out 4,500 copies a month and *Iketleetse*, in local vernacular, issues 7,000. The former goes to educational institutions and to some other African countries. The latter has less text, but more photographs and graphics, for attractiveness and easy reading. The third publication is *Agrifacts*, each issue of which is devoted to a single topic (e.g., production of green beans) for use by the extension staff, schools, and public. From one to eight issues appear monthly, as needed, with circulation from 500 to 2,000, depending on use and audience. The information sources are, as also for radio broadcasts, the specialists in the Ministry of Agriculture and agricultural personalities and groups who have been interviewed. — *from Mogotsi Matebesi, Head of Publications Section.*

Plans in Sierre Leone

What to do hereafter, particularly with institutions, is Sierre Leone's question, now that a major agricultural development project is slated for discontinuation. The possible consequences and opportunities for extension in the future was the theme of the second seminar of a series held on January 12-14 at Njala. The terminating project, ACRE (Agricultural Crops Research and Extension), has been quite successful but was not designed directly to strengthen ongoing research and extension institutions. The seminar studied alternatives and formulated recommendations that would permit the basic thrust of the project to continue with collaboration between Njala University College and the Ministry of Agriculture and Forestry. These options will be studied and governmental decisions reached before the ACRE project is completed, with special emphasis on the integration of extension with research.

New Extension Ideas: The Field Flag

A relatively new individual communication technique to use when farmers are not at home or in their fields when the extension worker visits is the use of a field flag. This method, which was developed by Korean extension workers, functions as follows. An extension worker visits a farmer and identifies a plant disease or harmful insects in the rice paddy. Since the farmer is not present, the results of the crop examination and recommendations for treatment, if any, are written down and placed in the pocket of a red vinyl flag that is attached to a thin pole or a stiff wire. The red flag is placed in the field where the farmer easily finds it. After reading the message, the farmer rolls up the flag and replaces it in the same location. The extension worker recovers the flag on the next trip by the field.



The obvious advantage in using this method is that the time and energy expended by the extension worker in traveling to a farm is not wasted if the farmer is not there. The extension worker may go ahead and proceed with the next task scheduled for that day. As staff time for individual farm visits is ordinarily limited, this technique can help the extension worker make more effective use of his or her time. Also, the red flag may create considerable curiosity on the part of neighboring farmers and they, in turn, will check their own fields for the same problem. If they also have the problem, they can ask the first farmer what the extension worker recommended. — *from Dr. Hae-Kyun Song, Seoul National University.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Major USAID Project Begins

A five-year contract has been concluded with the U.S. Agency for International Development: "Technology Development, Transfer and Information Feedback Systems in Agriculture." For details, see page 1 of this issue.

Consultant in Sierra Leone

On his return trip as a consultant in Sierra Leone, Director John B. Claar was keynote speaker for the second seminar on "The Integration of Extension in Rural Development in Sierra Leone," January 12-14.

The Editor?

For the earliest issues of *INTERPAKS INTERCHANGE*, Dr. Eldon L. Johnson, Vice President Emeritus of the University of Illinois, has agreed to editorial responsibility. His relevant experience includes service with the U.S. Department of Agriculture, the presidency of a land-grant state university (New Hampshire), and many educational and developmental missions overseas, particularly in Africa and the Caribbean. He most recently served as interim Director of INTERPAKS while Director John B. Claar was Acting Dean of the College of Agriculture.

Pakistan Progress

Dr. William N. Thompson and Thomas A. McCowen, Director and Assistant Director, Office of International Agriculture, returned to Pakistan in February to assist the USAID Mission in pursuit of reports and recommendations previously made by a design team from the University of Illinois and Southern Illinois University. INTERPAKS is involved in the extension-related portions of the project for assistance to the Agricultural University in Peshawar.

Wageningen Extension Conference

"Strategies for Agricultural Extension in the Third World" was the topic for a conference, January 18-20, at the International Agricultural Centre, Wageningen, The Netherlands. Approximately 25 participants came mostly from Europe but also from the World Bank and INTERPAKS, represented by Dr. Frederick Fliegel and Dr. John van Es, rural sociologists. Discussion based on prepared papers included such topics as the role of European training centers in improving Third World extension; appraisal of such new methods as T & V, Farming Systems Research/Extension, and the participatory approach; and a review of selected development projects sponsored by European countries. Follow-up results of the conference will be the publication of proceedings and a committee to seek further collaborative effort among Europeans working for extension improvement abroad.

New Managerial Short Course

Using senior, internationally experienced staff from the University of Illinois, INTERPAKS will sponsor a new short course from September 17 to October 19, 1984. The course, "Organization and Operation of Agricultural Extension Services in the International Setting," will be targeted at senior administrative staff in extension positions or persons being trained for such responsibilities. Selection and payment of travel and fees will be the responsibility of the employing extension agencies.

The five-week presentation will be divided into four modules: (1) historical development and recent trends in extension, with comparative review of the country systems represented by class members; (2) organizing and managing an extension service, with attention to leadership, budgeting and finance, program development, and evaluation; staffing training, development, and supervision; internal and external communications; and conditions for success; (3) setting up effective extension organizations, with guidelines, class problems, case studies, and discussions; and (4) a week devoted to field trips and exit interviews.

The course will be presented in English on the University campus in Urbana-Champaign, Illinois, 130 miles from Chicago. A similar course can be made available for overseas presentation upon request by appropriate international bodies or sponsoring governments.

The Office of International Training, U.S. Department of Agriculture, has agreed to coordinate enrollment. Potential funding sources for trainees are the USAID, FAO, the World Bank, and local universities or government agencies. If funding is from AID or FAO, enrollment should be directed to USDA/OICD through normal AID/S&T/OIT and FAO channels. If funding is from other sources, enrollment can be made by cable to Winklemann, OICD AGR/WASH 64334. The cost exclusive of a round-trip ticket to the U.S. will be approximately $4,950.

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Integrated Hill Development Through Nepal's Tuki System

With both ideas and labor from villagers, the government of Nepal and the Swiss aid agency have put together an integrated development plan specifically fitted to the eastern hills of Nepal. The Integrated Hill Development Project operates at altitudes of from 2,500 to 10,000 feet, where transport is by a single new road and many footpaths over which goods come on porters' backs. The extension function of the project is performed by the Tuki system ("Tuki" meaning *light* or *light of the village*), in which Tukis are progressive farmers who form a network of informed and motivated "development agents at the grassroot level," according to Werner Dick of the Swiss Development Cooperation.* His observations, paraphrased below, carry implications beyond their sharply targeted Nepalese objectives.

Tukis are carefully selected after village nomination, exposure to a two-week multidisciplinary training session, and follow-up on-farm performance evaluation. About half of the nominees are invited to be Tukis, but never more than one per village. They are chosen for innovativeness, respect of community, and representation of small farmers, not large landholders.

All aspects of the plan reflect an "integrated" approach. While the Tukis improve their own farming, they are also demonstrators for others and engage in village improvement as well. Training is half-time instruction and half-time practical work; and it covers not only farm production subjects, but also water supply, hygiene, formal and non-formal schooling, cottage industry, women's roles, and ecological problems like forestry and erosion.

Rewards are chiefly non-monetary incentives — no salary but some profit from seed produced and sold by the Tuki, plus a better image in the village and as a village representative, easy access to information and officials, supplies for demonstration plots, and, in general, improved living. However, the Tuki plan differs from many in that the mere reward of a better crop is not judged sufficient. The bestowing of honors, such as certificates and prizes, plays a major role in eliciting competition and good performance.

The two-way communication between the District Extension Service and the Tukis is maximized through central meetings every three months for refresher training, feedback, and planning of future work. Back in their villages, Tukis have extension staff visits once or twice a year, with annual determination of which collaborators will continue and which be dropped. This follow-up and perpetual evaluation is the most difficult part of the system because of the long distances and the unavailability of qualified and willing staff.

Actual field experience shows the success of encouragement through demonstration and competition; the merit of the "unique forum" of up to 100 Tukis who share experience, report problems, and regenerate motivation; and the well-rounded gains which extend beyond good seeds and improved farm practices to adult literacy classes, women's programs, erosion control, and village rehabilitation.

Where does and will this fit into the official Nepalese agricultural extension organization? That remains to be seen. One result may be the formation of cooperatives, both for input-output and credit. Another may be the rise of the private sector for producing and distributing seeds and saplings. Agricultural ministry officials are much involved already, the Agricultural District office takes heavy responsibility for the Tuki system, and further integration with the existing extension network is contemplated. However, "major efforts are still required" if the plan is to extend to other parts of Nepal or beyond the duration of outside sponsorship.

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*"The Tuki System," a paper presented on "Strategies for Agricultural Extension in the Third World," International Agricultural Centre, Wageningen, The Netherlands, January 18-20, 1984. For further information, the author's address is Swiss Development Cooperation, Eigerstrasse 73, C-H3003 Bern, Switzerland.

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

Possible Options to Avoid A Research-Extension Gap

by John B. Claar, Director, INTERPAKS

In the March issue of *INTERPAKS INTER—CHANGE,* we discussed missions and objectives as root causes of research-extension gaps. The development of well coordinated objectives and a spirit of mutual support are basic to success. But there are some supportive administrative actions that can facilitate a smooth-functioning continuum. In further pursuit of this theme, several practical approaches come to mind:

1. Put extension and research under the same administrative leadership, thus creating both the concept of a continuum and the administrative structure to insist upon it.
2. Develop coordinated missions for each organization, taking care to see that mutual support is stated and that high priority is placed on improving farm output and welfare: for research, make problem-oriented research, with field testing, a significant component; and for extension, ensure that selecting farmer cooperators, providing demonstrations, and bringing researchers in for first-hand contact are recognized functions.
3. Organize extension subject-matter specialists and research units along similar lines to make functional cooperation easy (e.g., set up counterpart administrative units with the same subject-matter components).
4. Establish commodity teams of research and extension personnel to study existing technology jointly and to be responsible for recommending technical production packages for field use and for monitoring results.
5. As counterparts to research units, set up extension specialists who should be housed with research counterparts at various levels and, where practical, given part-time appointments in research.
6. Make appointments and assignments to extension personnel that create a technical image and do not undercut this stance with the imposition of conflicting duties (e.g., give appropriate titles and locate offices at universities or research stations).
7. Provide for systematic contact of extension personnel with ongoing research and comingle researchers and extensionists in providing instruction at field days.
8. Develop new evaluative techniques for research and extension personnel based on the new goals and expectations, with recognition for excellent performance of these linkage functions.

These are but examples of administrative steps that could be taken, at very modest cost, to integrate these closely related functions at certain critical points.

The question remains as to what an adequate mission statement for an extension service should consist of and the possible impact of different approaches. Hence, we examined a number of such statements in the **International Directory on National Extension Systems.*** Two broad approaches stand out: (1) benefiting the country; and (2) also directly benefiting farmers and rural areas, as illustrated below:

1. "To provide a continual supply of quality foodstuffs, fibers, etc., to satisfy domestic requirements; to provide a source of export earnings, to maintain technical advantage on other countries; and to improve the efficiency with which resources are used in the agricultural industry."
2. "To help farmers acquire and exchange useful and practical knowledge related to agriculture, in order to promote efficient farming practices, increase agricultural products and improve the living conditions of farm households."

One could argue that the assistance to farmers and improvement of rural life are inherent, though unstated, in the first mission statement. This may well be true. But how missions are stated can have far-reaching effects on how extension workers approach their work.

Extension personnel operating under the first mission are likely to approach farmers in a top-down, manipulative style, since they see their goal as getting farmers to act in certain predetermined ways. In the second case, extension workers will be influenced by their mission statement to try and adapt information to the farmer's decision-making framework in order to encourage application and change. It is, of course, more important to adopt the latter stance when farmers are free to reject or accept the recommendations of the extension service. Where this is true, it would seem that the achievement of national goals, in the aggregate, and the benefits to farmers would be reasonably congruent.

The point here is that *how missions are stated* can and probably will affect how extension workers approach their jobs and how effective the organization actually is.

This raises the question as to what the criteria for a well-rounded statement of objectives and mission should contain. The following are suggested:

1. What the scope of the assignment is — subject-matter scope and the tasks assigned.
2. What the scope of the clientele is (the balance among the general public, the farm population, and input suppliers, for example).
3. What outputs are expected, how the organization will be evaluated, and the criteria for evaluation.
4. Some guiding philosophies about how extension approaches its work: for example, how it is to deal with the potential conflict between

the farmers' goals to improve their welfare and the nation's goals to increase, say, certain export crops to create foreign exchange; or how it is to balance a top-down, directive style versus a farm-centered, management approach.

The foregoing suggests that the functional assignment to extension, if confused and unclear, can result in a confused or ineffective extension service. It is, in fact, probably better that they should be broad enough and stated by the appropriate authority so that they can have some continuity. However, if a hard-hitting, sharply focused extension service is desired, there should be no ambiguity in the objective and mission statement about the scope of assignment, clientele, evaluation criteria, and basic philosophy.

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*Swanson and Rassi, Bureau of Educational Research, College of Education, University of Illinois at Urbana-Champaign, 1981.

Operating with Schizophrenic Goals

Agricultural development does not travel far without running into the fork in the road where the diverging signs say, "Increased Production" and "Greater Equity." Which to take? Extension work faces the same question, either because government has already decided or because government has not decided and hence left it to extension. Or what is more likely, government has not *clearly* decided and hence left it in confusion. Then there is, of course, the option of staking out a traversible new road *between* production and equity.

Unresolved debates call for the insights of the past as well as the insights of the present. Some cogent thoughts on these matters were presented by W. David Hopper in the symposium on the "Strategy for the Conquest of Hunger," sponsored by the Rockefeller Foundation in 1968.* In looking at the essentials for payoff, he said that he could not overstress this requisite and first priority: "a commitment by government that the conquest of hunger will be a single goal of action, a goal to be pursued by a set of strategies that will not be weakened by the requirement that they also serve political objectives." He conceded that rural development may have a broader purpose than the conquest of hunger and that, therefore, a compromise of mixed goals may have its place. But when that situation prevails, he lamented, governments have too often made a bad mix, incorrectly assuming that justified institutional changes and reforms will also raise the economic output. "I think it is abundantly clear from the record of the last two decades that agricultural policies in most developing countries have not evolved an acceptable compromise. The reason . . . lies in a confusion as to what can be accomplished in relating the ends of policy to the means . . . at the disposal of government agencies. The methods selected . . . have most often placed the social and political concerns of the national elites holding power above their concern for raising food production."

Hopper reiterated that it is "dreadfully obvious" that "agricultural policy is a strange schizophrenic creature that serves many masters." It may be cheap food in the city and incentives on the farm; or saving foreign currency and increasing the supply of low-cost modern inputs; or a host of other contradictions. Therefore, "many countries have accepted increased food production as a political objective so hedged by reservations and so conditioned by objectives of higher priority that it is lost as a focus for action."

Hopper concluded: "National governments must clearly separate the goal of growth from the goals of social development and political participation. This is the most important payoff essential. These goals are not necessarily incompatible, but their joint pursuit in unitary action programs *is* incompatible with the development of an effective strategy for abundance. To conquer hunger is a large task. To ensure social equity and opportunity is another large task. Each aim must be held separately and pursued by separate action. Where there are complementarities, they should be exploited. But conflict in program content must be resolved quickly at the political level with a full recognition that if the pursuit of production is subordinate to other aims, the dismal record of the past will not be altered."

These insights are not likely to lay the debate to rest, particularly since recent literature seems to emphasize the equity end of the polarity; but they do sharpen the question to be addressed by agricultural planners and extension workers. What is *OUR* situation, whatever someone else's? Is the real issue hunger? If not so stark, is it still greater food production? Or if a mix is affordable or deemed essential, with the considerations of equity and justice, how are the other Hopper cautions to be honored: where are the "complementarities," how do conflicts get "resolved quickly," and how can "each aim . . . be held separately and pursued by separate action?" But the first and most needed question still seems to be: how do we planfully exorcise the "strange schizophrenic creature that serves many masters?"

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*"Investment in Agriculture: The Essentials for Payoff," *Proceedings*, pp. 102–113.

INTERPAKS

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Information: Resource or Commodity?

In human communication, it makes a difference whether information is regarded as a commodity or a resource. So says Edward Ploman, a Swedish authority on international communications.* One view sees information as a commodity to be bought and sold, like anything else in the marketplace. Another view sees information as a resource, a key resource in society, with two unique properties.

"The first unique property is that all other resources depend on information and knowledge: it is the perception and evaluation of resources which make their use possible. You cannot use that of which you know nothing." Thus, the availability of information determines the use of other resources.

"The second unique characteristic of information is that, as a resource itself, information is not reduced or diminished by wider use and sharing. On the contrary, its value tends to gain in the process — 'value' seen here in both economic and social terms."

Ploman continues: "Today all societies face the challenge of adjusting to rapid techno-economic, socio-cultural, and political changes on a scale which makes it possible to speak of social transformation. The capacity of a nation to manage this adjustment depends crucially on its collective capacity to generate, to ingest, to reach out for, and to utilize vast amounts of new and relevant information. . . .

"Thus, as Soedjatmoko has put it, 'What is essentially called for is the transformation of the village from a traditional society to an information community, capable of acting and responding creatively to relevant information reaching it, capable also of reaching for that information . . .'

"It is revealing that the debate on a 'new international information order' is conducted without any clarity as to what is to be covered by the expression 'information.' Much of the debate and controversy has focused on 'news' — i.e. on the 'journalistic' dimension of information, often conceived in a relatively narrow manner. Even a cursory look at current patterns for organizing the flow of news makes it clear, though, that we deal differently with news of political events, of commodity movements, or of the weather. In discussing information in a larger sense, we encounter a series of different information flows with a diversity of patterns in terms of purposes, content, structure, and legal regimes.

"The question of control over information immediately raises the question of fundamental attitudes towards the role of information in society. Is information a resource, a commodity, a right, a duty? Or, rather, in what circumstances should information flows be organized according to each of these criteria?

"There is, of course, no one answer to these questions. Each kind of information flow requires its own organization. Disaster and health warnings can be seen as a public resource only, and not as a commodity which can be bought and sold. Other categories are less clear-cut. Different societies have decided differently on the relative weight to be given to the resource and the commodity aspects, or in another perspective to the balance between the public sector and the private sector. The focus on the issues involved thus varies with different socio-economic systems."

Thus the debate is likely to rage on. Much of the trouble lies in ideological generalities, whereas daily operations call for what might be called "situational solutions."

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*"The Changing Information Society," *United Nations University Newsletter*, November, 1983.

Cooperative Extension's International Mission

Attention needs to be given to the fact that "no comprehensive system has as yet been developed to successfully transfer the accumulated research results of IARCs (International Agricultural Research Centers) to small farmers in less developed countries." And since extension services around the world ought to help in this and other development activity, the Extension Service of the U.S. Department of Agriculture specifically pledges to do so. That is the message of **The International Mission of the Cooperative Extension Service — A Statement of Policy,** a new statement of the International Task Force of the Extension Committee on Organization and Policy (ECOP), extracted and endorsed from the draft prepared by Lowell H. Watts of Colorado State University. Copies of this "guidance for effective future Extension participation in international activities" may be obtained from the Extension Service, U.S. Department of Agriculture, Washington, D.C.

What can U.S. extension leadership bring to the task? Its "experience in technology transfer" and "its long history of community organization and farmer involvement." What is the mission? Abroad, to support U.S. governmental policies of development and to provide "creative leadership and innovative techniques to increase the adoption of relevant technologies"; and at home, to enhance the professional capabilities and experience of U.S. extension personnel by feedback from overseas, and to explain and interpret the world market and its effects on the U.S. farmer and consumer.

What are the problems and challenges? Linkages with a host of research, aid, and educational bodies, both national and international, must be cultivated, especially with the international agricultural research centers. A holistic approach — farming system, family situation, community environment — is necessary even in single commodity programs. National institutions and policies must be heeded, not contravened by some well-intentioned international program. Finally, modesty will help: "Not all the world's knowledge is contained within the United States."

Essentials for Extension Management

In an address to extension subject-matter specialists, Romeo V. Aquino, Region VI Director, Ministry of Agriculture, Philippine Islands, recently outlined critical conditions for success in extension programs in a developing country.* Director Aquino speaks from pioneering success in organizing a program to induce farmers to change from one crop of rice to two crops of rice plus a crop of corn or beans annually.

Success, he says, depends on the mutual reinforcement of two factors: "national circumstances, political climate, and development planning and strategy on the macro level" and "the effective organization of the extension service itself, including the efficiency of its officers, on the micro level." The contextual conditions of success include functional literacy among farmers; adequate markets and marketing strategy; technology made known to "our farmers in terms of their acceptance and practice"; strategically located storehouses for both supplies and harvest; cheap credit because the new technology "heavily demands the use of inputs which have to be purchased"; and the facilitative services of cooperatives or other organizations owned and operated by farmers themselves.

The internal managerial conditions of success include pay commensurate with education (college graduation generally in the Philippines); the backstopping of subject-matter specialists who report problems back to the research staff; clear lines of authority so the specialists are on tap but not on top; all extension activities under one management; continuous staff training; and an effective linkage between production and marketing based on the realization that the "income of a farmer is best determined not at the point of production but rather at the point of marketing."

For the specialists, Director Aquino has advice based on awareness that they have divergent interests and competencies but still "address your expertise to the same people (the farmers) through the same people (the extensionists)." Hence, the extension officers need to function as generalists, like general medical practitioners, while specialists need to function as advisers on problems of particular skill. But above all, both must cooperate; and the specialists must be aware of each other and work together with focus on the problem. All need to see "through a wide angle lens" and to look at not only the farmer, but also his or her family and community.

In closing, he said, "I would like to reiterate what I consider as the three basic or simple ingredients of helping farmers improve their well being . . . the availability of appropriate technology which has been generated and verified by research, a credible extension service, and strong rural organization."

*"Extension Systems Management," Keynote Address Before Specialists, Iloilo, Philippine Islands, October 24-29, 1983.

Needed: Household Technology

Much is written about technology and much about women in agricultural development, but not too much relates the one to the other. If technology is always assumed to be "doing somebody good," the somebodies may not be women; and the technology that *will* help women is the kind that is generally neglected. This is the point made in a paper presented by William Alex McIntosh, Texas A&M University, and Susan Evers, University of Western Ontario.*

They observe: "Improvements in technology often lead to reductions in the time and energy required to complete household and agricultural tasks . . . (but) little of this technology seems to have benefited women. Almost no major innovations in household technology . . . have reached the household in LDCs. . . . Technology's benefits have tended to be focused on cash crop agriculture, thus largely benefiting men."

This calls for more serious investigation; and, as the authors might have added, the results could be a bonanza for extension workers who want to arouse the sleeping giant of women in rural development. On the need for research on household technology, the authors say: "We know a great deal more about the cost/benefits of agricultural technology and factors that affect its rate of diffusion. Little attention has focused on the draw-back of current food processing and meal preparation in the Third World. We have some idea about how such technologies affect food quality, but we know very little about how various technologies relate to energy and time resources. It would seem that some technologies are more efficient than others, and the more efficient methods should be identified and their wider diffusion facilitated. The need for the invention of new technologies may also become apparent."

*"The Role of Women in the Production of Food and Nutrition in Less Developed Countries," *Women in International Development*, The President's World University Series, No. 2, Texas A&M University, 1982, pp. 41, 44.

Linguistic Limits of Sex

Using her different nationality and gender, an Indian woman, Mangalam Srinivasan, put this revealing disclaimer on the flyleaf of the book she edited, **Technology Assessment and Development:** "While the linguistic inadequacies of the English language have imposed upon me the use of 'he,' 'him,' and 'his' in general reference to a human being, please note that these words also refer to that type of man known as woman."

Helpful Ideas: Old and New

Daniel Benor and Michael Baxter, **Training and Visit Extension,** World Bank, 1984 (202 pages).

This important book is the definitive work on the T & V System. It is a revised and greatly expanded version of the system's guidelines in view of worldwide experience since the initial World Bank pamphlet introduced the subject in 1977. The phenomenal rapidity and scope of adoption — now wholly or partially in almost 40 countries in Asia, Africa, and Latin America — calls for this updated restatement aimed at producers and practitioners. While clarifications and changes in emphasis are made, no change has occurred in the basic precepts and objectives of the system. Lessons learned and emphasized are the need for perpetual adjustment to the agricultural and administrative structure of the country but, at the same time, adherence to certain basic features. "These features include professionalism, a single line of command, concentration of effort, time-bound work, field orientation, regular and continuous training, and close linkages with research."

The 25 chapters, which also incorporate the insights of several reviewing World Bank officers, are effectively designed to maximize usefulness, with a blend of theory and practical tips. The book does not presume that the T & V System monopolizes extension wisdom; it is instead an impressive exposition of the T & V tenets. It will be welcomed by advocates and critics alike. It will also contribute substantially to the efforts to identify the minimal essentials or indispensable conditions for *any* extension system.

Benito S. Vergara, **A Farmer's Primer on Growing Rice,** International Rice Research Institute, 1979 (221 pages).

For half the world's population who are estimated to depend wholly or partially on rice, this is an important manual for transferring research knowledge to rice farmers, particularly through teachers and extension workers. Available in a dozen languages, with 160 line drawings and diagrams and five or six line explanations of basic questions, it will let the farmer adapt practices to suit his or her unique position. It addresses, for example, seed incubation, weed control, herbicides, use of fertilizer, plowing depth, and how air, light, and water influence rice growth. The book is available in Burmese, Bengali, Gujarati, Indonesian, Kannada, Nepali, Pilipino, Ilocano, Maguindanao, Thai, and Warai. National programs that wish to use other local languages may obtain the illustrated pages of the **Primer** without text from IRRI, which wishes to encourage use in translation. (Available from IRRI, P.O. Box 993, Manila, Philippines.)

Carolyn E. Sachs, **The Invisible Farmers: Women in Agricultural Production,** Rowman and Allanheld, Totowa, New Jersey, 1983 (153 pages).

As a well-known novel years ago dealt with blacks as "The Invisible Man," this book deals with women as "The Invisible Farmers." Taking a frankly "feminist approach," it reports on the neglect and powerlessness of women in agricultural production and offers suggestions for reform.

A thesis with an interesting twist is that capitalism and commercial farming, through the patriarchal division of labor on the family farm in America, have moved women "out of the agricultural production and into the domestic sphere" (the home); and then through overseas aid, have exported this male dominance with its female divorce from production, power, and participation. This "domestication of women throughout the world" is worsened by the relegation of females in agricultural science to nutrition and consumer interests only. Remedies are perceived as chiefly by better access: access to *all* fields of agricultural science; equal access to all resources needed for farming; and access to decision-making, including top policy decisions, up to the international agencies. The book closes with an indictment of the system that attempts to "retain women as a reserve labor force and as reproducers of laborers."

Everett M. Rogers, **Diffusion of Innovations,** Third Edition, The Free Press, New York, 1983 (453 pages).

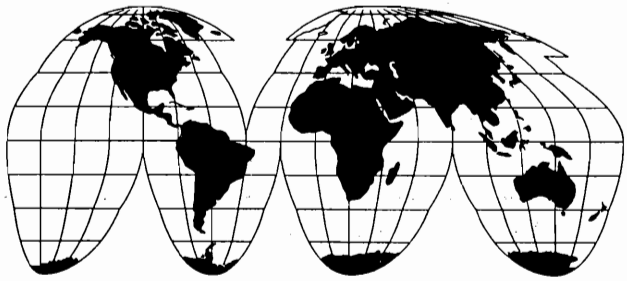
Twenty years ago, the first edition of this book gave some cohesion and much impetus to ongoing research and publication on the diffusion of innovations. This version differs from its predecessors in several significant ways. It presents a modified diffusion model, one less culture-bound, because it takes into account experience in Asia, Africa, and Latin America. The diffusion process is now viewed in a wider scope and as a broader process, with attention to the heretofore-neglected earlier phases of the interlocking whole. Attention is also given innovation decisions made by organizations as well as by individuals. Finally, the new edition reflects both the positive and the negative criticisms that innovation diffusion has experienced in the past two decades.

David K. Leonard, **Reaching the Peasant Farmer: Organization Theory and Practice in Kenya,** University of Chicago Press, 1977 (297 pages).

With its excellent evaluation of the Kenyan agricultural extension service, this book makes comparative analyses and suggestions that will be useful in all de-

veloping countries. It also concludes that western organization theory is relevant to Kenya in understanding staff behavior. The Kenyan service now represents a substantial investment in forging an effective link between research and farmer via extension. One resulting organizational problem is how to preserve the message or information needed in conveying new packages of technology. The analysis shows that there is an information loss, or a tendency to misinform, as the number of links increases and as the time elapses — also as the transmitter is less specialized. Bureaucratic organizational behavior sometimes gets in the way of performing the technical tasks, even to the point of producing "authoritative misinformation."

Two conclusions have far-reaching implications: "farmers taught in groups achieved dramatically higher yields than those who received personal instruction" and "secondary education has a uniformly detrimental effect on the work performance of agricultural extension agents." The author believes methods which reach farmers in groups will mean better prepared and more economical demonstrations and will, at the same time, tend to remedy the skewed distribution of services toward the wealthier and more progressive farmers. He also believes higher pay and promotion opportunities will reduce the frustrations of secondary school leavers whose expectations are higher than those of the primary school leavers, with resulting indifference to doing work well.



Around the World

Extension Progress in the Philippines

With a $35,000,000 loan from the World Bank, the National Extension Project (NEP) is accelerating agricultural development in the Philippines. Since the 1979 loan and the 1980 reorganization of the Ministry of Agriculture, NEP has promoted the transfer of modern technology from research institutions to rural clientele both for improved production and improved quality of life.

Five components make up the National Extension Project: (1) organization into 12 ministry-wide regions, with directors representing all functions of extension, soil, plant and animal industry, and agricultural cooperatives; (2) more than 160 new extension centers, plus new vehicles, equipment, and technical books; (3) introduction of the T & V system; (4) the addition of more than 1,000 new technical positions with training emphasis on leadership, youth, and international exchanges; and (5) use of consultancy services for improved administration. — *"Progress Report," NEP, 1979-1981.*

Philippine Linkage

Linkage Journal is an attractive bi-monthly publication of the Bureau of Agricultural Extension, Ministry of Agriculture in the Philippines. It provides extension personnel of all kinds with the latest research findings related to agricultural extension and communications.

FAO's New Management Training Approach

In several developing countries, the FAO is using or proposing to use an unconventional type of managerial training. It focuses on people rather than projects and ties administrative development tightly into agricultural development. It goes beyond what exists (e.g., current producers and practices) in an attempt to change, implicitly if not overtly, the power balances in the rural areas; to alter human behavior rather than merely changing "packages"; and to close the social and cultural gap between government functionaries and the rural poor.

The basic idea is to train by levels rather than by cross-sections at all levels — to bring together personnel representing all aspects of agricultural development at the district level, for example, for diagnostic discussion of the total development program in that district, including the needs and steps to improve overall management. Chief features are the diagnostic all-functions approach at each level, the reliance on in-country resources rather than "outsiders", the continuous nature of the process with its periodic reevaluations, and the feedback to higher levels of the intractable problems from below. — *from A. McCallum, Senior Officer, Rural Development Organization, FAO.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

USAID Project Launched

An advisory group from the U.S. Agency for International Development met with key INTERPAKS staff at the University of Illinois at Urbana-Champaign on April 26 and 27, 1984 to assist in the launching of the new five-year, model-building project. (Details of this project appeared in the March, 1984 issue of *INTERPAKS INTERCHANGE*.) To be known as the Management Team, the group consists of Douglas Caton, Policy, Planning and Coordination Bureau; Donald E. Anderson, Science and Technology/Rural Development; Phillip E. Church and Marshall R. Godwin, Science and Technology/Agriculture. Dr. Godwin will serve as the liaison officer for the project.

FAO Updates Extension Manual

A revised and rewritten extension manual will soon be issued by FAO for worldwide use, following the general model of the first version issued nine years ago. Under the editorship of Associate Director Burton E. Swanson, INTERPAKS provided the authorship of several chapters in addition to contributors from other institutions and from developing countries. The focus is on growth with equity, the theme of the World Conference on Agrarian Reform and Rural Development. Special emphasis is given to agricultural improvement through the targeted audiences of small farmers, women, and rural youth. Information about **Agricultural Extension: A Reference Manual (Second Edition)** may be obtained from the Publications Division, Food and Agricultural Organization of the United Nations, Via delle Terme di Caracalla 00100, Rome, Italy.

Pilot Course in Zambia

A pilot short course under INTERPAKS auspices was given at two Zambian locations, in cooperation of the Zambian Ministry of Agriculture and the U.S. Agency for International Development, during March and April, 1984. The purpose was to update new extension developments and to improve the communications and teaching skills for both the pre-service and in-service training of extension workers. An intensive one-week course was presented at Kabwe for provincial officers and at Lusaka for national officers and college faculties. The teaching team from INTERPAKS consisted of John B. Claar, Director; Violet Malone, State Leader for Extension Education; and Delbert T. Dahl, Head of the Office of Agricultural Communications.

Chairman of New Association

Dr. Burton E. Swanson, Associate Director of INTERPAKS, was elected the first chairman of the newly founded Association for International Agricultural Education at its founding meeting in Washington, D.C. on April 6, 1984. The purpose of the organization is to help strengthen agricultural education institutions and programs in developing countries. The next meeting of its Executive Board will be held on July 23, 1984 in Yaounde, Cameroon in conjunction with the scheduled African Agricultural Education Conference.

African Conference

Dr. Burton E. Swanson has been invited to present one of the two keynote papers at the African Agricultural Education Conference to be held in Yaounde, Cameroon, July 23-27, 1984. His paper will examine the role of agricultural education in agricultural development and will include an assessment of current educational capacity in Africa by sub-regions, field of study, and gender. Swanson will be accompanied by Dr. Earl B. Russell, chairman of the Agricultural Education Division at the University of Illinois, who will participate in a conference panel. They plan to visit FAO headquarters in Rome enroute home.

Colorado State-Illinois Publication

Proceedings of the joint conference sponsored last summer by Colorado State University and INTERPAKS are now available through the Office of Agricultural Publications, University of Illinois at Urbana-Champaign, 47 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801. The conference sessions, which were held near Steamboat Springs, Colorado, covered the major aspects of technology and knowledge transfer in agricultural development, including the theoretical capabilities of an ideal model and the constraints on successful operation as actually experienced around the world. The proceedings include Colorado State papers by William M. Brown, Jr., Kenneth C. Nobe, Everett V. Richardson, Willis W. Shaner, and Lowell H. Watts; and Illinois papers by John B. Claar, Eldon L. Johnson, Earl D. Kellogg, Violet M. Malone, and Burton E. Swanson.

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Training and Visit System: Some Critical Evaluations

Has a long-accepted extension principle ironically gone unheeded in the dramatic evolution of the Training and Visit System? That evolution has involved quick transplantation from beginnings in Asian small-holder irrigation projects to countrywide applications in totally contrasting physical, social, and institutional environments worldwide.

The burden of proof seems to be on the critics, given the adoption of T & V in more than 40 countries worldwide with strong World Bank financing. The real irony, however, is that while the new system was introduced to counter the widespread disillusionment with established extension systems, the critics now contend, perhaps not surprisingly, that the remedy itself presents significant new defects. One such critic is John Howell of the Overseas Development Institute in Great Britain, writing during 1981 on the basis of observations in Nigeria, India, and Malaysia.[1]

He first points out how T & V met "the formidable task for reformers" left by conventional extension systems. It tightened up the management system, with systematic training and supervision to make the staff more productive. It adopted a "specialist, single function approach" — advice and promotional work focused on agricultural *production*, with no involvement "in the organization and supply of production inputs or the marketing of produce" (i.e., no "diluting" functions). This put technical advice for increased crop production at the center of all development effort. Also, the T & V System made a concerted effort to solve the perennial problem of reaching baffling numbers of farmers in an effective way, although the "contact farmer" approach was neither new nor without dilution in practice.

Howell then presents four major criticisms of the T & V System, criticism of his own and from others. First, it presents, despite some flexibility in practice, "a top-down structure, insensitive to the differing requirements of small farmers." This follows from the false assumption that the major obstacle to increased production is insufficient knowledge of improved technology and that this knowledge is appropriate to large numbers of small farmers without change for physical variation. The very orderliness and regularity of the new system, with "overemphasis on training," presents problems in the field, where agents need confidence-building choices on how to "bring them closer to the communities they are serving."

Second, "the single function of crop improvement" curtails the agent's role and effectiveness by cutting him off from "input supply, credit and marketing." Where access to credit and input supplies comes solely or largely through the public sector, as in so many countries, "it becomes operationally difficult to organize extension on a single function basis, and it is not helpful to the farmer to have several sources of advice."

The third criticism alleges that the "contact farmer" system for reaching farmers tends to neglect the young, the women, and the "widows or relatives looking after the farm in the absence of household heads." It also tends to recruit existing leaders and richer farmers who may lack incentive to pass on the advice received, thus reinforcing existing privilege. While admitting that all extension systems have some initial dilemmas, Howell contends that "T & V does have its own in-built insensitivity" to such problems of equity.

Finally, the "administrative dislocation" and other costs of introducing the T & V System "are normally considerable" and must be weighed long-term versus short-term. Recurrent costs in some countries have proved to be "much higher than under the previous system." This leaves the specter of how to finance what is left behind from donor-assisted projects. Such projects have often also meant more money for on-farm research and more extension staff coverage, thus confusing the attribution of real success.

In summary, Howell says the T & V System gives us two lessons: it is not a panacea, and its principles are not immutable — not too much should be claimed for it, and adaptations are necessary in new circumstances.

Sponsors in the World Bank obviously take a different view, although they concede the need for adaptation. In his co-authored new book, David Benor,

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

T & V originator, candidly recognizes some of the needed modifications, while holding to the original core principles. The same balanced evaluation is given by him and others in the **Summary Report** of the Second Asian Workshop on the Training and Visit System of Extension, Denpasar, Indonesia, March 18-24, 1984, sponsored by the World Bank, UNDP, and FAO.

In their ten-year overview of the T & V System, three World Bank evaluators echo some of these criticisms in a more sympathetic vein.[2] They point out first that extension is only one factor, and not even the most important one, in increased agricultural production; hence all factors, including improved technology, inputs, and markets, must work in tandem. T & V has in practice presented problems of implementation, sometimes because of unexamined change. In fact, "a time horizon of at least ten to fifteen years" is now conceded for effective introduction of the new system. The top-down criticism has some validity; hence the need for "greater farmer participation." The subject-matter specialist is a key link also, as experience indicates. Admittedly, adaptation must occur as T & V moves to rainfed farming with different types of farmers and physical conditions.

These considerations lead the evaluators to conclude that the existing farming system is the appropriate starting point. That introduces the farming systems approach wherein farmers' priorities are identified and solutions found that will command the farmer's investment of time and money. Thus, farmer participation and feedback are tied in as an integral part of the research-extension-farmer linkage for conditions and preferences suited to a particular location.

This raises the interesting question as to whether the T & V experience and philosophy may not be significantly joining hands with Farming Systems Research. At least, the view from the World Bank is not likely to be contested: "Agricultural development will certainly benefit from further debate on this subject."

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[1]"Managing Agricultural Extension: The T and V System in Practice," *Agricultural Administration*, December, 1982.

[2]Michael M. Cernea, John K. Coulter, and John F. A. Russell, editors, **Agricultural Extension by Training and Visit: The Asian Experience**, World Bank, Washington, D.C., 1983.

INTERPAKS

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Brave New World For Oldest Science

Technology transfer and its practitioners will have plenty of challenges ahead. As the taxi driver made clear about the inscription, "Past is Prologue," on the National Archives Building in Washington, "You ain't seen nothing yet!"

"High tech" has been overused to the point of meaninglessness, but there is a technological future not to be ignored in agricultural development. A report to Congress from the U.S. Secretary of Agriculture says, "It is important to remember that tomorrow's gain in scientific agriculture has its foundations in the healthiness and vitality of today's science and education community."* The components and their linkage are crucial: science *and* education. We need the new technology, and we need trained expertise.

The report speculates on the new tools in biotechnology for increased production, improved quality, environmental protection, and storehousing of knowledge for "the next round of major advances." This means the use of genetic manipulation, plant and animal defense systems, chemical messengers, model systems, and computer simulations. Equally or perhaps more startling are the revolutionary prospects in information and communications systems, with these on-farm applications:

> "At the beginning of a new day, farm and ranch operators will be advised by their home terminal which actions are necessary to maximize daily operations. The terminal may even sound an alarm during the night if conditions sensed by the system move outside the bounds of acceptable limits. Livestock health will be automatically logged each day based on signals transmitted by embedded sensors monitoring heart rates, metabolism, and growth. Grain elevators will be driven by computer-operated robots. Weather data from the county satellite dish will be analyzed at home, using microcomputer programs. Available farm workers will be located by searching the migrant harvesting database; cost per hour will be negotiated by electronic mail. Operators will search the computerized database for research results on new crop varieties that would be well-suited for the particular soil and climate conditions found on their farms. Readouts from the automated irrigation sensors will keep the operators advised of moisture requirements. These are only a few examples of the many possible applications."

There, education reenters the scene. "The initial impact of these trends will be to confront end-users of agricultural information with a bewildering variety of databases, systems, and technologies. The need for information specialists to assist end-users will be extensive." Similarly, but more generally, colleges of

agriculture will need to raise agriculture to a true professional status and to "dramatically modify curricula emphases" in certain fields (e.g. cellular and molecular biology) and in "use of electronic communications to enhance interstate and interregional research and teaching." Finally, the report concludes, "the science and education system needs to continually revitalize itself" — again, a useful reminder of the importance of both *system* and *linkage*.

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*Summary: Needs Assessment for the Food and Agricultural Sciences, Joint Council on Food and Agricultural Sciences, Washington, D.C., 1984. Available with larger companion publication, Reference Document, through the U.S. Department of Agriculture.

Some Reflections On Development and Equity

by Frederick C. Fliegel, Professor of Rural Sociology
University of Illinois at Urbana-Champaign

The question of who wins and who loses when change takes place has probably been asked since human beings first became aware of change. In the last few decades, the technological revolution in agriculture has called widespread attention to that type of question, but the answers coming from difference sources may well not agree. Firm knowledge in this important area is lacking.

Changing Views

Serious attention began to be given to studies of the technological change process in agriculture in the 1940's. Hybrid corn varieties had been released in the North American Corn Belt before World War II. After the war, it became apparent that there was a backlog of technology which was not being accepted by farmers as rapidly as might be desired, and also a heightened sense of need to increase food production for a hungry world. Research on the diffusion of innovations flourished. The approach taken in that research focused on the "innovativeness" of the farmer, his willingness or lack of willingness to adopt the new technology. If appropriate information would be provided to the farmer, or if attitudes toward credit would be changed, the farmer could be persuaded to adopt, though some might lag behind.

When what soon came to be labelled the "classic diffusion model" was employed in developing countries, roughly in the 1950's, it became apparent that farmers' willingness might be less problematic than sheer ability to adopt. Studies done in Latin America, especially, drew attention to wide disparities in land holdings and the issue of insecure tenure. Such problems were much less common in North America, where the diffusion model was developed; and the approach had to be revised to pay more attention to resource limitations which affected the farmer's ability to adopt innovations.

If many farmers, especially in the Third World, were unable to adopt the new technology, a logical next step was to focus on the longer-run equity consequences of technological change. The earlier and largely tacit assumption that increased production was the only important issue was tempered by concern for the resource-poor farmer. The latter, if unable to adopt, was perceived as being further disadvantaged by the increased productivity of the better-off.

What Do We Know?

Studies of the consequences of technological change have been pursued with considerable vigor during the past two decades. Sweeping generalizations tend to overshadow sparse results. Public statement may still attribute a host of urban problems to specific technological changes in agriculture, or, on the other hand, ignore equity questions entirely in stressing the production gains of science-based agriculture.

The scattered and often highly localized studies of the equity effects of technological changes in agriculture do not lend themsleves well to generalizations.[1] One common theme can be discerned, and that is that capital-intensive technologies probably increase inequality in the countryside while others do not. The increased use of purchased inputs in modern agriculture obviously increases the capital intensiveness of the entire production process. But the "chunkiness" of certain investments — tractors, tube wells, and new tree-crop varieties that take years to come into production are good examples — tend to preclude adoption by the resource-poor farmer. Most of the new crop varieties and chemical inputs are infinitely divisible, however, and show results in a single season. These are at least accessible to all. The resource-poor farmer may lag behind in the short run, but experiences no long-run disadvantage.

Some Unanswered Questions

Systematic knowledge of the equity of technological change is hard to come by, in part because of the diversities in technology and also the wide range of contexts in which the technologies are applied. Studies which go beyond local impacts and can examine impact over time are sorely needed.

A recent study of rural electrification's impact in Colombia and India illustrates the complexities of the broad impact question and how those can be resolved.[2] Briefly summarized, the study shows that: (1) better-off, more accessible farmers are the first to get hookups and first to purchase the devices that use electrical energy. The poor are disadvantaged, though substantial market penetration (in Colombia) tends to reduce the disparity. (2) Since rural electrification is typically subsidized, the disparity between rural and urban dwellers is reduced. (3) Preferred rates for agricultural use (in India) give an advantage to farmers relative to, say, rural industry. (4) Areas of

sparse rainfall (in India) gain from electrical power for lifting irrigation water relative to areas served by canal irrigation. (5) Energy for irrigation intensifies production (in India) and increases labor demand, though the degree of sharing of benefits remains to be assessed. Finally, (6) the dominance of household use of electrical power (in Colombia) favors women and children who spend more time in the home, relative to men.

Much more detail could be cited, but the complex effects of a single technology should at least serve to demonstrate that broad generalizations about who wins and who loses in the technological change process must be viewed with caution.

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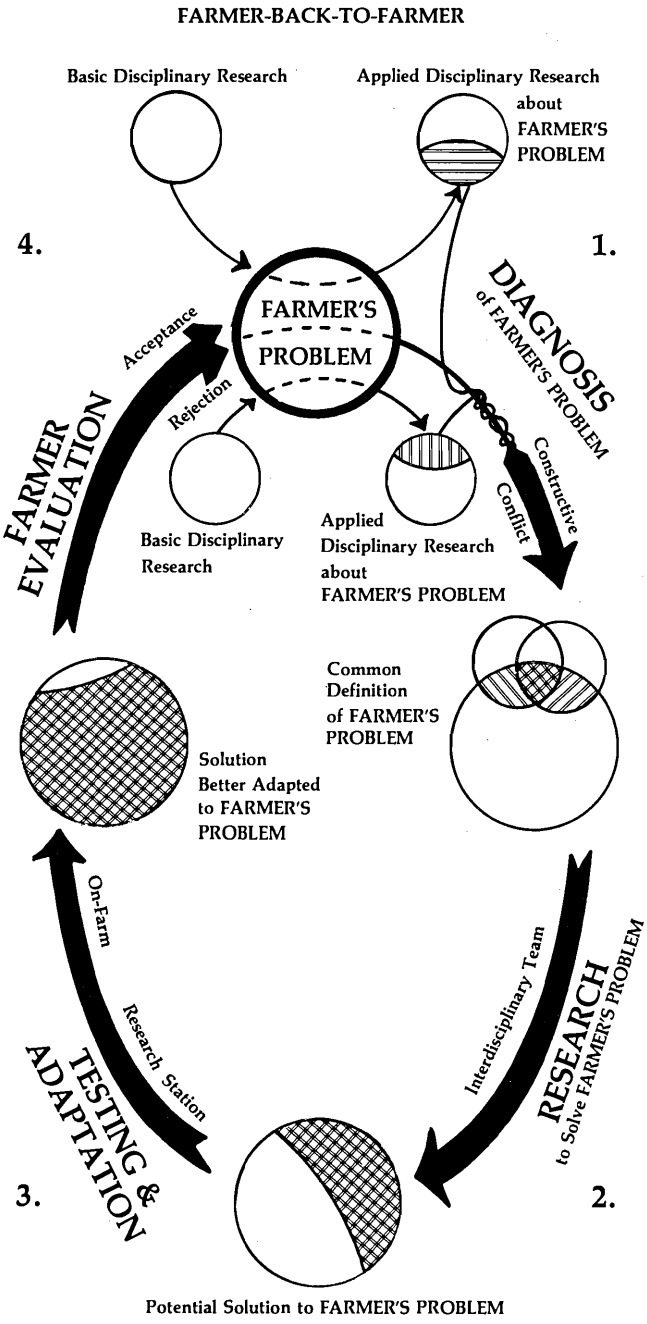
[1]A recent bringing together of the effects of mechanization, largely in the U.S.A., is useful here. See G. M. Berardi and C. C. Geisler, **The Social Consequences and Challenges of New Agricultural Technologies,** Westview Press: Boulder, Colorado, 1984.

[2]Douglas F. Barnes, **Controversy Over Rural Electrification: A Study of Rural Infrastructure and Socioeconomic Development,** Resources for the Future, Washington, D. C., forthcoming.

"Farmer-Back-to-Farmer" For Suitable Technology

An interdisciplinary research team from the International Potato Center in Peru sought improved and acceptable technology for consumer potato storage, building on previous experience in the design of household and village-level potato processing equipment. In looking at success and failure, they devised a model called "Farmer-Back-to-Farmer," representing the continuity from where to begin to where to end in applied agricultural research and extension.* Its graphic presentation is shown elsewhere on this page.

The beginning is the farmer's perception of the problem, and the end is his acceptance or rejection of the solution. "Starting with the philosophy that the farmer's circumstance is the springboard of research, the model then logically consists of a series of task-oriented *goals* aimed towards achieving acceptable technological solutions to specific farmers' problems." Goals are linked by activities numbered as followed: (1) arrival at a common definition *with* the farmer; (2) identification and development of a potential solution through *interdisciplinary* research ("which rejects the fragmented, staggered roles of several specialists in favor of ongoing, dialoguing, and totally involved research teams working together"); (3) testing and adaptation to make the proposed solution better fit the farmer's needs; and (4) completion of the circle by the farmer's all-important judgment as to acceptance or rejection.



"Farmer-Back-To-Farmer"
— a model generating acceptable technology.

The model is presented by its authors as an effective means of designing, generating, and transferring technology appropriate and acceptable to farmers, with economy of time and money and with the easy pinpointing of both progress and hurdles remaining, since the circle must be "closed back-to-the-farmer" for success.

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*Robert E. Rhoades and Robert H. Booth, "Farmer-Back-to-Farmer: A Model for Generating Acceptable Agricultural Technology," *Agricultural Administration*, October, 1982, pp. 127-137.

Billion-Dollar Extension

Almost a billion dollars was spent last year on public extension efforts in the United States: $900.2 million for the Cooperative Extension system; and $60.4 million for related efforts in other federal agencies.* The $900 million spent for Cooperative Extension included $323 million through the U. S. Department of Agriculture, $388 million from state sources, $162 million from the counties, and $27 million from non-tax sources. The $60 million came from the Department of Energy, $20 million; the Department of Labor, $12 million; the Tennessee Valley Authority, $15 million; and other sources, more than $13 million, according to the latest figures.

*Summary: **Needs Assessment for the Food and Agricultural Sciences,** Joint Council on Food and Agricultural Sciences, Washington, D.C., 1984.

Performers for a Full Stage

No "performer" stands alone in the agricultural technology/knowledge transfer business. Other performers are not merely present somewhere, but they must also be linked together somehow. That applies to the old familiars — like the federal government and the land-grant universities — but also to the lesser-known and larger-looming performers, such as the private sector and the non-land-grant institutions.

After identifying research, extension, and higher education as the essential "performers" in agricultural development, a recent report from the U.S. Department of Agriculture* emphasizes two often-neglected considerations: (1) the *interaction* of these elements; and (2) the mix of "public" and "private" features.

First of all, not all "extension" is institutionalized in one place, not even in the Cooperative Extension system with its nationwide linkage of federal, state, and local components. Even in the USDA, with its federal extension service, "other USDA agencies perform information and technology transfer activities," such as the Soil Conservation Service, the Forest Service, and the Food and Nutrition Service. Also, wholly outside the USDA, other federal departments make extension-related efforts costing more than $60,000,000 annually. Likewise, while land-grant universities still dominate the transfer processes and do most of the advanced education in agriculture-related studies, an almost equal number of non-land-grant schools are now offering degree programs in the food and agricultural sciences. All of these are among the new performers, not on stage a few years ago.

On the second point, concerning the public-private mix, the private sector actually outweighs the public in the production of knowledge and technology, making it "by far the largest segment of overall food, fiber, and forest research." In the development of such production inputs as pesticides, drugs, and farm equipment, 75 percent of the effort is private. While manufacturers, processors, and distributors attempt to educate buyers on product use and benefits, we have no accurate measure of extension-related information activities in the private sector. Nonetheless, they are clearly significant; and a "synergistic relationship" is viewed by the report "as appropriate and beneficial for all parties involved — particularly to the consumers. . . ."

In what must appear exceedingly strange in most developing countries, the report concludes with a question, "Why Public Investment?" After examining the difference between "private goods" and "public goods" in economic theory and the marketplace, the report gives the italicized verdict that "in many areas, *incentives for the private sector are inadequate,*" and *"In the mixed economic system that exists in the United States, both public and private performers must carry out their respective functions or the total society suffers."*

*Summary: **Needs Assessment for the Food and Agricultural Sciences,** Joint Council on Food and Agricultural Science: Washington, D.C., 1984.

Hogwash and Hunger

The ideological tension between growth and equity makes fair game of just about everybody, because everybody is vulnerable in the eyes of some proponent of a different mix. When Nobel Laureate Norman E. Borlaug was asked whether he had not founded the "Green Revolution" on growth and yields (i.e., statistics) instead of feeding hungry people, he gave a quotable retort: "That's just a bunch of hogwash. It's food in the belly that matters. I don't give a damn for anything else. I'm only interested in the wheat plant because it makes flour, and in flour because it makes bread or tortillas, but I'm not interested in them either except for what they do for people."

Technology Appropriately Wanted

Commenting on the demand for more than 100,000 units of the new pour-flush latrine units, Bill Smith, manager of USAID's Rural Water and Sanitation Project in Honduras, concluded: "In short, it is what the people wanted. I call that appropriate."

Helpful Ideas: Old and New

Michael M. Cernea, John K. Coulter, and John F. A. Russell, editors, **Agricultural Extension by Training and Visit: The Asian Experience,** World Bank: Washington, D.C., 1983 (160 pages).

Written by much-involved World Bank staff members and representatives of Asian countries where the T & V system is used, this paperback report is an essential part of the growing literature evaluating that system. It includes 14 papers prepared for the World Bank and UNDP symposium held in Chiang Mai, Thailand, in 1982. While generally pleased with the ten-year retrospective consensus, the authors present criticism, proposed improvements, and admittedly unanswered questions.

Carl K. Eicher and John M. Staatz, editors, **Agricultural Development in the Third World,** The John Hopkins University Press: Baltimore and London, 1984 (491 pages).

Although designed as a textbook, this is also a good collection of readings. It has two helpful features. The editors, from Michigan State University, open with an excellent history and literature review of the changing views of the role of agriculture in economic development since 1950, leading to the "growth-with-equity era since 1970." Revised from past publications, the readings from 37 scholars discuss development models, policy issues, and transformation of rural institutions, with minor specific attention to technology transfer.

Jon R. Moris, **Managing Induced Rural Development,** International Development Institute: Indiana University, Bloomington, 1981 (190 pages).

Intended for the management practitioner, this book is frankly "a personal statement" with arguments, proposals, and recommendations. It draws judgmental lessons from experience, especially the author's in East Africa, and from an impressive bibliography of more than 1,000 items. Prodding and questioning the existing order (e.g., the "acute econocrat problem," or the predominant role of economists and economics in development), the author intends to provoke reevaluation. His own conclusions are presented in the form of "seven priority problems as the agenda of unfinished business."

Carlos C. Sanchez, **Agricultural Cooperation in Sweden,** The Plunkett Foundation for Cooperative Studies: Oxford, England, 1984 (132 pages).

This is a concise paperback presentation, with many supporting statistics and charts, which describes agricultural policy and institutions quite different from those found at either extreme of the private-to-public spectrum, or the "free market"-to-"command" economies.

A Catalyst for Change — The Extension Service, Extension Service, U.S. Department of Agriculture: Washington, D.C., 1983, (48 pages).

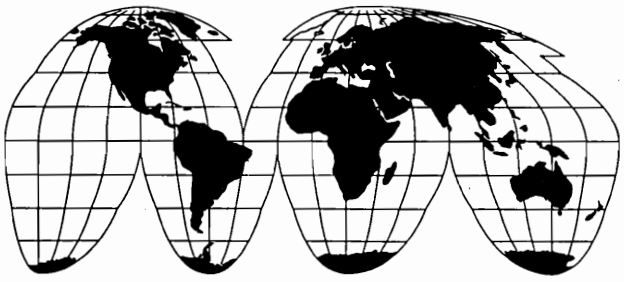
This attractive booklet may be of interest to extension-related personnel overseas as well as in the U.S., because it presents the goals and recent changes in the federal part of the unique federal-state (university)-local Cooperative Extension system.

Summary: Needs Assessment for the Food and Agricultural Sciences; and **Reference Document: Needs Assessment for the Food and Agricultural Sciences,** Joint Council on Food and Agricultural Sciences: Washington, D.C., 1984 (76 and 300 pages).

These documents were transmitted to Congress by Secretary of Agriculture Block pursuant to provisions of the Agriculture and Food Act of 1981. The **Reference Document** contains 15 papers by scientists and administrators. The **Summary** is the subject of two articles elsewhere in this issue. (Copies are available from the U.S. Department of Agriculture, Washington, D.C.)

Small Farmers Development Manual, Regional Office for Asia and the Far East, Food and Agriculture Organization of the United Nations: Bangkok, Thailand, 1978 (Vol. 1, 206 pages; Vol. 2, 78 pages).

These two volumes, suggestive of practices for wider adoption, are aimed at the "other end" of the delivery mechanism — that is, the receiving/utilizing end. These are "Asia's new breed of extension workers" — Group Organizers/Action Research Fellows, who live and work at the village level to help small farmers, fishermen, and peasants through group action. Both manuals are field-oriented: one for field-action people and the other for planners/administrators who design programs for the rural poor via field workshops.



Around the World

Transferring Fisheries Technology

The International Center for Aquaculture (ICA) at Auburn University in Alabama is involved in the transfer of fisheries and aquaculture technology to many parts of the world. Foremost among the extension principles used are: "help people help themselves," "start where the people are," and "use institutions and agencies that exist."

The ICA has assisted existing host agencies through various means, especially training and technical assistance, to help strengthen their extension outreach capability. ICA staff has seldom had programmed opportunity to work directly with farmers except for farmer training programs and "cooperator (farmer) field trials," a form of Farming Systems Research effectively used as early as the 1940s to extend pond aquaculture in Alabama, plus USAID-supported assistance to voluntary private organizations.

The ICA prefers to work with statutory agencies organizationally integrated with research — a mobile, non-passive plan of action involving farmers and using a variety of educational methods. When conditions are not optimal, the task is to build institutional capability while simultaneously reaching out to farmers through the planned use of whatever capability exists. — *from E. W. Shell, Department Head, Fisheries and Allied Agriculture, Auburn University.*

Right Method, Right Message

Comparative analysis of extension methods used in the Ampara district of Sri Lanka in 1977 shows "the importance of selecting extension methods that suit the type of message the extension agent plans to convey." Demonstrations and field days were most effective for simple messages, particularly for visually presenting new crops and varieties, whereas training classes were most useful in "imparting the know-how required of a complex innovation" and in the adoption of different management practices. — *from Research Study Series No. 24, Agrarian Research and Training Institute, Colombo.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

Tight Linkage in Victoria

The Department of Agriculture of Victoria, Australia, has "established a program structure based on industries and services and all research, extension, regulatory and administrative work is related to these programs. To ensure that field activities are directed to corporate priorities, funds are allocated on the basis of advice from program chiefs. Heads of research and extension divisions compete for funds and essentially contract to undertake projects that are directed to specific objectives. We have a comprehensive, project-based information system that describes research, extension, and regulatory work in a common format and thus facilitates co-ordination across the functions. I am convinced that the most important step in achieving effective research-extension co-ordination is the adoption of a single program structure that encompasses all functions." — *from H. M. Russell, Director, Scientific and Information Services.*

Knowing What is Known

Livestock researchers may now receive information from a unique computerized collection of 10,000 microfiched documents assembled in 17 sub-Saharan countries by staff of the International Livestock Centre for Africa. — *from ILCA Newsletter, July, 1983.*

One-Ox Technology

The simplest things are sometimes the last done. So it seems with the use of oxen. The innovation, utterly amazing among farmers in the Ethiopian highlands, is the use of a single ox instead of the traditional pair for ploughing. A one-day demonstration by staff of the International Livestock Centre for Africa led to 24 volunteers using the new technology for a year's trial. With the conventional plough but different harness and yoke, the single ox will cultivate from 60 to 70 percent of the area covered by a pair. The benefits from such a simple change will be reduction in the number of animals (now 6,000,000 draught oxen in Ethiopia), increased feed resources, less grazing pressure, no risk to subsistence crop yields, and minimum investment. — *from ILCA Newsletter, April, 1983.*

INTERPAKS Activities

Dr. Thompson Changes Positions

After retiring at the end of August from the directorship of the UI Office of International Agriculture, Dr. William N. Thompson has now become the part-time senior project advisor for the "Transformation and Integration of the Provincial Agricultural Network," centered at the Northwest Frontier Province Agricultural University at Peshawar, Pakistan. Southern Illinois University at Carbondale is a collaborating institution with the University of Illinois in this first four-year phase of a ten-year project, which heavily emphasizes the research-extension linkage for agricultural technology transfer.

Visits Abroad

Dr. John B. Claar, Director of INTERPAKS, traveling in Great Britain in July, visited the Agricultural Extension and Rural Development Centre, University of Reading, to gain familiarity with the program and the document center. He and Dr. Robert P. Bentz, Associate Director of Cooperative Extension and member of the INTERPAKS Committee, worked in Pakistan in late September and early October to assist with the pre-planning of the outreach phase of the USAID-financed project at Peshawar, described above.

Dr. Earl Kellogg, Associate Director of the Office of International Agriculture, and Dr. Frederick C. Fliegel, rural sociologist and member of the INTERPAKS Committee, visited Belize in September as part of the assessment of the agricultural sector, under the auspices of the Midwest Universities Consortium for International Activities.

Short Course to be Repeated

The new INTERPAKS five-week course, "Organization and Operation of Agricultural Extension Services in the International Setting," was concluded on October 19, with assurance that it will be repeated at a time to be announced in 1985. Participants came from high-level extension positions in Fiji, India, Brazil, Sierra Leone, and Rwanda.

Associate Director's Activities

Dr. Burton E. Swanson, the Associate Director of INTERPAKS, had two August and September assignments with the U.S. Agency for International Development in Washington: a presentation on "Human Capital and Agricultural Development" at the Forum for Development; and service as consultant to draft the African Agricultural Education Strategy Paper for the Africa Bureau. He is also serving as guest editor for the January, 1985 issue of *Agricultural Education Magazine*, with a focus on the International Youth year.

Nobel Laureate at Illinois

Dr. Norman E. Borlaug, Nobel Laureate for Peace, was on the University of Illinois campus in July for a lecture and seminars on international food problems and technology transfer.

Espousing Spouses

Extension workers who underestimate the role of women in farm planning may be shocked to learn that in the Caribbean, when opinions are sought on innovation/adoption, spouses are relied upon in more than two-thirds of the cases, whereas extension officers are turned to in less than half the cases — *T. H. Henderson and P. I. Gomes, "Family Structure, Attitudes and Decision-Making Among Caribbean Peasant Farmers," Agricultural Administration, April, 1982.*

Revolution on Campus

". . .(A)ll of us are caught up in this rapid change of the information revolution—a revolution at least as profound as the industrial revolution, and with considerably more implications for the university, since information, its creation and dissemination is, after all, our business." — *Chancellor Thomas E. Everhart, University of Illinois at Urbana-Champaign.*

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign

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Beyond Technology — Getting It All Together

We are hearing much about "systems" and about approaches to development that are "holistic" and "integrated." The import falls on no one more fully than the agents who provide the link between research and farmer. That is true for the generalist type but also for the bean or insect specialist. Every act has a context. The question is, "What are the really relevant components?"

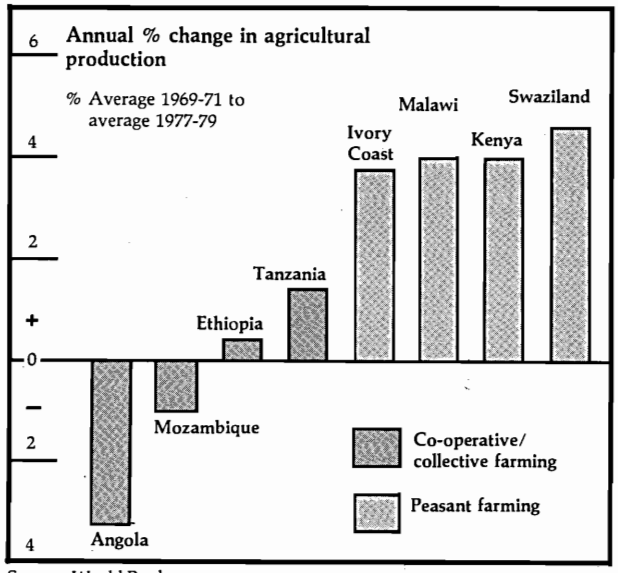
Some things, like the technical, are most likely to be included. Some other things, like the cultural, are likely to be neglected. Yet cultural influences determine consumer spending habits, the prestige of different occupations, and the education of youth—on which economic development largely depends. It is easier to deal with the technological, which may be inert, direct, and value-free, whereas the cultural is likely to be reactive, convoluted, and value-laden. The natural laws that run a machine from abroad are quite different from the acquired principles that run an economist from abroad.

It is the agent on the ground, facing the problem (or the change agency to which he or she is attached) who ultimately has to "get it all together." Exactly what that means can be clear only in particular cases, as Dudley Seers of the University of Sussex observed more than a decade ago in **Development in a Divided World**. He concluded: "One thing we can say with some confidence is that what is harmful is not so much the transfer of ideas (or techniques or tastes) as their *naive* transfer without adaptation in circumstances for which they were never intended."

Not least of "getting it all together" is the linking agent's making allowance for his or her own role as the instrument of selection, persuasion, equity, evaluation, and the human touch. The agent himself or herself is a bundle of cultural inheritances. What is brought to the problem has to be weighed with the problem itself.

Will Peasants Produce?

Under the heading, "Peasants are productive," *The Economist* of April 21, 1984 presents the following chart derived from World Bank sources:



Source: World Bank

Africa's Problem: Choosing Right Means of Transfer

If you are doing the wrong thing, doing it longer will not help. That seems to be a truism many development personnel, donors, and national policymakers have not yet learned in Africa, where "doing something else" seems overdue if the critical agricultural production problem is to be solved. This is one way of describing the theme pursued by Professor Carl K. Eicher, Michigan State University, at the conference of the Association of Faculties of Agriculture in Africa, held in Manzini, Swaziland, April

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

22-27, 1984.* His comments should be of special interest to everyone engaged in technology transfer.

The problem, he writes, is not with technology transfer but with choice of, and emphasis on, the wrong kind—the importation of existing technology of the material type (seeds, animals, machinery, pesticides, and fertilizer). This has neglected the two other kinds of transfer identified by Hayemi and Ruttan: design transfer and capacity transfer, the latter involving training of indigenous leadership for scientific and technical development in agriculture. Eicher illustrates with microcomputers: in material transfer, the instruments are physically moved to a developing country; in the design transfer stage, local programmers are trained, and software programs are revised and adapted; and in the capacity transfer stage, a technological ability is developed to produce the country's own design of computers.

Using someone else's technology by direct transfer seemed a "natural" for African nations without their own necessary critical mass of scientific talent, but the author shows that this theory often did not work in practice. It did produce benefits by transferring improved plant varieties, although not up to the "assumption of the early 1970s"; however, livestock improvement has proved to be quite difficult. The trouble has been the underestimation of "the variability in African agriculture and the indigenous science capacity required to achieve the full potential of technology transfer." In fact, "the uncritical acceptance of the direct (material) transfer of technology creates the comfortable illusion . . . that it is both possible and feasible to circumvent the long, arduous and costly process of strengthening applied and basic research capacity within national agricultural research services and in African universities."

Eicher's recommendations call for more emphasis on "capacity transfer" to help each nation's own institutions expand their scientific capacity; a more realistic time frame for agricultural development ("spans of decades rather than years"); reexamination of the sweeping mandates of the international agricultural research centers, with a view to developing "regional research networks" that can strengthen national scientific capacity to borrow technology fruitfully; "long term projects to strengthen the technical and administrative capacity of national research services"; and a shift in the center of gravity of post-graduate training in selected agricultural fields to Africa itself.

In summary, this need for technology transfer that builds an "indigenous scientific capacity" is the major lesson from Africa's long transfer experience, where too much reliance has been placed on waiting for "the thirteen IARCs and multinational seed, chemical, and machinery manufacturers" to supply "new technology that is appropriate to the needs of smallholders and pastoralists."

*"International Technology Transfer and the African Farmer: Theory and Practice," **Working Paper 3/84,** Department of Land Management, University of Zimbabwe: Harare, May, 1984.

Wheels Already Invented By Extension Experience

Does our 30-year experience in agricultural extension in low-income countries remind us of those many conferences from which we emerge with the thought, "Well, what did we learn there?" Surely not. But what *have* we learned? A concise list would surely be welcome, and it does exist, through the work of Max K. Lowdermilk, then Senior Water Management Specialist, Asia Bureau, U.S. Agency for International Development.* His 16 lessons may be summarized thus:

1. Effectiveness depends on "an adequate basic, applied, and adaptive research program."
2. Top-level public agricultural policy commitment, with incentives, is needed for both farmers and extension.
3. Administrative structures should implement top policy at all levels, link research centers and extension, and encourage decentralized decision-making.
4. Organization should provide "close coordination of all tiers of staff, careful and tight integration of inputs and services, and appropriate accountability mechanisms."
5. "Adequate incentives, facilities, and support services are needed for extension staff at all levels."
6. Field staff require adequate "selection, training, supervision, and evaluation . . . on a continuous basis."
7. Extension's services should be supported and strengthened by "evolving good functional linkages with relevant public, quasi-public, and private agro-business organizations."
8. "Extension works best as an educational process," without regulatory duties or use of compulsion.
9. When cast into a separate organization, extension works best where there is a parallel private sector with existing infrastructure of facilities and services for agricultural development.
10. Extension covering more than one subject matter is preferable "in regions having group-centered cultures and unaccustomed to rapid change."
11. Education that helps farmers to identify and solve problems, acquire confidence in their skills and their government programs, and gain freedom in decision-making "is more effective in the long run than simply using extension as a distributive mechanism" for research results.
12. By design and implementation, extension programs should provide protection against capture and monopolization by the elite.
13. Programs should have the experimental flexibility "to identify the most effective approach

for given countries and situations"—that is, "no one extension approach."

14. Programs should be based, not on assumptions, but on "the basic facts of the given context" (problem or country).
15. "The road to the farm should provide for two-way traffic to avoid collisions between farmer's needs and interests and those of outside agencies."
16. Adaptation of the Training and Visit System holds out promise of "substantial progress" in improving extension systems where a new "policy commitment can be successfully negotiated."

*"Promoting Increased Food Production in the 1980's: Approaches to Agricultural Extension in Different Production Systems," presented at a World Bank Symposium and revised for the USAID Workshop on Linkages of Agricultural Research and Farmers, Paris, 1981.

Developing Universities Relevant to Development

by Eldon L. Johnson, Vice-President Emeritus University of Illinois

Universities, all professing universality, can claim relevance to almost any human aspiration. Whether the relevance is deep or superficial, committed or rhetorical—that's another matter. Therefore, it is particularly painful for a university in a *developing* country to be accused of indifference to *development*. Yet that is a common charge.

Why painful? Because the university is potentially man's greatest means of adding to knowledge and getting it where needed. The potential is there to be used—the pool of talent, the training of manpower, the generation and storage of knowledge, the capacity to apply what is known. If these factors had no special meaning at home, no peculiar relevance at home, no unique usefulness at home, students could better and more cheaply have gone to existing institutions outside their country. The university mission is plural—missions—but that does not provide the easy out of being "all things to all people," with priority for none. Surely no university spokesperson in a developing country could in good conscience offer the excuse that, "Development is just not one of our priorities." The fact is that universities do not say it; however, they can, and often do, produce the same result by no action at all. Development calls for action, and in relation to need.

The Criticisms

Some sense of this "failure of mission" moved a 1981 UNESCO-sponsored meeting to conclude: "It is increasingly felt that the institutions of higher learning must move out of the ivory tower and relate themselves to individual aspirations and societal needs. Such an adaptation is indispensable if higher education is to contribute to a country's development. This will require a reorientation of structures, contents and methods, and launching of research studies on themes that are priority concerns for the development of each society."

Nearly a decade ago, Dale E. Hathaway, seasoned both in university life and agricultural officialdom, was more specific.* He wrote: "Yet in the developing countries with which I am familiar, the educational system appears to be basically organized toward the training of public servants, not public servants to work in rural areas, but public servants to work in central city government bureaucracies. Thus, it seems there is a major question of whether the institutions that are in place to train agriculturalists to both produce the applied technology and to produce and deliver information to farmers are really adequate to meet the needs of the countries concerned."

He then proceeded to criticize trained professionals, whether from the universities or ministries of government, for aiming at the wrong target, with their unfortunate tendency to "write exceptionally well for professional journals on esoteric subjects which are vaguely related to the problems of real farmers." "I do not believe," he wrote, "that the developing countries can afford the luxury of having a high proportion of the people capable of producing applied technology primarily writing for their peers rather than working to develop technology that will be useful to the farmers of their country. I do not question the motivation of individuals. I do question whether the institutional incentives, the professional reward system, and the bureaucratic promotional system are organized to induce the trained professionals of a country to really apply their talents to the development of improved technology for that country's small poor farmers."

Whether the criticism is old or new and whatever the particular words, it has a consistent theme of neglect of "poor farmers," "societal needs," and "the country's development." That charge is indeed old, because that was the theme on which the American land-grant colleges were launched over a century ago as an alternative to classical education. One begins to suspect, therefore, that we are dealing with contradictory claims on our universities—claims that they should serve society by detachment (and by involvement), by thinking (and by doing), by teaching students who come (and by solving problems for the state and everybody else). These claims are not mutually exclusive, and universities are bound to respond to both of them at different times, or indeed to both simultaneously for different purposes.

Imported Patterns

This confusing dilemma has been compounded in the developing countries, almost all of which patterned their new universities after the more detached European type or the more practical American type. The heritages are quite different, and particularly different in matters pertaining to technology/knowledge transfer. In one system, universities are under central

ministries of education; in the other, they are governmentally related in a more decentralized way, indeed at the subnational (or state) level. In one, the central government retains agricultural research functions in the ministry of agriculture; in the other, the land-grant state universities have specific delegated research functions centered in agricultural research stations (with some federal aid, but not the major part). In one, the ministry of agriculture likewise retains the extension functions, with extension personnel serving as a part of the civil service; in the other, the extension service is *within* the land-grant state university, with extension personnel serving as part of the faculty. There is an overarching federal interest and federal role in the American plan, with a coordinating Federal Extension Service and some federal aid; but the federal government is a distinctly junior partner in both personnel and finance. Obviously, these divergent systems bear the unmistakable marks of national history, geography, policy, and scale of operations.

With late arrival on the developmental scene, the developing countries would seem to have the advantage of deliberate choice and new arrangement among parts of more than one working model. However, if the university is itself a late or reluctant convert to the idea of service, to agricultural development, and to faculty aid in problem-solving, it will find the options reduced if not wholly preempted. But assuming the university is converted, what then needs to be done to maximize "relevance" in development?

Conditions take precedence over form. The first condition will already have been met—the firm commitment to the development mission. Another condition is demonstrated capacity to deliver, to take action, to produce—countering the governmental suspicion that professors are undisciplined dreamers, averse to practical action. Still another is the creation of a "culture of research," or habit of research, which is one of the most difficult tasks in developing societies and universities, where immediacy is the urgent appeal. The admonition to extend knowledge presupposes something to extend. Therefore, the faculty must be generators as well as extenders of knowledge, encouraged and supported by internal university policies.

Linkages and Models

Eventually, workaday operations take over and organizational forms, or structures, do become important in making the university relevant to development. Relations with the government are crucial, producing questions to be answered about appropriate contact points. Should the overall university relations be with a particular ministry (e.g., education)? Should some colleges have special ties to functionally-related ministries (e.g., the college of agriculture to the ministry of agriculture)? Or should the entire relationship aim at an autonomous status (e.g., nominally related to the office of the head of state or buffered from all government by a quasi-independent governing council)? The central question is how to harness the talents and resources of the country's pool of development-related expertise: how much of it kept in a governmental ministry, how much organized in the overall university, or whether indeed some or most should be in a wholly separate development-related college (e.g., agriculture). Choice of these options is important, not because only one "proper" choice exists, but because a variety of choices permits tailoring to country-specific needs and circumstances.

Because of its practical orientation, the American land-grant university has sometimes tempted developing countries to copy them generally if not literally. Experience shows that such wholesale adoption "is not necessarily a useful enterprise," to quote Hathaway again. What *not* to adopt is equally important, given the varying stages of development in both the model and the mimic. It could be argued that of all the American experience, the adoption of the basic commitment or philosophy is the key to all else—that is, university service to the entire public, not students alone, through applied knowledge and problem-solving.

What follows has to be fitted to inherited institutions and peculiar national needs. No more than suggestions and choices can come from America's university-based extension service, its research linkage in the same institutions, the multi-layered governmental cooperation, and the private sector inputs. The truest emulation of America's peculiarly American institutions would result in something peculiarly something else—maybe many of the same ends, but not the same means.

*See "Alternative Institutions and Other Agents of Change for Increased Food Availability," in **Proceedings: The World Food Conference of 1976,** Iowa State University Press: Ames, Iowa, 1977.

Jumping the Language Barrier To Multiply "Availability"

Producing knowledge is not enough. You must "get it there," where it will be used. And that means more than hiring extension workers, too. It means transcending the language barrier, which is too often forgotten. The International Rice Research Institute, for example, recently found that its periodicals, all published in English, go to subscribers of whom only 24 percent use English as their first language. IRRI has thus concluded it is folly to assume that such materials are really "available." Instead, they in reality "bypass millions of farmers, extension specialists, scientists, and educators in Asia, Latin America, Africa, and the Middle East."*

The first need is awareness of the monumental nature of the problem. Then the remedial stage often leads to half-measures, because the obvious solution of using professional translators typically means editions in English, French, and Spanish, with the

preponderant millions still cut out. This is the dilemma faced by all the international agricultural research centers. A similar, but smaller, problem is commonly faced by national research centers and extension organizations — wherever multilingual populations exist.

With instructive experience for others, the IRRI is doing something about it. It has embarked on a policy of "copublication," whereby the original publisher grants a second agency permission to republish in another language. A critical element is original planning and specific design for easy and inexpensive copublication. As a result, hundreds of thousands of copies of IRRI materials are now available in more than 30 languages.

A year ago, 60 communication specialists from Asia, Africa, and Latin America proposed a global network to facilitate such multilanguage transfer, with a pilot project to test the feasibility. That was the outcome of a workshop sponsored by IRRI and the International Development Research Centre of Canada.

Making progress on the obvious is sometimes the greatest breakthrough.

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*T. R. Hargrove, R. C. Cabrera, and F. E. Manto, **Copublication: IRRI Design, Procedures, and Policies for Multilanguage Publication in Agriculture,** Los Banos: Laguna, Philippines, 1983.

Questions Worth Pondering In Chinese Rural Successes

Learning lessons from others is most commendable, but that implies clear answers to learn from. We may be left, instead, merely with better-formulated questions. That can be extremely useful, too—a necessary starting place. China is a case in point. How China does it is of special interest because of the sheer size of land and people and the phenomenal changes in the last decade.

Chinese agricultural production has recently been rising from five to six percent a year, far ahead of the increased population demands. The volume of food and commercial crops is three times the capability of 30 years ago. How was such success achieved? First, by fine tuning the old system and, second, by adding something new: the "rural production responsibility system," which encourages "sideline" production alongside "mainstream" production. Light is thrown on these changes in a "Focus on China" issue of the *Agricultural Information Development Bulletin* for June, 1984, from which this information is extracted.

Chinese agriculture has always been intensive. Cautious mechanization has recognized the significance of 80 percent population dependence on the land. The agricultural system is highly organized through 2,000 state farms and 50,000 to 60,000 communes, which are extended to light industrial production for self-sufficiency. Improving this enterprise management system is the largest issue of all, especially reconciling the pull between meeting old "mainstream" production quotas of the state and the new "sideline" production interests of individuals, teams, and brigades. Without abandoning the larger commune and state farm system, the emphasis has shifted to smaller units (including small country towns), easier to administer and more receptive to modern technology.

The new "responsibility system" derives from contracts between farmers (organized in brigades or teams) and the state to meet planned output, with all surplus left for sale. This means that while property and the means of production remain collectivized, more decision-making is localized and the outputs are shared to produce incentives. Agricultural cooperatives have been formed for specialized production and services, like raising fish, refining sugar, or providing transport. The result? The great increase in agricultural production in the 1980s has come from cash crops, where decisions are made locally, whereas staples have barely exceeded quotas. The State Statistical Bureau reports that cash income for peasants has risen at a rate almost seven times the average for the 26 years after 1952. The number making more than 300 yuan a year rose to 22.6 percent in 1981, or 10 times the figure for 1978. During the same period, peasant spending for goods and building materials rose 83 percent. In the area of nutrition, less coarse grains and more rice and wheat were consumed, while protein intake was rising. In the areas of technology, the pattern of mechanization was changing from large and medium-size equipment to small, semi-mechanized machines that are cheaper to buy, easier to maintain, and more suited to the historical heritage of the Chinese rural worker.

This retention of millions on the land has not meant blind adherence to tradition. Instead, the many agricultural institutions are contributing to greater agricultural production through knowledge-transfer techniques, including a rational redistribution of crops based on land potential, and the greater use of chemical fertilizers. With surprising similarity to many countries with contrasting economies, China finds that its research-extension institutions are oriented to large-scale farming and thus, with the new developments, face an information gap.

If outside observers cannot learn infallible lessons from all this, are there questions that transcend particular economic and ideological systems? Four clusters of questions stand out. One has to do with what makes labor more productive. What kinds of incentives are most effective? What is the role of target-group participation or local decision-making in human motivation and agricultural production? What is the balance between the gains of freedom of choice at the bottom and the need for direction and planning at the top?

A second cluster of questions seeks to discover what seemingly polarized systems of technology/knowledge transfer have in common. What are the universal elements, the indispensable conditions of *any* system that does in fact make the transfer? What

are the tolerances, if any, for substitution?

A third cluster deals with fitting technology to the problem, or making it "appropriate." What is "appropriate" where population pressure on the land is intense, alternative employment is unavailable, and user purchasing power is low (as in China)? Or what is it under wholly contrasting conditions (as in the U.S.)? The obvious point is that "appropriate" derives from particular situations, requiring applied human knowledge and careful evaluation, whatever the country, the culture, or the circumstance. The same meticulous fitting to site-specific requirements applies to agricultural *knowledge* as well as to technology, and both dictate the extension or transfer techniques and processes to be employed.

The fourth cluster of questions relates to the role of government. At the technical level, there is neither a communist nor capitalist way, but at some other levels the political, social, and economic ambience makes tremendous difference—the conception of man, of the state, and of the relation between the two. What are the public and private structures, institutions, and processes that will best facilitate technology/knowledge transfer from where known to where needed? What is the optimum mode of organization or division of labor among ministries of government, educational institutions, research and extension agencies, and next-to-the-farmer officials and groups? How do these make the most of the constraints or opportunities presented by government policy?

China is not the only country wrestling with these questions.

A cautionary postscript is needed, however. The meaning of reforms of this type, like those also seen in Hungarian agriculture, can easily be exaggerated. The conclusion is not the oversimplified view that "They are going capitalist," but rather that "Socialism no longer means just one form of organization for agriculture." So concludes Kathleen Hartford, University of Massachusetts political scientist, in **Proceedings of the Fourth Agriculture Sector Symposium,** World Bank, 1984. The shift is in the balance among state, collective, and individual; hence the key in all socialist cases is to be found in how these three sectors fit together.

Greater Output From Small Farmer Input

What determines success in projects to assist small farmers? The U.S. Agency for International Development asked that question in 1975 as it arranged for the examination of 36 rural development projects in 11 African and Latin American countries.* The conclusion was that these four primary factors determine success: increases in farmer's income, in agricultural knowledge, and in self-help capacity, plus a "high probability that the benefits of the project will become self-sustaining."

Local action, or what the small farmers did to complement outside help, accounted for 49 percent of the variation in the overall success rankings. The two most important components were positive actions by small farmers: involvement in project decision-making, especially in the implementation phase; and "willingness to contribute labor and money to the development effort."

Some surprises showed up in the appraisal. Cost per participant, or degree of subsidization offered for adoption of new technology, did not improve chances for success. Farmers' perception of their own interest apparently overrides further incentive. Also, "the growth rate in the number of project participants showed no relation to project success. . . ." Environment and farming conditions did not appear to be of determining importance. Success appeared under contrasting conditions. These findings reinforced the conclusion that project designers should work "to generate various types of small farmer involvement and resource commitment to project activities."

*"Development Information on Integrated Rural Development," Office of Development Information and Utilization, Development Support Bureau, October, 1978, quoting from **Strategies for Small Farmer Development: An Empirical Study of Rural Development Projects,** Development Alternatives, Inc., Washington, D.C., 1975.

(Im)Possibility of Doing Good: Experience in East Caribbean

Workers in development projects in the developing world often share their stories about "the impossibility of doing good." This is the point of departure for Corrine Glesne, Ph.D. candidate at the University of Illinois at Urbana-Champaign, who has drawn upon her substantial first-hand experience in agricultural development plans on the main island of St. Vincent and the Grenadines. From three perspectives — external donor teams, Ministry of Agriculture officials, and farmers — she weaves the story of how all were, in varying degrees, victims of circumstance. The possibility of doing good is not negated, but certainly strained. The following is a summary of the paper she presented on this subject at a meeting of the Society of Applied Anthropology in Toronto, Canada, March 14-18, 1984.*

Donor teams — The host government of St. Vincent puts up only 18% of the total public capital expenditure on agriculture; and despite the possible perpetuation of dependency, "a high level of donor activity continues." "Donors act as if the projects will be maintained beyond their externally-funded lifetimes even though participants in the process become frustrated and skeptical."

The author then points out the possible unfamiliarity of the donor teams with the Caribbean; the difficulty of getting help from Vincentians who have

different priorities and work habits; the inherent primacy of donor over receiver, however much "local participation" is touted; and project implementation which leads to phase-out, with equipment deterioration and general backsliding. "The team feels forced into the lonely position of doing what it can under the constraints of donor agency bureaucracy and Vincentian inertia. Their antagonism . . . is at a high level, and they question the Vincentian's seriousness about development."

Government officials — "What does this process look like to the Vincentians in the Ministry of Agriculture? Every day someone from the alphabet soup of funding agencies makes his way up the steps to beg counsel with the Minister. Ten farmers may be waiting outside the office door, but the Minister must see foreigners first."

Comment then follows on the problem of dealing with outsiders who are better paid and better educated, but not necessarily more relevantly informed (hence "disdain for and yet deference to technical experts"); reluctant cooperation (because of past experience) through "local participation" involving assignment of a subordinate who is less than effective; the use of donor funds to bring in experts rather than to develop local talent; and the preoccupation of outside funding agencies with tangible goods instead of less visible inside planning.

Farmers — "The chasm between the small and landless farmers and the government is deep. . . . The government is seen, much like estate masters, as something that should take care of them but which instead takes much and gives little in return. One result is pride in finding ways to trick the 'big men' [e.g., by diverting fertilizer from export to garden crops]."

Though rarely included, farmer participation in project planning is viewed with cynicism. If the donor agency has insisted, "a farmer or two may be included in a project design team," but this means traveling to the capital, loss of time, cost of transport, meeting with high officials in the presence of foreigners, and listening to much seemingly irrelevant talk "connected to an administrative level over which they feel no control." Implementation of farmers' ideas may lie in the small-grant channels, but few possess the skills required for proposal writing. "Projects that challenge the existing structure of access to land, capital and knowledge are ignored by donor groups because most donor projects are channeled through a government that appears content with the status quo."

Glesne then offers a number of pertinent observations and conclusions concerning these viewpoints: "These three perspectives contribute toward an ethnography of the development of victims, not to mention self-fulfilling prophecies of failure. At the highest level, victims are created by government-to-government relationships. Everyone below that level is exposed to inexorable pressure generated by people giving money for presumed good ends. . . .

"Donor project team members are not bad people making bad judgments. They are innocent victims who ask, 'Why did we come? They wanted us, didn't they?' They find little cooperation and less appreciation from the Vincentians and are constrained by donor procedures and perhaps intentions. . . .

"Ministry officials are victims, too. They resent the intrusion of foreigners into their affairs but feel that they have little choice. . . .

"Farmers, particularly small ones, are victims in that the projects designed to assist them bring them few benefits. But there is hope here, too."

Without moralizing on the need for removal of these contradictory constraints, the author then closes on a positive note, citing her own observations: "I saw community groups form to discuss common problems and ways to alleviate them. I saw nongovernmental organizations begin to work with community groups and facilitate cohesive action based on local demand. I saw technically competent and socially sensitive governmental and nongovernmental Vincentians who were motivated to act by the plight of the poor."

*Available in *Culture and Agriculture*, No. 23, Summer, 1984.

The Method Matters; Participation Helps

Proceeding on the assumption that "Emphasis on imparting knowledge, and ignoring or downgrading the importance of people's attitudes, is a common characteristic of professionals in development work," two Colorado State University economists tried a remedy in Kenya.* They combined technical information and human development, if not subordinating the first to the last. In conducting workshops to teach marketing and community development skills for Kenyan leaders, the authors used "participant-centered training" based on "the willingness of the change agent to change first" and the extension workers' combined "faith in themselves and their clients."

The important opening session set the tone by dwelling on the personal objectives and learning goals of the participants, many of whom were required to attend. The participants also elected an "officer of the day" to begin each new session by summarizing the previous day's presentations with relevant participant feedback.

The authors concluded: "We found that our clients could effectively participate and that their expertise was equally valid in working out solutions. . . . The teacher is no longer merely the-one-who-teaches, but one who is also taught in a dialogue with students, who in turn while being taught also teach."

*William P. Spencer and Donald M. Sorensen, "Audience Involvement: Best Way to Learn," *Journal of Extension*, July/August, 1982.

Women vs. Technology: Lessons from Nigeria

Is it true that new agricultural technology in the developing world often "liberates" women into unemployment? A documented case of such results is presented by an extension lecturer at the University of Ibadan in Nigeria.* She reports from a study of rural women in Bendel State who process "gari," or farina, a fermented, dehydrated West African food staple made from cassava.

The effects of mechanization have been both positive and adverse. While the entire process has been greatly shortened and hard, disagreeable labor largely eliminated, mechanization has also converted the traditional work of women into the new work of men. Women never operate the machines; they lack cash and credit arrangements for the costly ownership; they are discouraged and disadvantaged in the marketing processes; and they are left literally with the left-overs from the male newcomers' choices (e.g., "the skinning of cassava tubers . . . in a male dominated plant").

This leads the author to conclude that new technology, whether intermediate or fully mechanical, "is more advantageous to men than to women"; and "whenever a technological change leads to improved income-earning opportunities, men tend to avail themselves of these," thus squeezing out previously employed women.

What are the remedies? No easy ones, but it would help if technological innovations would first *take into account* the underutilized potential of women in the economy and the need for machines fitted to both the physical and financial capabilities of women. Attitudes of village women, which are more subtle and unyielding, must change. Since they accept their supposed inferiority to men with a "submissiveness to fatalism," a "re-education of women will be necessary." This means cultural training toward equality and toward organization to bring about the sharing of governmental benefits, access to credit, "women's programs in the budgets of development projects," and more extension education directed to women.

*Carol E. Williams, "The Effect of Technological Innovation Among Rural Women in Nigeria," *Journal of Rural Development*, December, 1982.

"To See Ourselves as Others . . ."

"The widely-alleged low motivation among extension staff is often a polite way of saying that field staff are lazy and do not undertake the visits they should. 'Poor supervision' is, similarly, often a way of indicating that field staff are corrupt . . . (and) may, for example, insist on commission from farmers for such jobs as arranging tractor hire, signing loan applications, or allocating fertilizer." — *John Howell, Agricultural Administration, April, 1983.*

FSR: Panacea or Process?

In 1980, a USAID-funded study at Michigan State University made a critical appraisal of Farming Systems Research and found "a compelling case . . . for incorporating FSR in both design of rural development efforts and in determining research priorities in commodity and discipline programs."* Despite the "theoretical attractiveness," FSR's complexity militates against ready understanding; and its resource base may be eroded before it is "given ample opportunity to prove itself," particularly since the implementation stage certainly will not yield "the spectacular changes exemplified in the Green Revolution."

FSR is not a panacea. It will be judged less by the "correctness" of its methodology than by how much it adds to rural development. Operational linkages are needed between FSR activities and the entire research-extension-farmer range. Cost effectiveness of FSR will not be resolved until we know more about costs and benefits in different ecological zones with a host of impacting factors.

In conclusion, the authors wrote: "We view FSR as a process, not a structure that should be established as a separate unit in an agricultural research institution or development project. However, major changes in the structure and orientation . . . may be required in order to make effective use of FSR."

*E. H. Gilbert, D. W. Norman, and F. E. Winch, "Farming Systems Research: A Critical Appraisal," *MSU Rural Development Papers*, No. 6, Michigan State University, 1980.

Getting More Goats

The deserving goat—the one with an improved image—may have been neglected by development experts and extension personnel, maybe even experiencing a double neglect. Animals often do not fare as well as plants in the total extension efforts, and goats do not fare as well as other less-maligned creatures. All this might be concluded from the "First Southeast Asian Seminar-Workshop on Goat Production and Management," sponsored in the Philippines, October 12-15, 1983, by the Southeast Asian Regional Center for Graduate Study and Research in Agriculture and the Philippine Bureau of Animal Industry.

The conference concentrated on the goat's great potential for increasing meat and milk supply in many developing countries, the latest technology in goat production, and such support services are policies, markets, and extension. In appropriate ecological zones, the potential is so obvious and immediate, if some prejudices and misconceptions are set aside, that some enthusiasts are talking about a "goat renaissance."

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Credit Programs Lack Suitable Technology

The seemingly obvious solution is often too simplistic. Take, for example, "It takes money (credit) to increase production." But what if there is no change-producing technology in which to invest the money (credit)? And if there is technology, what if it is not profitable for the farmers targeted, or has unacceptable risks, or lacks the necessary transfer or adoption features (as supplied by extension agents)? What looked like a simple solution turns out to have a whole succession of necessary conditions, all locked together.

These linkages are shown by Professor Ronald Tinnermeier of Colorado State University in an article abstracted in the *Development Digest*.* Small farmer credit programs have usually failed to raise farm output and income (and to avoid defaults) because they are accompanied by no profitable new technology. Yet that is what it takes to increase productivity. The easy assumption is wrong—the assumption that suitable change-producing technology is readily available to the farmer with the credit. Providing credit but providing no technology is the "biggest error." "Therefore, further expansion or support of credit programs is not to be recommended unless new output-increasing technology is available to the potential borrowers."

The author even enumerates eleven possibilities of "researchable areas" for the development of technologies suited to small farmers. (Other critics have pointed out that the developed or aid-giving countries have no incentive at home to engage in this type of research, unless it is indeed the greater awareness of this necessary linkage between credit and technology.)

Not just any technology either—it must meet the final test of "its economic performance for the farmer on his own land." That means emphasizing three characteristics: (1) profitability to the farmer in question; (2) freedom from risks he is unwilling to take; and (3) availability to him, "with information supplied by extension agents combined with adequate supplies of required inputs."

*"Technology, Profit, and Agricultural Credit," 12, 1974, pp. 54-60.

Variations on an Agricultural Theme

From the U.S. Department of Agriculture: More than one of every five jobs in the U.S. derives from the farm. That is, 22 percent of the work force is employed somewhere in the land-to-consumer pipeline, which is made up of 13.6 percent farmers, 7.8 food processing, 11.1 textiles, 7 other manufacturing, 3.5 transportation, 14.5 eating places, and 12.8 "other."

From the U.K. Economist, December 1, 1984: "All over the mid-west, signs proudly proclaim that 'one farmer feeds 75 people.' The sign is a myth. Farmers do not live in a self-sufficient world, providing for others from their bounty. They buy tractors and seeds from farm supply companies. What they sell, and how much they sell it for, is determined by how much other countries produce. Above all, they depend on other people's money to keep themselves in business. In fact, one farmer plus one banker plus one tractor-maker plus one fertilizer chemist feed 75 people. On this broadest of definitions, farming is America's biggest employer and its biggest business, accounting for 22% of 1983's $3 trillion GNP."

Now, any questions about the domain of "agricultural" development, the role of "agricultural" extension, or the meaning of "agricultural" knowledge transfer?

INTERPAKS Again Sponsors Managerial Short Course

Using senior, internationally experienced staff from the University of Illinois, INTERPAKS will again sponsor a managerial short course from September 16 to October 18, 1985. The course, "Organization and Operation of Agricultural Extension Services in the International Setting," will be targeted at senior administrative staff in extension positions or persons being trained for such responsibilities. Selection and payment of travel and fees will be the responsibility of the employing extension agencies.

The five-week presentation will be divided into four modules: (1) historical development and recent trends in extension, with comparative review of the country systems represented by class members; (2) organizing and managing an extension service, with attention to leadership, budgeting and finance, program development, and evaluation; staff training, development, and supervision; internal and external communications; and conditions for success; (3) setting up effective extension organizations, with guidelines, class problems, case studies, and discussions; and (4) a week devoted to field trips and exit interviews.

The course will be presented in English on the University campus in Urbana-Champaign, Illinois, which is 130 miles from Chicago.

The International Training Division, OICD/USDA, has agreed to coordinate enrollment. Potential funding sources for trainees are the USAID, FAO, the World Bank, and local universities or government agencies. If funding is from AID or FAO, enrollment should be directed to OICD/USDA through normal AID/S&T/OIT and FAO channels. If funding is from other sources, enrollment can be made by contacting INTERPAKS, 113 Mumford Hall, 1301 W. Gregory Drive, Urbana, Illinois 61801 USA (Telex: 206957). The cost exclusive of a round-trip ticket to the U.S. will be approximately $4760.

Helpful Ideas: Old and New

Gershon Feder, Richard E. Just, and David Zilberman, **Adoption of Agricultural Innovation in Developing Countries: A Survey.** World Bank: Washington, D.C., 1984 (65 pages).

As usual, usefulness depends on the use of the user. For the scholar engaged in explaining and measuring adoption behavior in agricultural innovation, this survey is a needed critique of methodologies and a plan for improvement through appropriate econometric tools. For the knowledge user seeking workaday help, sophisticated clues and intimations lead eventually to a bibliography of 169 items, if self-help is still needed. For every reader, the impression is left that adoption research is difficult, unsatisfactory, and improvable. It has been too simplistic and too prone to look at mere adoption versus non-adoption, neglecting impinging factors (e.g., intensity of use, as with fertilizer), interrelated complementarities, government policies, cultural considerations, and landholding patterns.

Michael J. Gibbons and Richard Schroeder, **Agricultural Extension.** Peace Corps: Washington, D.C., 1984 (309 pages).

This Peace Corps manual, M-18, is geared to the paraprofessional extension agents trained by the Peace Corps itself and to their relations with small farmers at the village level. It incorporates Peace Corps experience into the rudiments of agricultural extension, with an acknowledgement that the "most significant contribution . . . has been made by farmers who have educated extension workers about the process of change." As an in-house document, it is not for sale and is available only to university and public libraries and individuals or organizations working in development overseas.

T. T. Williams, editor, **Readings on Rural Development: Integrated Strategies for Rural Families and Small Farmers.** Tuskegee Institute: Tuskegee, Ala., 1983 (226 pages).

This derives from the outreach activities of the Tuskegee Human Resources Development Center in 1982, summarizing papers and comments from two conferences on rural development. The participants were chiefly representatives from the 1890 land-grant colleges and universities, who sought "to have inputs into the formulation of National Policy on Rural Development." Interlaced in the presentation are sections on extension services and experiences in some of the institutions represented.

Charles Weiss and Nicolas Jequier, editors, **Technology, Finance, and Development.** Lexington Books, D. C. Heath and Company: Lexington, Mass., 1984 (343 pages).

This is an analysis of the World Bank as a technological institution characterized by "its active role in the choice of technologies appropriate to each particular situation and in the mobilization of local technological capacity for the accomplishment of socioeconomic objectives and human development." Papers chiefly by Bank personnel give impressive statistics and graphics on the Bank's past and present role in combining money and technology in development worldwide.

For agricultural development, an opening sectoral chapter is illuminating on the Bank's role and philosophy; and two chapters deal with technology transfer in water resources development and fertilizer production (where the transfer problems range from taking it out of the bag to building fertilizer plants).

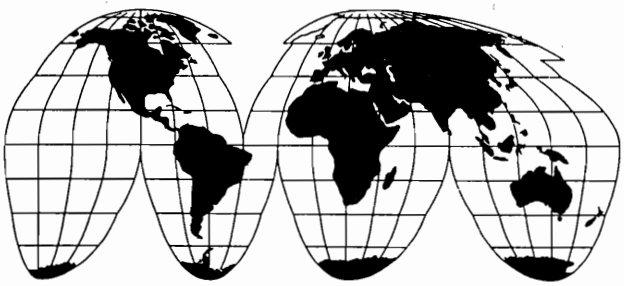
The Bank's successes lead the editors to conclude that other development banks and financial institutions might emulate such an active partnership in the technological system. What would have to be done, however, to produce sufficient or minimal comparability for such change might be included among "a number of questions, not all of which have been fully addressed in this book." One clue: one-fifth, or 600, of the Bank's professional staff are "experienced technical specialists."

Warren Prawl, Roger Medlin, and John Gross, **Adult and Continuing Education through the Cooperative Extension Service.** Extension Division, University of Missouri-Columbia: Columbia, Missouri, 1984 (279 pages).

While this concise, readable book has a Missouri flavor in authorship, photographs, and appendices, it is addressed to all those who want to understand the Cooperative Extension Service in the U.S. and to the extension practitioner everywhere. It begins with the historical and philosophical roots; moves through objectives, organization, and management; dwells on the four program areas; gives special attention to the predominantly black land-grant colleges; and concludes with evaluation and future prospects. Statistics and graphics are used imaginatively.

International Rice Research Institute, **Publications on International Agricultural Research and Development.** Los Banos: Laguna, Philippines, 1984 (539 pages).

This convenient, indexed bibliography of publications of all International Agricultural Research Centers and nine non-CGIAR centers is available, $10.20, from IRRI, P.O. Box 933, Manila, Philippines.



Around the World

Linkage Question in Lesotho

Washington State University's Farming Systems Research team in Lesotho is encouraged by the real gains made in the elusive area of linkages. During five years of FSR experience there, several significant happenings have taken place. USAID has added an expatriate position in extension; the FSR package has been fully integrated into the research division of the Ministry of Agriculture and Marketing; and extension workers have been assigned to both the research division's headquarters and to field research centers representing the three FSR prototype areas (lowlands, foothills, and mountains). Thus, the FSR effort in Lesotho is now interdisciplinary and bi-national, with extension personnel involved in all phases of FSR methodology, from surveys and farmer selection to demonstrations and farmer education.

Linkage dynamics go further. Research and extension collaboration has developed a publications capability for research bulletins, scientific reports, and a technical information circular series specifically for extension workers. Collaboration among the agricultural information service, the nutrition unit, and the extension division is involved in a weekly farm radio program; in food production, preservation, and preparation workshops; in needs assessment; and in curriculum development for continuing education.

Linkages have been particularly productive in education. The research extension department has joined nationwide with officers from the ministry's research, extension, crops, conservation, and livestock and range units in continuing education for extension workers and subject-matter specialists. It has also conducted the dynamic village chief and farmer education programs through instruction shared with officers from many other relevant governmental units, including the Ministries of Cooperative and Rural Development and Interior. Research personnel have reciprocated with lectures under the shared auspices of FAO, the Lesotho Agricultural College, and the National University of Lesotho.

While the problem continues to be both complex and elusive, with personalities to deal with and well-protected "turf boundaries" to overcome, the Lesotho experience confirms that linkages are possible and can be very enriching — *David Youmans, Professor and Extension Specialist with Washington State University's Farming Systems Research Project in Lesotho.*

Women Agents for Women in Sudan

"Sudanese women, who do much of the agricultural field work, are unlikely ever to have seen a government rural extension agent, most of whom are men," says the *Ford Foundation Letter*, August 1, 1984. So the Foundation has given $150,000 to the Ahfad University College for Women, located in Omdurman, for a five-year expansion of extension work with rural women. Faculty, women agents, and village leaders will be trained to teach poor women about health, literacy, and marketing skills, and to aid in setting up cooperative projects.

T & V Results in Kenya

In the fourth year of T&V implementation in the Taita-Taveta District of Kenya, the need has been demonstrated for problem-oriented research geared to local conditions; field trials have given extra confidence to subject-matter specialists, frontline staff, and particularly farmers; regular visits with useful messages have developed mutual trust between farmers and staff; technical messages given in bits at the right time have led to longer retention; and nonmonetary recommendations have produced higher adoption rates.

Strategies for overcoming constraints include introduction of drought-resistant crops and more irrigation, pre-extension trials, consistency of staff effort with follow-up, careful choice of contact farmers, use of women's groups to propagate messages, publicity of the program through results of achievement, and starting "with the farmer from where he is and with what he has." — *Nzuva G. K., District Agricultural Officer.*

Anniversary for British Center

To celebrate its twentieth anniversary, the Agricultural Extension and Rural Development Centre at Reading University in the United Kingdom will sponsor a conference, "Investing in Rural Extension: Strategies and Goals," September 15 to 21, 1985.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

AID Project Advisors Named

To assist the model-building, case-studies project which INTERPAKS is conducting with USAID funding, the following university representatives have been named as an advisory committee: Lowell S. Hardin, Purdue; Glenn L. Johnson, Michigan State; Bryant E. Kearl, Wisconsin-Madison; Vernon W. Ruttan, Minnesota; and Ernest T. Smerdon, Texas at Austin.

Wendell E. Morse, Jr., Office of Science and Technology/Agriculture, USAID, has been named liaison officer for the project, which is directed by Burton E. Swanson, Associate Director of INTERPAKS.

Associate Director's Appointment

Burton E. Swanson, Associate Director of INTERPAKS, has been appointed to USAID's Steering Committee on Agricultural Education and University Building in Africa. Also, as president, he officiated at the New Orleans meeting of the Association for International Agricultural Education on December 4, 1984.

Dean Campbell in India

Dean John R. Campbell, University of Illinois College of Agriculture, was in India from November 17 to 30, 1984 with five other deans, fostering relations with institutions of agricultural education and research.

New Office Director

A new director of the University of Illinois Office of International Agriculture will assume duties in March, 1985. He is John J. Nicolaides III, a soil scientist who heads the Tropical Soils Research Program at North Carolina State University.

Kellogg in Zambia

Earl D. Kellogg, Associate Director, Office of International Agriculture and INTERPAKS Committee member, spent approximately a month in Zambia in November/December, preparing for the mid-project review of the Zambian Agricultural Research and Extension Project.

Staff Additions on AID Project

While also completing her doctorate at Harvard University, Kathleen Cloud has joined the INTERPAKS model-building and case-studies project, funded by USAID, as Research Associate. She came from a similar position at the University of Arizona, where she initiated and led several projects on the role of women in world food systems, including the Women and Food Information Network, originally funded by USAID and now incorporated under her presidency as a non-profit organization in Cambridge, Massachusetts.

Malone in Belize

Violet M. Malone, Professor of Extension Education and INTERPAKS Committee member, conducted three two-day workshops for extension staff in Belize in January, 1985.

Pakistan Visitors

Two from the Office of International Agriculture, Thomas A. McCowan, Assistant Director, and John W. Santas, International Agricultural Training Officer, worked on the Pakistan Project in Peshawar in December, 1984.

Fulbright for Fliegel

As a Fulbright scholar at CEPLAC (Executive Commission for the Planning of Cacao Cultivation), Itabuna, Brazil, Frederick C. Fliegel will spend from January to August, 1985 studying the impact of technology on farmers producing cacao in southeastern Bahia. He is Professor of Rural Sociology and Agricultural Economics and a member of the INTERPAKS Committee.

Claar in Brazil

Representing the Dean of Agriculture, John B. Claar, INTERPAKS Director, joined other U.S. university representatives in Brazil in November/December to review agricultural research and sign a memorandum of understanding between the University of Illinois at Urbana-Champaign and EMBRAPA.

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A Cardinal Principle: Heeding the Gatekeeper

by John B. Claar, Director of INTERPAKS

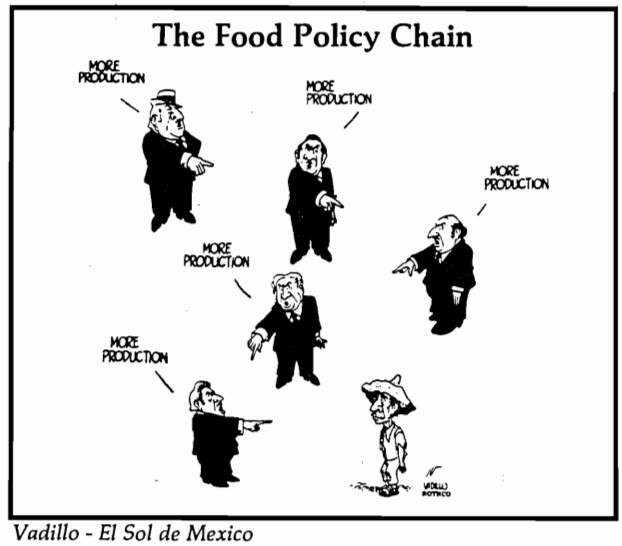
Attention to transferring and utilizing technology as a means of improving farm output seems to be increasing in developing countries. One of the contributing factors is Farming Systems Research/Extension (FSR/E), with its many research projects focusing on farmers' problems and promising farmer-ready technology. Another is the widespread expansion of the T & V system that features many improvements in conventional extension systems.

Technology generation and transfer, of course, do not occur in a vacuum. They fit into the development policy of the country—a policy or no policy, a plan or no plan. They may be a part of a national plan which directs national resources, establishes priorities, and sets goals for the future. Extension in this context may be expected to modify agriculture in accordance with the plan, thus becoming "plan-centered." Following another option, extension may become centered on the technology or the subject-matter knowledge. The T & V System tends to this focus: that is, to be "technology or message-centered." Each focus, however, gives inadequate consideration to two very important points:

1. In most societies, farmers have wide latitude, if not complete freedom, to accept or reject new technology and production methods.
2. Farmers (and their families) have a set of decision-making criteria that all new techniques have to meet before they are adopted, such as reasonable cost, risk, labor demands, and taste preferences, to say nothing of economic gains.

In this setting, top-down pressure is not effective in modifying farmer behavior. Therefore, research and extension, unable to give orders, would be well-advised to adopt a marketing or educational approach to speed farmer receptivity to innovation. The focus needs to be "farmer-centered."

There is research to support this view. Rogers (**Diffusion of Innovations,** 1983) found that the amount of extension agent contact was the most important factor explaining the rate of adoption, and that the most effective extension agents were those who had a problem-oriented or client-centered approach. Axinn and Thorat (**Developing World Agriculture,** 1972) suggested the generalization that the rate of adoption will be in direct proportion to the amount of involvement that the farmers have in determining program objectives. Many notes published in this newsletter have documented similar findings in many settings.



Vadillo - El Sol de Mexico

The acceptance of these points would have a powerful effect on how extension units are organized and operated. This information stresses that extension or knowledge transfer is, in the end, *a human development process.* This is not to say that the decisions of farmers are not subject to manipulation. Among the conditions that affect the rate of agricultural development are the incentives that move farmers in certain directions. Through agricultural policy, a nation can affect farmers' actions by providing controls and/or incentives (e.g., quotas, price supports, input subsidies): that is, by deliberately catering to the decision-making criteria known to be held by farmers. The more profitable the situation and the more certain the result, the more readily technology can be transferred

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

and utilized, and the less important specific methodology becomes. *But regardless of the situation, farmers are still in control of which new technologies they will accept; and understanding must precede adoption.*

Yet, in spite of these facts, many extension services have little involvement with the clientele in programming and present a distinctly top-down, authoritarian approach in transferring information. In this setting, farmers are likely to treat extension workers as guests, listening politely but continuing with their old ways after the guest leaves.

Isn't it time to take greater account of the fact that farmers are the gatekeepers for the introduction of new technology? Farming Systems Research/Extension methodology does take these factors into account. In fact, this approach is deliberately geared to problems and opportunities as seen through the farmers' eyes. It starts with a survey of the area to find out what problems farmers feel they have and tests out solutions on farmers' fields under farmers' management.

This approach not only facilitates a "client-centered" approach on the part of extension, but *demands it* for success. With its contrasting philosophy, a top-down approach cannot be harmonized with farmer-oriented FSR/E projects. Instead, a management approach is needed by extension which recognizes that each farm is a decision-making unit with its own resources and decision-making criteria.

Since so little heeded, this point is worth repeating: where farmers are free to accept or reject new technology or knowledge, they are in charge of change; and any system that wishes to introduce change is likely to succeed in proportion to the attention it gives to both the positive and negative aspects of this fact. As gatekeeper, the farmer is not necessarily properly informed or rightly motivated and his or her private interest is not necessarily also the public interest. The point is that the farmers' gatekeeping position has to be taken into account, their motivation considered, and their welfare balanced off against any other standard of public policy. However, this adjustment is hard to make if one may judge from how seldom it is done. Is extension caught at the bottom, on the farm, with requirements basically at odds with other requirements as seen from the top? Is this one of the reasons why "extension problems" are reported in many developing countries? In any case, improvement can follow only from some reconciliation among the requirements of "national plan," "technology," "know-how" (or whatever), and "the farmer." The point is that the neglected gatekeepers are more potent than they know in determining the rate of agricultural development; and they also are more important than most of us have conceded.

So the question lingers on: Are we paying a price in effectiveness by refusing to accept the basic premise that the farmer is in charge of change and will make changes only when his or her decision-making criteria are satisfied?

Should Extension Get Involved in Research?

Will the researcher or the extensionist be more surprised at this question? Or if neither is surprised, we have come a long way. The question is taken verbatim from the front-page headline in the *Farming Systems Support Project Newsletter* (second quarter, 1984). Then follows a report on the USAID-funded FSSP experience with the Project for Technology for Small Farmers in Paraguay.

In each of eight pilot regions affiliated with the national Agricultural Extension Office, a regional head coordinates extension and adaptive research activities. Multidisciplinary teams of "especialistas" (agronomist, agricultural economist, animal husbandry specialist, and home economist) provide back-up for extension agents—15 or 20 of them in each region. "Having adaptive research *in the extension service* (italics added) was a novel approach to defining and carrying out high priority research. . . ." Each area makes its own region-specific work plan for the year, with the *joint* participation of extension and research personnel. As a result, at least 20 on-farm research trials were designed for each region, with end-of-year evaluations to guide planning for 1985.

Management Dimension Too Often Neglected

Management is a sorely neglected dimension of agricultural development, or so many critics would say. It could be said of management both at the institutional level and at the farm level. Skill in "how to do it" is important. Indeed, an international conference in 1976 reported: "The problem of increased food production is no longer primarily technological, but shows a pervasive managerial deficiency at all levels in assuring the delivery of services to the small farmer, who must make the critical decisions required to increase productivity."[1]

This problem at the farmer level is dealt with by Professor Burton E. Swanson, Associate Director of INTERPAKS, in a recent paper presented in Africa.[2] Agricultural education and extension, he says, have not done the whole job by merely *transmitting* knowledge or technology. *Using* it to the farmer's advantage is essential as well. That means ability to choose among technologies or pieces of knowledge and ability to put the choices to efficient use. Such allocation of resources goes beyond mere on-site experience or rule of thumb, as in subsistence agriculture, to what can be and should be taught, learned, and applied—management skills.

INTERPAKS

To repeat, the need for management skills emerges as agriculture moves from the familiar pattern of subsistence to the complexity of the market economy and dependence on technology. Such development drastically affects agricultural education also: while children may get literacy and numeracy in the primary grades as a means of access to information, young and adult farmers need more. They need "technical and allocative competencies." Swanson puts it thus: "Allocative competencies refer to the management skills and knowledge farmers need to make intelligent choices between different types of technological components, practices and process, given available resources. These evaluative skills operate in a decision framework which include the value (criteria) of the farmer and farm household. In subsistence agriculture, where most production is consumed within the home, criteria such as risk aversion and stability of production at or above the subsistence level may be the dominant values affecting decision-making."

"In modern agriculture, where most production is sold in the market economy, profit maximization and/or income stability may predominate. It is during the transition from subsistence to modern agricultural production, and the growing importance of economic criteria in decision-making, that management skills become increasingly important. Changing economic conditions and new technological alternatives soon surpass the innate abilities of most farmers to make sound decisions about increasing production and incomes."

Hence the advantages of both formal and non-formal learning begin to emerge.

With regard to formal schooling, the author says "A cursory examination of the agricultural science syllabus of some African countries suggests that an academic approach to agricultural education is being followed, with little attention being given to the practical application of agricultural knowledge and even less concern being given to developing the allocative or (farm) management skills of students. . . . It is recommended that an alternative approach to agricultural education be considered that would more directly address the longer-term educational needs of farmers. The problem-solving methodology of teaching agriculture, with its concomitant implications for a vocational agriculture curriculum, appears to meet these needs and merits attention. This approach puts equal stress on technical and allocative skill development, and prepares students to be effective consumers of agricultural information once engaged in agricultural production."

"The repeated use of the problem solving methods in the classroom, dealing with successively more complex agricultural problems, and the practical application of this knowledge in student or group projects, helps students develop decision or management skills. They learn how to seek out technical information to solve production problems and they learn how to evaluate this information to solve production problems and they learn how to evaluate this information in a decision framework vis-a-vis specific criteria that are important to them (such as profitability, increased farm income and so forth). The problem-solving approach to agricultural teaching and curriculum should be given careful attention as an appropriate approach to develop the technical and allocative skills needed by farmers."

With regard to extension and non-formal learning, Swanson says it must pick up the slack: that is, until formal schooling succeeds in the way described above, "agricultural extension must help farmers develop these skills as well as transmit appropriate agricultural information." In fact, beyond the early stages of development, or in the market-oriented stage responsive to technology, extension organizations will always have a dual role: transmitting information and training in how to use it. With farmers beyond school age in agriculture sensitized to changing technology, extension has a never-ending challenge to see that the most relevant information gets out and that it is processed into enhanced farmer benefits.

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[1]Laurence D. Stifel, James S. Coleman, and Joseph E. Black, editors, **Education and Training for Public Sector Management in Developing Countries,** Rockefeller Foundation: New York, N.Y., 1977.

[2]"Agricultural Education in African Agricultural Development: Current Trends and Future Priorities," presented at the African Agricultural Education Conference, Yaounde, Cameroon, July 23-27, 1984.

Development Lexicon Addendum: "Networking"

"Networking" is becoming a popular part of the agricultural lexicon. The adaptation of the word to agricultural research and extension has not yet found its way into the dictionary, but "network" already suggests the kinship to "fabric," "threads," "meshes," "crossings," and "interlacing." A search for meaning soon begins to suggest collaboration, cooperation, partnership, and mutual assistance, particularly among independent agencies seeking to extend their spatial or areal coverage.

Regional collaboration among state experiment stations in the U.S. has long been practiced, with spectacular results in developing hybrid corn and wheat varieties. But the most far-reaching impact is now emerging at the international level, with the international agricultural research centers (IARCs) taking the lead. This is an effective and non-threatening vehicle for eliciting cooperation from the developing nations, with joint efforts spread over several locations. While not all international centers have initiated networks, others like the International Rice Research Institute and the International Potato Center are participating in four or five each, with from few to scores of countries in each. Some networks take the form of international nurseries; others work on the development of intermediate technology, ap-

propriate cropping patterns for diverse conditions, and methods of fertilizer application.

While networking is most prevalent in research, it has been applied much more rarely in dissemination efforts. The internal structure ranges from minimal and informal transnational exchanges to formal arrangements among collaborators, with coordinator, staff, and committees.

A good example is INTSOY, the International Soybean Program, which is itself a research and training network. It has external funding, primarily from USAID and smaller specialized grants, and plans research through more than 200 scientists in more than 100 institutions in 70 nations. Through its International Soybean Variety Experiment, INTSOY tests varieties under all conditions worldwide, exchanges data, and disseminates results. More than 250 cultivars have been tested in more than 100 countries by 500 cooperators. It has a director and international training officer at headquarters, the University of Illinois at Urbana-Champaign, but depends heavily on collaborating staff in institutions and countries around the world. INTSOY is atypical in one sense, however, because its primary mode of organization is not regional.

The not-so-common networking primarily for diffusion purposes is well illustrated by the West African Farming Systems Research Network (WAFSRN). This network is made up of 10 country participants, under a steering committee with various study groups to review FSR in West Africa, to map farming system zones, to operate documentation services, and to publish a newsletter. The coordinating headquarters is at the University of Florida.

When understood, "networking" is not esoteric at all. Its advantages and flexibility have natural appeal in a wide variety of agricultural development efforts on problems which spill across originating boundaries.

Technological Leapfrogging

It is a mistake to assume that a "developing" nation has to move sequentially through a set of fixed stages or that "underdevelopment" must characterize all phases of its economy. In writing about what the computer chip and the communication satellite have done to create "a new world information economy," comparable to the famed Industrial Revolution, Geta Feketekuty and Jonathan D. Aronson point out some surprises about who is already "out front": "Developing countries such as South Korea, Singapore, Hong Kong, India and Pakistan have already become major *exporters* of key information services including computer programming, engineering and key punching. These types of service industries provide areas in which developing countries are already competitive."*

*"Meeting the Challenges of the World Information Economy," *The World Economy*, March, 1984.

Failure vs. Misdirection

Knowing limitations seems to apply to practitioners of technology transfer, the same as in other walks of life. Assiduously passing out information, recommendations, and kits may be a tried-and-true technique, but not in all places and circumstances. Peddling "good techniques" is futile as an end in itself, and doing more will not necessarily turn failure into success. As J. De Vries found in Tanzania, "What is really needed in low potential areas is not more extension per se, but more research, development of infrastructure, credit programs, etc., aimed at removing the constraints or at evolving recommendations which are more suitable, thereby increasing the scope for successful extension work and a more egalitarian development."*

Extension may find itself working on the wrong thing in the wrong place—on production before roads, markets, credits, inputs are sufficiently available, or on a farm situation where farmer constraints are insurmountable and latitude for decision-making virtually non-existent. In other words, there is still a problem, but not the one originally perceived and attacked. Needs assessment and feedback from the field may redirect some of the promotional effort, elicit help from the research and policy levels, and redirect and reschedule the knowledge transfer efforts. De Vries cites a good example of adjusting strategy to compelling constraints: "Research and other promotion programs can be tailored to the needs of poorer areas and poorer farmers as well as to the high potential areas and rich farmers as was done in the past."

*"Has Extension Failed? A Case Study of Maize-Growing Practices in Iringa, Tanzania," **RER Paper No. 1,** Faculty of Agriculture and Forestry, University of Dar es Salaam: Morogoro, Tanzania, 1976.

Lesotho Chiefs Remembered

*by David Youmans**

Farming systems research projects, together with associated extension and development activities, are in various stages of implementation all across the African landscape. Practitioners from every sector of the continent periodically share success stories and, perhaps more frequently, commiserate about common concerns and constraints. Principal thinkers in the field present papers and write articles, and the literature grows. So, too, does the cumulative experience on the ground.

We think we now know a great deal about the special interpersonal relationships that must happen so that farmers become true partners with scientists in the FSR process. We repeatedly extol the virtues of bi-national and multidisciplinary teamwork, emphasize the importance of national perspectives toward intervention, and purport to comprehend the intercultural sensitivities involved in such a highly in-

teractive set of activities. Field manuals and procedural "cookbooks" have been written and published, and the FSR thrust continues to gain momentum. It is thus surprising, in view of the magnitude of the African experience, that so little attention has been paid to the role of village chiefs, headmen or headwomen as legitimizers, facilitators, and real partners in the FSR formula.

Washington State University faculty on the Farming Systems Research Project in Lesotho are fully integrated into the Research Division of that country's Ministry of Agriculture. Together with their national colleagues, they early realized the importance of local chiefs in advancing the farming systems research and extension processes. In recognition of the critical and traditional role of such citizens, research and extension personnel developed and presented training courses for the chiefs and headpersons in the agroclimatic research prototype areas.

Traditionally, chiefs are local leaders. They hold power to convene public assemblies, they grant grazing access to the public domain, they hear complaints and resolve problems, and they control the movements and guarantee the safe passage of outsiders. As a natural extension of that tradition, well informed and supportive chiefs can become most important facilitators of desired change.

During 1983 and 1984, some 30 selected chiefs were trained at the Matela Farmer Training Centre in Lesotho. In a major effort to assist chiefs to become change agents, a considerable array of topics was shared. Leadership styles and communication skills were taught, and the role of farmer contact groups was explained. The intervention of chiefs themselves as promoters of small agricultural groups and of needed change was explored. Government regulations and policies on agricultural research, basic grains, new crops, grazing control, livestock importation, erosion control, and afforestation were discussed by authorized experts. The advantage to be gained through proper stocking rates and rotational grazing were shared. Finally, a clear explanation of farming system research and a description of the role of chiefs in agricultural development were emphasized.

In making chiefs partners in the FSR process, not only has a potential constraint been reduced, but a major resource has been gained.

*Professor and Extension Specialist, Washington State University's Farming Systems Project, Lesotho.

Man and Equations

"Concern for man and his fate must always form the chief interest of all technical endeavors. Never forget this in the midst of your diagrams and equations."—*Albert Einstein.*

Rural Employment Model: "Uniformly Small Farm"

The most superficial observer of the developing world must have had disturbing moments of wondering about the "models" of development chosen, or induced by external aid. "Modernization" often connotes "becoming industrialized" or "going Western," or at least implicitly becoming like some unspecified model. That still does not address the *agricultural* dimension of the model. The U.S. or Japan both could be modernized or industrialized models, but, agriculturally, they would present drastically different patterns. Britain and France both have advanced economies, but one is working for maximum agricultural production and the other is struggling with farm surpluses. Furthermore, it also depends on what the agricultural objective is: growth, equity, employment generation, or some other target.

Two analysts have looked at the choice of models from the standpoint of employment generation to increase demand for food and other essentials of the poor in the developing world. This was done in recognition of the fact that poverty so often rests on unemployment and underemployment. Their study also takes cognizance of the intent of the U.S. Agency for International Development, stated in a policy paper in 1978, to develop "a broadly participatory, employment-oriented agricultural production strategy for developing countries." The authors, from the International Economics Division of the U.S. Department of Agriculture and the Food Research Institute of Stanford University, emerged from research and country experience with a strong case for a "Uniformly Small Farm" model (USF). This does not mean equally small, but "reasonably equal access to land, knowledge, credit and other resources," with increased agricultural production based on "labor-using, capital-saving technologies." It describes a self-employment sector dominated by small-scale farm units, "epitomized by Japan and Taiwan."

The alternative carefully examined and compared is the "Dual-Size Structure" (DSS), which is essentially at the opposite pole. In it, "A relatively small number of atypically large and capital-intensive farm enterprises occupy a disproportionate share of the agricultural land" and dominate commercial farm production, while the great majority of farm units are small and account for a disproportionately small part of agricultural production. That is, a small number of big farms dominate a large number of small ones. The DSS model uses technologies quite different from those found on the great majority of the farm units. Although not sufficiently recognized, these contrasting models tend to be mutually exclusive, forcing the developing countries to choose between them as models to approximate. Policy that focuses on rapid growth within large-scale farm enterprises concentrates capital and management there, thus reducing

the small farmer's ability "to participate in the technological transformation and commercialization process. . . ." Again, a focus strategy and a dispersal strategy tend to be mutually exclusive.

To be realistic and in accordance with actual experience, the analysts then looked at something between these two polarized models, or a model with "mixed characteristics," as actually found in the majority of developing countries. While a dual mix exists there, the large-scale, capital-intensive sub-sector is not so dominant as in the dual-size model. Case studies were made of Kenya, Tanzania, Costa Rica, and Malaysia. The conclusion regarding all such mixed-model countries was, "We believe that the empirical evidence and theoretical analysis both emphasize the importance of their approximating a USF pattern of development as closely as political and other constraints permit."

Having chosen the USF model from among the alternative development strategies, the analysts then recommended many actions to move the developing economies in that direction. Overall, "dispersal strategies" must be designed and carried out, spreading capital and management resources and government effort "over essentially the entire agricultural sector" and promoting labor-using, capital-saving technologies. The experience of Japan, Taiwan, and Korea is again suggestive. Several strategies are critical to progress toward the desired model: strengthening the research and extension programs; finding out how to close the "yield gap," or difference between new variety yields on the experiment stations and on the majority of farms; "developing technological innovations that will be feasible and profitable for small farmers under rainfed conditions;" and assuring that "the growth of demand for labor exceeds the rate of increase of the rural labor force," thus avoiding a repetition of the Green Revolution's adverse impact on farm employment opportunities and income distribution.

This is the prescription for serving the sometimes 80 percent of the population who are dependent on agriculture in developing countries and who supply the labor force needing productive employment, whether on-farm or off-farm.

*Bela Mukhoti and Bruce F. Johnston, "Agricultural Development and Employment Generation," **Final Report for the Bureau for Program and Policy Coordination,** U.S. Agency for International Development, May, 1982.

INTERPAKS INTERCHANGE

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Simple, Cheap Help by Radio

Poor farmers get too little help. So it is indeed a bonanza for purposes of food production and health if they can get assistance which is free or cheap, simple, tested, and without dependence on what the farmer does not have. Doing just that is the purpose of the Developing Countries Farm Radio Network (DCFRN), supported by the Canadian International Development Agency. Practical techniques for ready use by farm families are available to developing countries through radio tapes in English, French, and Spanish, with accompanying printed transcripts, usually with simple illustrations. For English language: c/o Massey-Ferguson Ltd., 595 Bay Street, Toronto, Ontario M5G 2O3, Canada; for French and Spanish: c/o University of Guelph, Guelph, Ontario, N1G 2W1, Canada.

Pitfalls of Integration

Pulling organizational pieces and services together, coordinating, and even merging into "integration," vertical or horizontal, seems so logical and efficient on the face of it that some cautions may be worthwhile. Like so much else, "it depends on the circumstances," but looking—and knowing what to look for—before leaping seems only prudent. Robert E. Klitgaard of Harvard University deals with this problem in relation to rural development, comparing experience in the private and public sectors and concluding that "the costs of integration in rural development tend to be higher, and the benefits lower" than in economic theory or private experience.*

One of the dangers is "foregone specialization—or drowning in complexity," as cautioned in a textbook used in the Harvard Business School: *"The effective solution to any integration problem is the one that costs the least and that does not seriously undermine the effectiveness of the specialized subunits. . . .* A good solution to any problem is one that does not create even more serious problems of a different kind. In solving integration problems managers sometimes seriously undermine the types of organization needed at the subunit level. More than one well-intentioned company president has managed to get his people to start pulling together, but in the process, made them each less effective at their respective specialized tasks." (John P. Kotter, Leonard Schlesinger, and Vijay Sathe, **Organization: Text, Cases, and Readings on Management of Organizational Design and Change,** 1979.)

Klitgaard himself adds, "These costs of integration will be higher as foregone economies of specialization are larger and the new integrated tasks complex, uncertain, and difficult to measure." Pointing out the "heavy costs as well as the benefits" of "integration" and "coordination," he quotes another source with pointed humor: "The word 'co-

ordination' provides a handy means for avoiding responsibility for clear proposals. It is perhaps for this reason that it is much favored by visiting missions who are able to conceal their ignorance of how an administrative system works or what might be done about it by identifying 'a need for better co-ordination.' Indeed, a further research project of interest would be to test the hypothesis that the value of reports varies inversely with the frequency with which the word 'co-ordination' is used. Moreover, by using 'integrated' and 'co-ordinated' more or less synonymously and in alternate sentences, long sections of prose can be given an appearance of saying something while in fact saying very little indeed. . . . Maximizing co-ordination or integration would paralyze administration." (Robert Chambers, **Managing Rural Development,** 1974.)

In some cases, having services simultaneously available may be more important than integration, as with simultaneous services for propagation of a high-yield crop, for production credit, and for specialized extension attention.

Since the desirability of integration does *"depend,"* Klitgaard reports on *what* it depends and merely hopes for consideration before precipitate action.

*"On the Economics of Integrated Rural Development," **Lincoln Institute Monograph #81-6,** Lincoln Institute of Land Policy: Cambridge, Mass., 1981.

Success Breeds Success

In studying the effect of schooling and extension services on farm efficiency in Nepal, two World Bank researchers, Dean T. Jamison and Peter R. Moock, have reported: "A farmer is more likely to grow wheat or use chemical fertilizer the greater the proportion of other farmers who do so in this farmer's immediate area."*

Copying success is contagious. They continue: "The extension programme may serve as a catalyst in the diffusion process. Extension agents preach the benefits of a new farm technology, and this promise is heard and acted upon by the most innovative of the area's farmers. Although the bulk of the area's farmers assume a more cautious, 'show-me' posture toward the new technology, nevertheless, as soon as the benefits of the innovation have been demonstrated in practice, some of these farmers will also adopt. As the evidence continues to accumulate, further adoption takes place, first at an increasing rate, and then, when some majority of farmers are already using the new technology, perhaps at a decreasing rate."

*The full report appears in *World Development,* Vol. 12, No. 1, 1984.

From Known to Grown, Antiquity to Present

"Never take down a fence without finding out why it was put up" is a good farm aphorism. Or translated for more general purposes: never fail to consult relevant history on "How did it (or we) get this way?" The same applies to "agricultural technology generation and transfer," which is current sophisticated language for what has been going on from prehistoric times.

Such diffusion certainly is not new locally and regionally, nor is it new even internationally. In a brief compression of the voluminous literature, Vernon Ruttan points out that in both prehistory and classical civilization, productivity growth was stimulated by international and indeed intercontinental diffusion of plants, animals, tools, and farm practices.* Much of it was incidental to travel, exploration, and migration. Later, diplomats brought back seeds and plants. Migrants carried along their husbandry practices. Newly discovered America enriched European agriculture with the transfer of crops. International diffusion gave West Africa its cocoa for export and Southeast Asia its rubber.

Only after centuries, indeed into the nineteenth century, did the international diffusion process become institutionalized, with governments setting up agencies to deal in exotic crops and animals and with government-sponsored trading companies to promote the overseas introduction of new export potentials. Since then, the diffusion processes have grown and changed, with the transfer of more than mere materials and information. The new dimension includes "the transfer of scientific ideas, the migration of individual scientists, and the establishments of . . . research facilities." This means the transfer of human capacity as well as biological material.

In a sense, the culmination of all this is best illustrated in the "Green Revolution," with the marshaling of all techniques for the development and diffusion of high-yielding varieties of rice, wheat, and maize into the tropics. This is a fitting reminder of what our accumulated experience now gives us as enhanced potential, just as Ruttan's summary should give us that little humility, as well as better understanding, needed for future use.

*"Technology Transfer, Institutional Transfer, and Induced Technical and Institutional Change in Agricultural Development," prepared for an Agricultural Development Conference at Villa Serbelloni, Bellagio, Italy, May 23-29, 1973.

Well, Generally Useless

"Every man who has seen the world knows that nothing is so useless as a general maxim." —*Macaulay.*

Training Used to Close Research-Extension Gap

Agricultural research organizations are commonly accused of reveling in their production of technology but giving little or no attention to its use. When the international agricultural research centers (IARCs) were created, they were soon charged with the same deficiency.

One such center is doing something about it, consciously and systematically. The International Potato Center (CIP), headquartered in Peru, believes that the transfer of technology to farmers "depends more on the ability of national programs to make use of a technology than on the technology alone." Hence CIP has "deliberately focused on enhancing the capability of national programs to conduct research relevant to specific growing conditions *and to transfer the results to farmers' fields* (italics added)."

National capability means human capability—trained manpower. Richard L. Sawyer, Director General, opens the CIP 1983 report with this comment: "What is clear is that capable manpower must first exist within national research systems before technology transfer can take place. After all, it is the national researcher, the extensionist, the educator, and the agri-businessman who have the responsibility and ability to reach growers and affect changes in potato production."*

Reflecting this conviction after treating each of the ten thrusts, or research areas, the report gives special attention to "Manpower Development through Training." Working with national programs out of seven regions, CIP provides two types of training: production-oriented and specialized training. The first type, done through international or in-country short courses, prepares for addressing farm-level production; and the second enhances skills for conducting research on CIP's priority areas. CIP input depends on the stage of advancement of the collaborating national programs—little or much, depending on need, and none at all until the countries have determined their research and training priorities.

CIP staff emphasize training needs as they travel and as they meet with national leaders in annual conferences in Lima. Such consultations permit CIP to project a five-year plan for group training activities, to be revised annually and supplemented by mid-career and individual training. This collaborative scheme contemplates 179 courses between 1984 and 1989: 59 specialized and 120 production (29 regional and 91 in-country). While CIP provided 50 percent of the instructors in specialized courses last year, it provided only 20 percent in production training.

All this calls for communications support, too. Thus, more than a quarter of CIP's communications effort goes into training programs—manuals, visual aids, and handouts. This new emphasis and new activity are also helping shape CIP's library and documentation services. Another kind of communication goes on after training: keeping in touch with trainees and evaluating their achievements and needs. This is done systematically, with a *CIP Circular* aimed at the generation of new ideas and the motivation of action.

What of the future? "CIP's long-term plan to the year 2000 calls for 'the development of a global communications network for the transfer of technology,' involving national scientists, extensionists, and educators in research and training."

*__Annual Report 1983,__ International Potato Center: Lima, Peru.

Inadvertent, But Nevertheless

In his conviction that "much scope for increased and fruitful farmer participation in project formulation, design and implementation . . . is yet to be realized," an acute observer points out that well-intended donor agencies tend to raise obstacles and bring in constraints with their external aid.* In a few sentences, he ticks off the dangers and implies some of the antidotes.

The outside helpers obviously are not always negative factors, but he writes: "Still, their preoccupation with scale, their procedural rigidities, their internal reward systems, their bias toward foreign currency, all work against local participation. Smaller projects which are more readily initiated and managed by rural people may not 'move money' very rapidly, at least not in initial stages; they require flexibility to take advantage of diverse situations, motivations, etc.; they presently contribute less to the career advancement of staff; they need a larger proportion of local currency, which foreign-funded projects provide less readily. Participatory development takes patience and time, beyond four or five-year project frames; it should not be subjected to the fadishness and shaken by the fickleness found in much donor agency thinking."

*Norman Uphoff, "Farmers' Participation in Project Formulation, Design and Operation," **Proceedings: Second Annual Agricultural Sector Symposia,** World Bank, January 5-9, 1981.

"Poignant Reminder"

"In our view, the catastrophe unfolding before our eyes in Africa provides a poignant reminder of the need for institution-building programs. There is no question whatever that, if the institutions for producing and distributing food had been in place, the current tragedy in Africa would have been greatly mitigated, if not actually averted." —*Chairman E.T. York, Jr., Board for International Food and Agricultural Development.*

Helpful Ideas: Old and New

Guidelines for Planning Communications Support for Rural Development Campaigns. UNDP Asian and Pacific Programme for Development Training and Communication Planning: Bangkok, Thailand, 1984 (82 pages).

Compiled by Najib M. Assifi and James H. French, this is the latest version of guidelines based on the experience of the professional staff of DTCP. It comes in two issues, for trainers (with 41 acetate transparencies) and for trainees, and is designed to provide practical skills in planning communications support activities for rural development campaigns. The material is highly organized, simplified, and illustrated, including apt cartoons. Earlier versions have been used in 20 workshops in Asia and the Pacific Region.

The trainee manual is US $8 per copy plus postage; the trainer manual is US $50 plus postage.

Burton E. Swanson, editor, **Agricultural Extension: A Reference Manual (Second Edition).** Food and Agricultural Organization of the United Nations: Rome, Italy, 1984 (262 pages).

This totally rewritten version of the widely used 1972 manual is aimed at extension practitioners in developing countries and at students who need to understand the extension process. Done under contract between FAO and INTERPAKS, the multi-authored volume covers the framework for agricultural extension—the historical, developmental, and conceptual context; programmatic improvement; and the strengthening of structure and function. Added to this general storehouse of useful information is a bibliography of new literature since the original publication.

The opening chapter by Swanson and John B. Claar gives a concise picture of six types of extension organizations found around the world: the conventional ministry of agriculture model; the T & V System; the university-based system as in the U.S.; commodity development and productivity system (usually one commodity); integrated agricultural development programs, emphasizing coordination of all institutional components; and integrated rural development programs, incorporating the participatory *animation rurale* approach of Francophone Africa. The authors single out no model for favor since "each has certain advantages and disadvantages depending on the problem to be solved."

Wout van den Bor and Anthony M. Fuller, editors, **Proceedings: Universities and Integrated Rural Development in Developing Countries.** Agricultural University: Wageningen, The Netherlands, 1984 (234 pages).

This is a worthy addition to the library of every practitioner or scholar interested in rural development. Its approach is from the point of view of the contributions of what are called the "first world" and "third world" universities, as discussed in an international conference jointly sponsored by the University of Guelph, Canada and Wageningen Agricultural University, The Netherlands. Spokespersons for national and international organizations give "the agency perspective" also. Major findings are grouped under university responsibilities, university capabilities (both strengths and constraints), and "the realities, present and future." As a result of the conference, some means of continued communication is proposed, such as an expanded "network of associates" and a better means of sharing the great wealth of existing knowledge and experience on rural development among developed and developing institutions.

Ruth Leger Sivard, **Women . . . a world survey.** World Priorities: Washington, D.C., 1985 (44 pages).

This is an unusually attractive compendium of statistics, colored graphs, and interpretation of changes in the status of women worldwide since 1950, assembled with foundation support from Carnegie, Ford, and Rockefeller sources. Much information relevant to development can be extracted from the total, amply illustrating the conclusion that although rural women produce more than half the food in the Third World, and as much as 80 percent in Africa, development strategies "have not yet adequately addressed the economic needs of women"—that is, their productive, as well as reproductive role.

Kathleen Staudt, **Agricultural Policy Implementation: A Case Study from Western Kenya.** Kumarian Press: West Hartford, Connecticut, 1985 (69 pages).

Concerned with women's roles and gender differences in development, this case study done for the Population Council shows that "a pervasive bias exists" against women managers in western Kenya, representing female-managed farms as compared with joint husband-wife management. This bias was found in discriminatory access to extension visits, training programs, government loans, farm supplies, and technical information. Three alternate strategies for remedy are discussed, with many specific recommendations.

A. V. Allo and R. H. Schwass, **The Farm Advisor: A Discussion of Agricultural Extension for Developing Countries.** Food and Fertilizer Technology Center: Taipei, Taiwan, 1982 (90 pages).

Written by two New Zealand agriculturalists, this volume of practical insight attempts to convert their long experience in Asian extension work into "an increased appreciation of the need for sound agricultural extension and a greater recognition of the worth of extension workers." In a foreword, the Premier of Taiwan welcomes the book for use throughout the Asian and Pacific Region. Chapters deal with the extension officer, the mechanisms and organization of extension, and extension in the wider context of developing countries.

Robert B. Charlick, **Animation Rurale Revisited: Participatory Techniques for Improving Agriculture and Social Services in Five Francophone Nations.** Rural Development Committee, Center for International Studies:Cornell University, 1984 (243pages).

As the culmination of a special series on *animation rurale,* this is an evaluation of the Francophone technique for promoting rural development. It is based on an examination of 37 case experiences in five countries. Sharpness of conclusion is made difficult by different conceptions of "development" and different variants of *animation.* While this mass-based, supportive participation "makes a small but independent contribution to success in material terms," the overall "record of technical success, and of improvement of the material conditions of participants, is not good." Only a minority of *animation* cases expanded access to decision-making, an omission that makes it "unlikely that projects will promote technical success with equity." If it "has not failed, neither has it succeeded brilliantly," which can also be said of its alternatives. Where equity is a major goal, *animation* does help. It is "one alternative to despair and violence."

Ted J. Davis, editor, **Proceedings of the Fourth Agriculture Sector Symposium.** World Bank: Washington, D.C., 1984 (360 pages).

Composed of chiefly technical papers, this paperback has a major section on Farming Systems Research with a useful review of the state of the art by Norman W. Simmonds, formerly Director of the Scottish Plant Breeding Institute, Edinburgh, Scotland.

Denis Goulet, **The Cruel Choice: A New Concept in the Theory of Development,** Atheneum: New York, 1971 (362 pages).

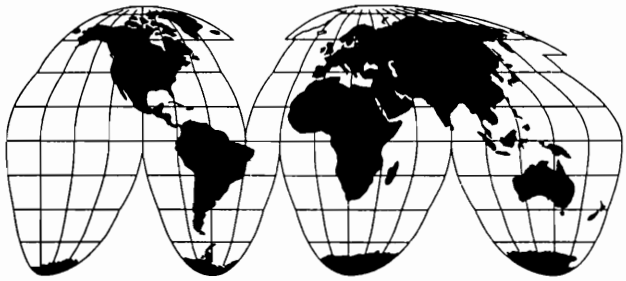
This might be regarded as a series of essays, sometimes a bit abstruse, on the ethics of development. Reminscent of the writings of Ivan Illich and Paulo Freire, it discusses the "shock of underdevelopment," vulnerability of the weak, abuses of the powerful, and commonly-practiced "anti-development." A major thesis is that developed countries must have their own cultural revolution, and "radically alter their value systems," before they prescribe for the less fortunate world. The choice in development is "cruel" because "development's benefits are obtained only at a great price and. . . often obtained in a manner which is alienating rather than liberating," sacrificing both happiness and freedom.

W. W. Shaner, P. F. Philipp, and W. R. Schmehl, **Farming Systems Research and Development: Guidelines for Developing Countries.** Westview Press: Boulder, Col., 1981 (414 pages).

Emphasizing cropping systems research, these application-oriented guidelines are intended "to assist national governments interested in helping poor farmers." Chapter eight relates FSR to the extension service, reiterating the need for the integration of research and extension in ways not yet fully established. Among the possible ways, the authors are most specific about the need for highly centralized national extension organizations to adapt to farm-centered concerns, with "decision-making authority . . . shifted to local and regional groups."

Paulo Freire, **Education for Critical Consciousness.** The Seabury Press: New York, N.Y., 1983 (164 pages).

Others of Paulo Freire's books, such as **Pedagogy of the Oppressed,** may better present his liberation rhetoric, but this volume is half devoted to an essay on "Extension or Communication." It is strong medicine, useful chiefly as an antidote to unthinking conventionalism. It contends that extension as a mere act of transmission is misconceived. It is not the sending of "communiques" to the masses, nor from those who know to those who do not know. "Education is communication and dialogue." It is entering in and understanding, not mere "cultural invasion." These and other provocative but sometimes abstruse meanings suggest that the time has come for a cogent essay on "What Can Extension People Learn from Paulo Freire?"



Around the World

From T & V to T & D in Nigeria

Bauchi state in Nigeria has modified the T & V System following extension agent difficulties with the two-week periods of prescribed chain transmission of messages from target farmer to contact farmer. Among the problems were inability to keep fixed visits, scattered settlements, and inadequate transport. The renamed system is now T & D (Training and Demonstration), with greater emphasis on demonstrations. Supported by a mobile video unit capable of three shows a day, training concentrates on such practical skills as how to demonstrate new methods on farms. To boost staff morale and farmer interest, staff are given colorful identification badges and awards are made for meritorious service.

Some of the results are an improved agent-to-farmer ratio, one demonstration plot per 100 families, and T & D radio listening by 65 percent of the state's farmers. Demand has risen sharply for fertilizer, new crop varieties, and chemicals.—*from Agricultural Development Information Bulletin, December, 1984.*

Netherlands Activities

The Department of Extension Education of the Agricultural University of Wageningen, The Netherlands, has added to the 1984 celebration of its twentieth anniversary by sponsoring a 1985 seminar on "Scientific Aspects of Agricultural Knowledge Systems" and contributing to the rural extension course given this summer, with 90 participants from more than 30 countries.—*from Neils Roling, Chairman, Department of Extension Education.*

Dual Attack on Linkage

Agricultural research and extension functions are in the same department in Kenya, but all parties agree that a gap still exists in technology generation and dissemination. A conscious, systematic attack is being made "to establish explicit mechanisms to fully utilize the complementarity" between the two systems recently adopted: T&V and OFR/FSP (on-farm research with farming system perspective), the latter for technology generation and the former for dissemination.—*from P. Anandajayasekeram, CIMMYT, Nairobi.*

Upgrading Rural Africa

With Ford Foundation funding, the Agricultural Development Council will promote improvement of the rural social sciences in Africa, which is comparatively disadvantaged in trained specialists in agricultural ministries, research institutes, and universities. It will attempt to repeat its success over a 30-year period in Asia, where 600 rural specialists were trained in a similar program. Undergraduate and master's level education will be upgraded (e.g., in agricultural economics and related fields) and scholarships will provide advanced training in European and American universities.

New Development Research Center

A new research and training center, World Institute for Development Economics Research, will be set up in Helsinki under the sponsorship of the United Nations University and hosted by the Finnish government, which has made a US $25 million endowment contribution. It will have a small staff of economists, visiting scholars, and young postgraduate professionals from the developing countries. Its director will be Lal Jayawardena, who has been secretary of the treasury in Sri Lanka and that country's representative to several European nations and international organizations.

Extension Training in Israel

Advisers in agriculture, rural development, and home economics are trained at the Agricultural Extension Centre, Department of Agricultural Education and Extension, The Hebrew University of Jerusalem, with special attention to those who intend to work in developing countries. Three programs are offered: diploma in extension, master's degree in agriculture with diploma in extension combined, and master's degree in communication, in cooperation with the Institute for Communication. A tutorial field practicum, or personalized program of practical training in agricultural extension, gives students a week of field observations before the start of the academic year, 20 days with field tutors in their full range of duties, and tutorial meetings in small discussion groups.—*from Abraham Blum, Head, Department of Agricultural Education and Extension.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

New INTERPAKS Director

Beginning in July, John L. Woods will be the new Director of INTERPAKS. He has extensive overseas experience and since 1974 has directed a unique project headquartered in Bangkok, Thailand, under the United Nations Development Programme—the Asia and Pacific Programme for Development Training and Communication Planning. He has written and published widely on rural development, particularly from the perspective of agricultural communications and technology transfer. Previously, he headed a two-year project in Malawi and served as consultant in India, Australia, Colombia, and Jordan. He has also been an East-West Center Fellow. Before receiving his Ph.D. degree from the University of Illinois, he served three years there as Development Program Specialist concerned with the planning of off-campus adult education programs.

Woods replaces John B. Claar, who has served as INTERPAKS Director on a half-time basis to help launch the program. In recommending the change, Claar cited the growth of INTERPAKS and his desire to spend his half-time commitment on technical assistance and academic matters relating to extension.

Short Course Registration

Registrations are being received for the INTERPAKS managerial short course, September 16 to October 18, geared to senior administrative staff in extension positions or persons being trained for such responsibilities. This is a revised repetition of the course successfully given last summer. Selection and payment of travel and fees will be the responsibility of the employing extension agencies. For more information see the March issue of *INTERPAKS INTERCHANGE* or contact INTERPAKS.

First Case Study in Malawi

The first of several comparative case studies of national systems of agricultural technology development and transfer will be done in Malawi in August and September by an INTERPAKS team including Burton E. Swanson, Kathleen Cloud, John B. Claar, Donald A. Holt, Earl D. Kellogg, and Andrew J. Sofranko. Swanson, Project Director of this USAID-sponsored project and Associate Director of INTERPAKS, made a preliminary visit to Malawi in May to complete arrangements.

International Role of U.S. Extension

Earl D. Kellogg, Associate Director of International Agriculture, and John B. Claar, Director of INTERPAKS, contributed to the program of the conference held at Michigan State University, March 31 to April 2, on the mobilization of the resources of the U.S. Cooperative Extension Service "to address international issues and problems." A committee will analyze suggestions made and consider next steps. Other sponsors in addition to MSU were the Extension Service of the U.S. Department of Agriculture and the National Association of State Universities and Land Grant Colleges.

Zambian Relations

Bharati K. Patel, Chief Agricultural Research Officer, Zambian Ministry of Agriculture, visited Urbana-Champaign in May for consultation on the ZAMARE Project (Zambian Agricultural Research and Extension Project). Also, Earl D. Kellogg, Associate Director of the Office of International Agriculture and a member of the INTERPAKS research team, spent two weeks in Zambia in April on the evaluation of the project.

Rodda to Head TIPAN Team

Errol D. Rodda, Professor of Food and Agricultural Engineering, has become team leader for the four-year, $15 million AID-funded project, "Transformation and Integration of the Provincial Agricultural Network," located at the Northwest Frontier Province Agricultural University at Peshawar, Pakistan. Going with him before fall on long-term assignments will be Raymond G. Cragle as research program specialist, R. William Seiders as outreach specialist, and Martin Waananen from Washington State University as teaching program specialist. Other specialists, including those in agricultural knowledge systems and technology transfer, will be added later.

Correction

In some inexplicable slip between pen and print, the name of the new Director of the Office of International Agriculture appeared incorrectly in the March issue. It should have been John J. Nicholaides III, spelled with an "h." He himself endorses this simplified pronunciation: "nickel ladies."

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign November, 1985/Vol. 2, No. 3

Ambivalent U.S. Lessons In Pre-Extension History

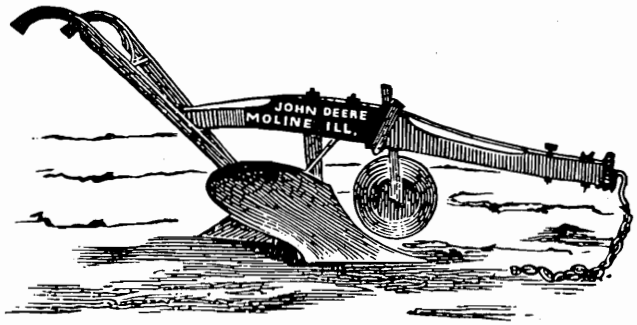
The use of agricultural knowledge and the spread of new "things" in farming has an ancient history. It did not begin with what we call "Extension," the modernized, professionalized, institutionalized version. Hence some understanding of the pre-extension era—some knowledge of historical antecedents—should be informative. Nowhere can it be more instructive than in the development of the virgin continent of North America and the great river-drained heartland of the United States.

So much happened in American agriculture before 1914 that the Congressional enactment of the federal cooperative extension system in that year was in a sense the culmination, certainly *not* the beginning. What were the chief antecedents? In the beginning was the word. Prominent colonial land-owners exchanged letters about new crops, breeds, and methods. Even the founding fathers, Washington and Jefferson, envisioned needed agricultural diffusion functions, both private and public. Then came agricultural journals—a flood of them, with ideas from outside the locality, even from abroad. Perhaps 30 existed before 1840 and 60 in the next three decades, increasing to 450 by 1913.

Pre-Extension Dissemination

The written word was amplified further as the agricultural experiment stations began issuing, by the hundreds, bulletins of research results after 1887. The spoken word was embodied in the great popular movement for farmers' institutes, plus traveling lectures, short courses, and professorial perambulations from the new agricultural colleges.

Organized effort at knowledge dissemination flourished in the early agricultural societies (from county to national level) and fairs, from the late 1700's through and beyond the fairs' heyday in the 1850-70 period. Ill-planned, fly-by-night schools of agriculture sprang up and faded away, with unsatisfied needs left behind—long before President Lincoln signed the Morrill Act of 1862, founding the land-grant college system and assuring at least one agriculturally oriented institution in each state. Despite this *public* interest which began to make a difference in creating the several pieces, the whole system of institutionalized extension was still a half-century away. Meanwhile, some states named entomologists to aid plagued farmers and also in 1862, the federal government founded the U.S. Department of Agriculture.



Among the early advances in U.S. agricultural technology was the John Deere steel moldboard plow.

But good dissemination intentions could get nowhere without scientific content; hence states began creating experiment stations and pressuring the federal government for help, which came in 1887 with the Hatch Act to help finance an experiment station in each state land-grant college. This further pointed up the deficiencies in getting research results to farmers—the need for a new approach, which was well understood generally by 1900.

Soon the state colleges, chafing from poor acceptance among farmers, began to name special personnel to reach the grassroots people. This soon included resident field agents, particularly as Seaman Knapp's successful demonstration method spread up from the South. It was then only a matter of time until the political potency of all these interests—college deans of agriculture, experiment station directors, emerging state extension personnel, and federal agricultural officials—was to be felt.

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

State Colleges Become Central

The Smith-Lever Act of 1914 was the result, providing for "cooperative agricultural extension work between the agricultural colleges and the United States Department of Agriculture." Ironically, it was "cooperative" because both the *state* colleges and the *federal* agency coveted the function, and a compromise had to be struck. Thus, some monumental decisions had been made in one fell swoop. The state colleges, and not the state departments or boards of agriculture, were to be entrusted with the extension function (thus separating educational and regulatory functions).

The cutting edge was to be the college, but the federal department had to approve the "plan of work." And the federal funding had to be matched by "State, county, college, local authority, or individual contributions from within the State...." (hence the tripartite system with support from federal, state, and local levels). Also, some tested methodology was nailed down, requiring "the giving of instruction and practical demonstrations in agriculture and home economics . . . through field demonstrations, publications, and otherwise."

That is how the organized extension service came about in the U.S., after decades of pre-extension evolution, including the prerequisite arrival of "agriculture for profit" (commercial farming), the enhanced value of land no longer free for mere settlement, and the farmer's own reluctant conviction that he should as readily embrace new knowledge as he had long embraced new machinery.[1]

Implicit in all this, if unstated, was also a major role played by an aggressive private sector of the economy—land speculators, banks, seed dealers, implement manufacturers, city markets, and railroads. In fact, the early railroads were so eager to increase both settlement and farm freight that they set up their own progressive extension programs, including demonstration trains, which drew crowds of farmers at stops along the route.

Our story is not done, however, until more is said about machinery—or hard technology—and the role it also played, from manpower to horsepower, to engine power. Since Illinois, with its almost 12,000,000 people, is regarded as the "nation in miniature" or the "microcosm state" in the U.S., we can learn most from the story of how the prairies and woodlands were turned into the farming marvels of today.[2]

In the half-century before 1890, Illinois agriculture changed more than in all its previous history. After 1830, settlers who came to the incredibly cheap land from the eastern states and abroad, brought new practices and a strong work ethic, replacing the earliest pioneer methods which differed little from those of the Indians. The ax came first to clear the woodlands. The plow came to break the prairie sod. Buffalo were soon replaced by cattle on the open range, but the black soil was much too rich to be left to pasture. So the government stepped in: fences were required by law (1860). But what would best keep the cattle in? Wooden rail fences, mud fences, and deep ditches were tried, to give way after 1847 to hedge fences of the Osage orange, which in turn gave way after 1874 to the real revolution: the Illinois-invented barbed wire.

While the fertile land was virtually free, it offered plenty of problems. First, the prairie sod and undrained soil would barely yield to a plow with two men and four or six oxen. The crisis of clogged plows was solved by two Illinois blacksmiths who invented self-scouring steel plows in the 1830's. The name of one inventor, John Deere, has since circled the globe as the trademark on the latest versions of agricultural implements.

Even when the intractable sod could be broken, the richest land was often swampy and fever-ridden. Again, all kinds of inventions attacked the problem, including "shoes", "moles," and even a contraption pulled by 40 oxen. Following the organization of government-authorized drainage districts, approximately 50,000 miles of tile were laid in Illinois during the last two decades of the century—enough to circle the globe twice.

Crops also presented challenges. Wheat harvesting changed after Cyrus H. McCormick moved his reaper production from Virginia to Chicago in 1847. First was added the binder, which replaced the men who tied the sheaves; then also came the major switch from flail to the steam threshing machine. In the 1860's, hand hoes in the corn fields were replaced by wheeled, straddle-row, man-ridden cultivators; and hand planting succumbed to a riding, check-row corn planter. Hay crops also were served by horse-drawn mowers and rakes.

Both Success and Challenges

While all this "progress" was taking place, both good and bad consequences began to appear. Farm "improvement" meant heavy capital expenditures, often many times the original price of the land and often leading to debt (the price of central Illinois farm land rose from 20 cents per acre to $4,000 between 1818 and 1980). Hence, selling the "surplus" and "making profit" became major farm objectives. Even more "progress" was needed; thus, scientific knowledge applied to agriculture began to be accepted, as had the earlier inventions.

The research work of the state land-grant college (later university)—especially through the experiment stations founded with federal funds in 1887—gave the new institution the credibility among farmers that had been so sadly lacking. But with crops went insects. With plowing went soil erosion. With "improvements" went indebtedness. With higher costs, limited land, and mechanization went larger farms and more farm tenancy.

This is the story to the end of the American frontier, in 1890. The trends went on as outlined above until formal extension work was nationally recognized and firmly established in 1914. The revolution of hybrids, chemicals, computers, biotechnology, and combines with air-conditioned cabs was yet to come. But that is more than necessary to demonstrate that

knowledge systems and technology transfer have long been with us and always will be—and that the American experience is peculiarly American, so much so that when it is marked for export, the label should say, "Copy with Caution."

[1]Historical content is drawn from Roy V. Scott's **The Reluctant Farmer: The Rise of Agricultural Extension to 1914,** University of Illinois Press: Urbana, Il., 1970.

[2]Illinois materials are drawn from Fred W. Kohlmeyer's chapter in Robert D. Bridges and Rodney O. Davis, **Illinois: Its History and Legacy,** River City Publishers: St. Louis, Missouri, 1984.

The Buzzword "Diffusion"

"Diffusion" has had a field day since we tied it to innovations, non-formal education, and knowledge systems. It is, nevertheless, a rediscovery of common usage in the Age of Enlightenment. In one of many versions, Thomas Jefferson said in 1786, "I think by far the most important bill in our whole code is that for diffusion of knowledge among people." In his Farewell Address, President George Washington left this plea: "Promote then as an object of primary importance, Institutions for the diffusion of knowledge." Obviously, good ideas are timeless.

Thoughts From the New Director

I believe that leaders of developing countries and international donor agencies are recognizing that new approaches are needed to make agriculture and rural development programs more effective. In addition to the traditional focus on technology development and economic planning, the awareness exists that the human and organizational components must receive more consideration. These are at the heart of what INTERPAKS is trying to promote, with the development of practical techniques. Knowledge or technical information is the glue which brings the appropriate people together—policy makers, researchers, extension workers, monitoring/evaluation specialists, farmers, and many others who must be involved in the total knowledge system that makes for effective rural, social and economic development.

Through our USAID-funded INTERPAKS research project, these systems will be looked at through case studies in a number of countries. I am sure we will learn much that will be of value to policy-makers in developing countries and to donor agencies, as well as to university faculty throughout the world. The multidisciplinary approach of INTERPAKS is rare, if not unique, and could serve as a R & D laboratory for a number of other organizations in different settings throughout the world.

The social science and humanistic fields upon which INTERPAKS is focusing have not received the attention and resources they should have. In the international context, the CGIAR system and other activities such as scientific journals have served a very valuable role in developing close linkages among agriculture researchers and also in establishing professional standards and goals. For the most part, this type of focal point does not exist in the extension, education, communications, and similar agricultural fields. A great deal of excellent work is being done throughout the world in these areas. However, there is a serious lack of linkages and exchanges among groups.

I hope that INTERPAKS can help facilitate the establishment of a global network of organizations and individuals dealing in these "process" fields. Burton E. Swanson, INTERPAKS Associate Director, has developed global directories in the agriculture extension and education fields. The international directory of extension systems is now being updated. Jane Johnson, INTERPAKS documentation specialist, is in the process of developing a computerized data-based program for preparing profiles of institutions dealing in the various fields of INTERPAKS concern. Hopefully, these directories and the computer profiles can help move forward the establishment of a global network.

We would be very interested in having your comments and suggestions on how this network idea can be realized. We are cooperating with a number of other institutions already on this, and we look forward to adding other interested groups to our collaborators' list. Eldon L. Johnson, editor of *INTERPAKS INTERCHANGE,* also is helping us revise and expand our mailing list for this newsletter, as well as for other INTERPAKS publications. We welcome your contribution to *INTERPAKS INTERCHANGE,* including the names of people who should be on our mailing list.

Again, I want to say that it is a real pleasure to be associated with INTERPAKS. I personally hope that it will be possible for me to meet many of our readers during the next several years.

—John L. Woods, Director, INTERPAKS

Editor's note: As reported in the last issue, Dr. John L. Woods has assumed the position of INTERPAKS Director. John B. Claar will continue with INTERPAKS on a half-time basis, focusing on the developing programs in the areas of management and extension policy. The new Director's career in agricultural knowledge fields spans more than 25 years, with more than half of that time overseas in Africa, Asia, Australia, Middle East and South America. During the past ten and one half years, he was Director of the Bangkok-based UNDP Asia and Pacific Programme for Development Training and Communication Planning, commonly called DTCP.

More about Management, With Extension Equity

More hammering away is needed on the importance of management and the quality of extension staff in the business of technology generation and diffusion for agricultural development. That is emphasized by William K. Gamble, recent Director General, International Service for National Agricultural Research.*

He observes that "as we look at research and extension programs in many places throughout the world, we can identify management in a broad sense as one of the major constraints on a productive output of the research or delivery system." Also the management problem pertains to present resources as well as improved ones; and pouring in more resources without better management is no solution. He implies that asking for more financial support is an easier and more common response than asking for, or insisting upon, more management skill. That includes leadership: "I am often impressed by what a difference a single person can make within a research or extension organization by his or her leadership role."

Yet *quality* of staff is too often undervalued and neglected, particularly for extension purposes. "There often appears to be," he says, "a two-class structure in research and extension, with the research staff having much higher requirements in terms of education and training and research staff being considered as superior to the extension staff. This always leads to an unfavorable comparison and such comments as 'research is going down to the extension service and down to the farmer,' rather than there being some mutual level of confidence, mutual exchange of information, and mutual participation in the total research/development process. I believe we need to give increased attention to the standards for extension staff."

Director General Gamble then asks why yesterday's successes may be tomorrow's failures and why similar inputs can yield very different results. His answer: "I would venture that two critical factors are always involved, namely management and leadership which influence the success or failure. As we try to analyze programs, we cannot take out the human factor . . . of excellent leadership or passive leadership or somewhat negative leadership. This is not the sole factor . . . but it is an important point."

*Secretariat's Note, "Workshop on Linkages between Agricultural Research and Farmers in Developing Countries," Organization for Economic Co-Operation and Development, May 10-11, 1981.

INTERPAKS

The Passive Peasant Myth

Experience is sometimes a difficult teacher, but a teacher nevertheless. In his state-of-the-art paper on **Participatory Approaches to Agricultural Research and Development,** William F. Whyte, Professor Emeritus of Industrial and Labor Relations and Sociology, Cornell University, shows no respect for sacred cows.* After looking at what has usually gone wrong, he concludes with sharp criticism of "the now discredited assumption still implicit in the commonly used phrase, transfer of technology." This viewpoint is "seriously misleading" because it rests on "the myth of the passive peasant," who is assumed to be ignorant and resistant to both innovations and incentives. Whyte thinks that the time has come for a new conceptual and organizational framework, based on a new understanding of the small farmer.

"Professionals are now increasingly recognizing," he writes, "that the small farmer must be visualized as an active individual, fully capable of making rational decisions, based upon assessing the total costs and benefits of change to himself and to his family. Students in this field are also increasingly recognizing the importance of an organizational base for small farmers—both to provide them with a more cost-effective means of plugging into the R & D system, and in order to gain some influence on decisions affecting their productivity and welfare."

*Rural Development Committee, Center for International Studies, Cornell University, 1981.

Coping with University Expansion in Nigeria

On a grand scale, Nigeria presents an informative case study in the fitting of higher educational opportunities to national needs and student applications. This, of course, has direct impact on all aspects of national development. No developing country has responded to its perceived needs with so many universities, with still more likely to follow. Now the question arises as to whether "a good thing" has not been overdone, and if so, what are the remedies? That question is addressed by J. Okpako Enaohwo, Department of Educational Management and Planning, University of Port Harcourt.*

The British colonial lid on higher education came off with Nigerian independence, and by 1970 six universities had sprung up. Seven more appeared in 1975 and 1976. In a third phase, seven more were established after 1979 as federal universities of science and technology. To these 20 are likely to be added "the still-born Open University and the federal university slated for the federal capital territory, Abuja," making 22 federal institutions. To these, eight states have founded state-owned universities.

The author writes of the cumulative total of 30, "This, by any estimation, is uncontrolled growth; hence the situation calls for immediate remedy." The

decline in federal funds for higher education, reflecting the economy depressed by the worldwide oil glut, seems to add emphasis. In fact, the author's analysis is based solely on "the financial constraints Nigeria now faces"; therefore, his remedies undoubtedly differ from others in vogue.

To meet the concerns of parents and politicians and the demands of students totaling from 300,000 to 450,000 by 1990 (a tripling or quadrupling of the present enrollment), the author has a revolutionary remedy. He would make university education an exclusive federal function again and make all universities city-based, abandoning the early practice of self-contained enclaves carved out of the country, with all the burdens of self-sufficiency—basic utilities and amenities, staff and student housing, security services, and virtual town management. In the new plan, the surrounding existing cities and the private sector, rather than the universities, would take up the burdens of facilities and services peripheral to teaching and research. Short-term and long-term costs involved are not discussed.

This is estimated easily to double present planned university capacity, which, with the addition of 50,000 in the Open University, would reach the anticipated 450,000 by 1990. Thus, "every available facility can be freed for teaching and research purposes." The author also adds that "universities should be linked to the improvement of the national economy" with strong "pursuit of adult education . . . as a complement to the services of Open University. . . ." This would take care of many more conventional students, while also catering to those who cannot afford full-time attendance.

The history and dynamics of the problems in Africa's most populous nation, whatever the solution or amelioration, may be instructive elsewhere, although the hazards of extrapolation are obvious.

*"Emerging Issues in Nigerian Education—The Case of the Level and Scope of Growth of Nigerian Universities," *Higher Education*, June, 1985.

New Agricultural Development Institute

Three U.S. institutions with Rockefeller family support have been merged into the Winrock International Institute for Agricultural Development, an autonomous, non-profit corporation with headquarters at Morrilton, Arkansas. It includes and combines the missions of the Agricultural Development Council (founded in 1953), the International Agricultural Development Service, (founded in 1975), and the Winrock International Livestock Research and Training Center (founded in 1975).

Technology Bridges China and the World

The old question has become real: What will happen when China and "the West" interact as equals? China is at last, after the Cultural Revolution, "joining the world." The terms and means are important. Technology transfers will be one means, as recently explored by Michel C. Oksenberg, University of Michigan.*

Not all of China's one billion people will join the world economy soon, but a whole series of metropolitan regions are on their way to doing so, continuing a development that "50 years of foreign invasion" interrupted. Remember that Shanghai was "the greatest city in East Asia" before 1930. This means that perhaps a third of China's millions will become "modern people," or "as many . . . as live in the United States and Western Europe today—with all the creativity and pollution that entails." The implications are "staggering."

Recognizing that world cooperation will be necessary for food sufficiency and general economic progress, the author explores the technological transfers now taking place between China and the outside world, particularly the U.S. They are "massive", both through student/scholar exchanges and government/corporate channels. Half of China's 20,000 visiting scholars and students abroad are in U.S. universities, and more than 4,000 have completed their studies and returned home. Thousands of technicians have been trained in plants and laboratories—academic, governmental, and corporate—in the U.S., Europe, and Japan.

Flow the other way is naturally slower, but U.S. colleges and universities have study-abroad programs in China, including the training of "a new generation of China specialists." Sales of U.S. high technology to China now exceed an estimated one billion dollars annually. Government agencies are parties to 22 protocols, including one on agriculture.

Are there problems? Yes, as shown by questions. Does China have the capacity to purchase, "from the cornucopia now available to it," the "latest" technology with sufficient regard to specific use? Or will it blame the outside world for palming off something inappropriate? Can the Chinese absorb the technology, with adequately trained personnel and freedom from viewing foreign ways as culturally suspect?

Helping train China's future scientists and policymakers and exchanging knowledge and technology between China and the world "should have profound and (on balance) favorable consequences. . . ." Rather than being merely parenthetical, the *"on balance"* is the hinge for it all—a world view that assures national regeneration and creativity only "at the hub of international activity," which henceforth must include China.

*"China Joins the World: Prospects and Implications," *Issues in Science and Technology*, Spring, 1985.

Technological Challenges For Amazon Agriculture

If one is looking for agricultural alternatives produced by changing technology, the Amazon Basin provides sufficient, indeed dramatic, example. That region itself covers one-third of the world's humid tropics. It presents an agricultural challenge as population pressures impinge on common farming practices. This results from traditional clearing of the rainforest by shifting cultivators, who, following clearing, crop for one or two seasons, and then leave the field fallow for several years.

Need exists for the substitution of continuous cropping systems, or permanent field cultivation, without long fallowing and environmental damage. This alternative for the acid, infertile soils of the Amazon Basin has been worked out and tested since 1971 by North Carolina State University's Tropical Soils Research Program in cooperation with the Peruvian Ministry of Agriculture under long-term USAID funding.*

The investigations on an alternative technology for slash-and-burn clearings were centered at Yurimaguas, Peru, at the headwaters of the Amazon in climate and soil representative of much of the basin. Capitalizing on the area's capacity to sustain up to three crops a year without planting a second crop within one already growing (e.g., rice-corn-soybean, rice-peanut-soybean, or corn-peanut-corn), the "improved" Yurimaguas technology gave markedly improved economic returns. At the same time, it chemically improved rather than degraded the soil. One rotation gave a monetary return three times the investment in lime and fertilizer, and another increased the farm family income almost fourfold.

Adoption of this technology for continous cropping without ecological damage has spread encouragingly among small farmers and offers great hope for the future in similar areas of the world as well. However, some cautions are noted: adaptation will be needed for sloping lands; site-specific trials should precede adoption; farmers will need improved extension-type services to transfer from shifting to continous cultivation; and socio-economic factors (cost-price ratios, markets, policies) must be heeded.

*J. J. Nicholaides III, D. E. Bandy, P. A. Sanchez, J. R. Benites, J. H. Villachica, A. J. Coutu, and C. S. Valverde, "Agricultural Alternatives for the Amazon Basin," *BioScience*, Vol. 35, No. 5, May, 1985. Nicholaides is now Director, Office of International Agriculture, University of Illinois at Urbana-Champaign.

Doing Vs. Doubting

"What a man hears, he may doubt; what he sees, he may possibly doubt; what he does himself, he cannot doubt."—*Seaman A. Knapp, 1833–1911, one of the founders of agricultural extension in the U.S.*

National Disparities

As farmers present dissimilarities, making comparison and generalization difficult, so do nations, as in the relation of the agricultural sector to the total economy. "For example, other things being equal, a 20-percent increase in farm output in Bangladesh increases national income by 12.5 percent; a 20-percent improvement in Japan's farm output increases national income by only 1 percent." So says the *Agricultural Information Development Bulletin*, December, 1984.

"Japan, with so much less dependence on agriculture, with much less to gain from agriculture, and with a century of experience in national agricultural research, still spends 400 times as much per hectare and nearly 800 times as much per person in agriculture as does Bangladesh. Japan is, of course, a much wealthier country, and, it might be argued, can therefore afford to invest much more in research. The real question facing Bangladesh, however, is not whether it can afford to invest in this type of research but whether . . . it can afford not to."

Extension Consortium Proposed

Initial plans emerged at the Reading conference (mentioned elsewhere in this issue) to form a Dutch-British-U.S. consortium among three existing institutions involved in international extension programs. As proposed, INTERPAKS would join with two older organizations—the Agricultural Extension and Rural Development Centre (AERDC) at the University of Reading, U.K., founded 20 years ago; and the International Agricultural Center (IAC) at the Agricultural University, Wageningen, The Netherlands, which has been active for 34 years. Exchanges among proposed members over the next six months will lead to a March, 1986 meeting to consider a formal collaborative agreement. Options being considered are exchanges of information and personnel, joint projects and training programs, and a computer linkage.

"Down on the Kibbutz"

With this subtitle in its survey of Israel, *The Economist*, July 26, 1985, concludes that despite egalitarianism even in the urban areas, "certainly the Utopian idealism of the kibbutz, the communal rural settlement . . . has faded." With only three percent of Israelis living in the 277 kibbutzim, the old rigors have given way to modern amenities, less communal dining, and dramatically reduced removal of children from their parents for communal living and sleeping. A spirit of democracy and sharing persist, but life is "much softer, less agricultural," with more menial tasks, like seasonal fruit-picking, done by foreign labor. In fact, more than 70 percent of the kibbutzim's income is now derived from manufacturing.

"Investing in Extension": Reading Conference Theme

If innovation is good for farmers, it is also good for those who advise farmers. That, in a sense, was the consensus among the 130 officials from throughout the world who participated in the conference held September 15–21 at the Agricultural Extension and Rural Development Centre, University of Reading, U.K. The theme was "Investing in Rural Extension: Strategies and Goals." One of the speakers commented that the costs of the dramatic changes in the economics of agriculture in recent years have made many extension systems "dinosaurs"—too big, too inefficient, too ill-fitted.

The representatives from national extension services, extension education units of universities, international extension centers, and donor agencies seemed to agree that the time has come for a new look at the role, responsibilities, and methods of extension services. This also means some shift in emphasis from the traditional focus on technology to a new focus on human resource development and agricultural knowledge systems. Other themes were the financial problems of investment needs and costs and the human problems of improving effectiveness by incorporating strong "user" control. (Some keynote papers will be treated in later issues of *INTERPAKS INTERCHANGE.)*

Clarification

To clarify the July article on "networking", it should be understood that the University of Florida is the coordinating headquarters for the Farming Systems Support Project but not for the West African Farming Systems Research Network. The latter organization's headquarters is at Ahmadu Bello University, Zaria, Nigeria. The two are independent cooperating bodies.

The Asia-Africa Differential

The problem prompts the question, but not necessarily the answer. In addressing the problem of the Asian and African differential in economic performance in the last two decades, Keith Marsden, in the June 3, 1985 issue of *The Wall Street Journal,* puts it this way: "South Korea and Ghana provide the sharpest contrast in performance among the countries reviewed. In 1962 their per-capita incomes were almost identical, $491 and $490, respectively, in 1980 U.S. dollars. They also had other characteristics in common—66% of Korea's labor force was engaged in agriculture in 1962, compared with 64% in Ghana; 90% of Ghana's exports were primary products, 86% of Korea's were. Yet just 20 years later, the average South Korean enjoyed an income five times that of the average Ghanaian."

Patriarchy of Agriculture: Agenda Without Action

If it comes as a shock that farmers have *husbands* (not just wives), then our understanding of the nature of the world's agricultural production system is seriously defective. Worse yet, when understanding comes, the phenomenon is commonly seen like the weather—nothing to be done about it. The FAO, the World Bank, the ICARs, the national assistance agencies, the foundations, the universities, and common sense (if time is taken for its application) give us the basics of the role of women in world food production, and often the sophisticated statistics if needed to embellish the obvious. It is not surprising, therefore, that the agenda for the World Conference on Women (held in Nairobi in July), marking the end of the UN Decade for Women, should have had something to say about women in agriculture.

Of the many points made, several are most relevant to the generation and transfer of knowledge and technology. Laws of marriage and inheritance have left women with an estimated ownership of only one-hundredth of the world's property. Women's neglected role, even when documented, is underestimated because of unpaid work and "invisible" labor around the house in addition to the field. When new technology arrives, it benefits the masculine part of the division of labor and indeed tends "to replace women completely rather than easing their work."

In many countries, particularly in Africa, great numbers of men have gone to the cities for wages, leaving households entirely in the care of women. Denied regular wages or other collateral, women have incredibly inferior access to education, credit, seeds, fertilizer, and all other resources and services needed for independent farm production. Even the bright promise of change—new crop varieties, improved farm practices, current research knowledge, and better extension services—is reserved largely for men. Many extension workers never see a woman, even in the case of a major crop grown almost exclusively by women. Lamenting the heavy cost of this state of affairs for the developing countries and looking for a bright spot of progress, the FAO has been forced to conclude: "It is virtually impossible to identify any country in which national strategies have generally benefitted women's role in agriculture."

*__The State of the World's Women: 1985,__ compiled and written on behalf of the UN by New Internationalist Publications: Oxford, 1985 (20 pages).

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Putting People Paramount: New Agricultural Sociology

Development problems are complex enough to invoke the expertise of many disciplines and professions. Indeed the question is often where to stop. If the intent is "holistic" and "inclusive," how far does that go?

It is illuminating, therefore, to get the point of view of representatives of the potentially involved disciplines. If they feel left out of critical decisions and actions, the logic of their criticisms is worthy of careful attention. In his opening address to the Sixth World Congress for Rural Sociology, held in Manila at the end of 1984, Michael M. Cernea, Rural Sociology Advisor, World Bank, discussed "The Position of Sociological Knowledge in Planned Rural Development." In fact, that was the subtitle to "Putting People First," which foretells the orientation throughout.

The "non-economic/social sciences, which study people, cultures, and societies, are vitally necessary" to redress the imbalance commonly found in development projects in the past. When concern later turned to alleviating poverty, emphasis was shifted from "physical infrastructures" to "social structures." Still more people-oriented input is needed, as is well illustrated in financial interventions for induced changes. These can be extremely disruptive among risk-averse farmers. Indeed "in some cases money is the least important contribution to change processes." The social structures can be overwhelmed by heavy financial influx; hence the need for taking that possibility into account.

That is where social scientists can make the most important impact—"in the design for social action," not at the end for evaluation, as so often in the past. They should also have a hand in "the actual execution of rural development programs." But rhetoric is easier than operations. For example, "participation" is heavily articulated, but the question is: Can the social scientists "offer a more or less systematic methodology for organizing actual participation in different social contexts"—a methodology as well as an ideology? The same need applies to rural institution-building and organization-building. These call for "high yielding social organizations" analogous to high-yielding crop varieties—that is, "capacity enhancers," like cooperatives, credit groups, farmer organizations, and pastoral associations. In other words, "social scientists have to learn to generate new products, products usable by development practitioners."

Since unresolved worldwide issues "are more social and behavioral than technical," research is needed in new directions—peasant studies, single crop studies, farming systems, social problems of irrigated agriculture, impact of fuel-wood crises, and land tenure systems, rather than the old themes of "the rural-urban continuum and the diffusion of innovations." Such efforts may indeed comprise a new "sociology of agriculture." That, in turn, entails something else: "profoundly restructured" training of sociologists to give them "an action-oriented outlook," and the infusion of information into the training of technical experts to enable them better to see the world through "a crucial lens—a social one." The object is to avoid producing "incompetent technical experts or technically illiterate sociologists."

Debate about who is "on top," the technical expert or the social scientist, is irrelevant. Indeed, "only their well orchestrated joint efforts can produce harmonious development."

Better Using What We Know

Knowing more than we use is nothing new. It can be so said and will be true at almost any time. Esman and Montgomery said it a decade and a half ago—about not using what we really know about human and organizational behavior in carrying out large-scale development programs.* While simply carrying over knowledge or technology from here to there may have its rudimentary place, "It is clear that a growing number of developing countries have achieved the stage in their human resources development that no longer requires . . . simple technological transfer." They have other sources of capital and of technological skill, including what they themselves have fostered.

Our more sophisticated knowledge of public administration is now required, although it "has been seriously neglected in the organizing and 'delivery' of professional knowledge for development purposes." Studies at home and abroad show "the need for integrating the rapidly increasing knowledge of human behavior with professional knowledge as applied in specific developmental fields such as agriculture, education, and health." All "attempts to separate 'administration' from 'substance,' whether in hospitals, research organizations, or service programs, have resulted in sterilization of both elements." The need for integrating administration and economics into the curricula for training subject-matter professionals is being recognized. But in both training and action, what we know still outruns what we use, or even recognize that we ought to use.

*Milton J. Esman and John D. Montgomery, "Systems Approaches to Technical Cooperation," *Public Administration Review*, September/October, 1969.

New Bibliography Available

Volume I of the **Annotated Bibliography on Development and Transfer of Agricultural Technology,** prepared for INTERPAKS by Jane S. Johnson, is now available on request.

Helpful Ideas: Old and New

Eric Clayton, **Agriculture, Poverty and Freedom in Developing Countries.** The Macmillan Press: London and Basingstoke, 1983 (277 pages).

Dedication "to the small peasant farmers of the developing world" does not place this book in the expected category. It does not favor "equity," "structural change," "income redistribution," "basic needs," "land reform," and much else so characteristically associated with the alleviation of rural poverty. On the contrary, the free enterprise system is vigorously defended and leftists and Marxists aggressively attacked (e.g., the "nonsense of the paranoiac preoccupation with income distribution"). It is an agrarian reminder of Hayek's **The Road to Serfdom** of 40 years ago.

In the author's opinion, remedy lies in "the resurrection of the growth of GNP as the central development objective." However, government is conceded a role. Policy should recognize that the small farmer does produce more per acre than the large landowner, that aid may be needed for large capital investments, and that research and extension are legitimate public functions. The polemical tone is moderated by the presentation of much hard data from research.

Vrinda Kumble, editor, **Proceedings of the International Symposium on Development and Transfer of Technology for Rainfed Agriculture and the SAT Farmer.** International Crops Research Institute for the Semi-Arid Tropics: Patancheru, India, 1980 (324 pages).

This formidable title obscures a wealth of useful information in papers presented in ICRISAT's inaugural symposium in 1979. Illustrative are the papers by L. D. Swindale, former Director General, on the problems and central concepts of agrotechnology transfer and by participants in the section on "linkages." Another section deals with country-specific experiences in the semi-arid tropics.

While recognizing the division of labor between what is international and what is national, the Director General sets the philosophy of ICRISAT in the opening sentence: "The work of an international agricultural research institute becomes meaningful only when the results can be effectively conveyed to their ultimate user—the farmer—through the scientists and extension agencies of the many nations served by that institute."

Uma Lele, **The Design of Rural Development.** Johns Hopkins University Press: Baltimore and London, 1975 (246 pages).

This volume, with a suitable subtitle "Lessons from Africa", has passed the test of remaining relevant after a decade. It is a study done for the World Bank, based on detailed evidence from 17 rural development programs; it also conceives of rural development in terms of the McNamara (then Bank president) preoccupation with the absolute poor and their inability to contribute to economic growth. The study looks at the past in order to design better programs for the future—at the basics for closing the gap between original objectives and actual performance.

In consideration of the production system—with the interaction of such factors as credit, marketing, social services, management types, and employee training—agricultural extension is treated with emphasis on mass participation. A major conclusion is that merely intensifying the extension service (i.e., adding staff), as commonly desired, will not be an effective reform unless accompanied with several other specified changes involving technological packages, incentives, management, staff training, and farmer participation.

Coralie Bryant and Louise G. White, **Managing Rural Development with Small Farmer Participation.** Kumarian Press: West Hartford, Connecticut, 1984.

This is in a sense a how-to-do-it manual—how to turn the glib rhetoric of grassroots or rice-roots "participation" into reality. Little development literature addresses this practical question about small farmer participation and the building of effective participatory institutions. These essays and their many specific guidelines challenge the traditional wisdom of hierarchical organization, single-line authority, and reliance on the top-down flow of knowledge presumed to be greater and better if from the outside.

Rita S. Gallen and Anita Spring, editors, **Women Creating Wealth: Transforming Economic Development.** Association for Women in Development: Washington, D.C., 1985 (185 pages).

With opening speeches and selected papers, this volume is drawn from the second annual conference of the Association. Reflecting the group's tripartite organization—researchers, policy makers, and practitioners—the papers deal with "gender equity in research, policy, and practice at the national and international levels." Sections cover human resources, natural resources, and capital resources, with the goal of illuminating "our understanding of how women subsidize the development process."

Robert Chambers, **Managing Rural Development: Ideas and Experience from East Africa.** Scandinavian Institute of African Studies: Uppsala, 1974 (216 pages).

Among the many works by Chambers, this 10-year-old book gives insights and experiences from the point of view of public administration and the application of management procedures to rural development. It is incisively critical in its analysis. Seven principles are singled out, with several precepts for procedural design. The central context is "rural equity," in the hope that "it may prove possible to reach many more of those who are being left out and left behind."

D. B. Grigg, **The Agricultural Systems of the World: An Evolutionary Approach.** Cambridge University Press: London, 1974 (358 pages).

History is where knowledge systems and technology transfer begin. Part One of this concise history concentrates on the early history of agriculture, diffusion of crops and livestock, and significant changes. From 10,000 years past until less than a century ago, farmers were "remarkably slow to respond to technical and economic change"—and even then, in only "very limited areas." Hence the author concludes: "Thus the simplest and perhaps the most useful classification of modern agriculture is into those countries which have experienced economic development in the last century and those which have not."

Gene F. Summers, editor, **Technology and Social Change in Rural Areas.** Westview Press: Boulder, Colorado, 1983 (266 pages).

These fourteen essays honoring Professor Eugene A. Wilkening of the University of Wisconsin deny that technology is the causal factor and social change the mere consequence. Instead, writes the editor, "social structures have a degree of independence which permits them to exert reciprocal influences on technology and to influence its creation, adoption, diffusion . . ." Four sets of essays deal with the adoption and diffusion of technological innovations in agriculture, the effect on the structure of agriculture, the influence on patterns and quality of rural life, and the question of fitting technology to existing vs. alternative (i.e., "appropriate") institutions.

Social change in rural areas and farm living, particularly in the last 30 years, is dealt with throughout. No denial or polite softening of "the fall of the family farm" is combined with thought about the future, with "demands for a more humane application of technology," the problem of growth coupled with equity, the role of women, and the many limitations of the U.S. model for emulation in the developing countries.

Catherine Overhold, Mary B. Anderson, Kathleen Cloud, and James E. Austin, editors, **Gender Roles in Development Projects.** Kumarian Press: West Hartford, Connecticut, 1985 (326 pages).

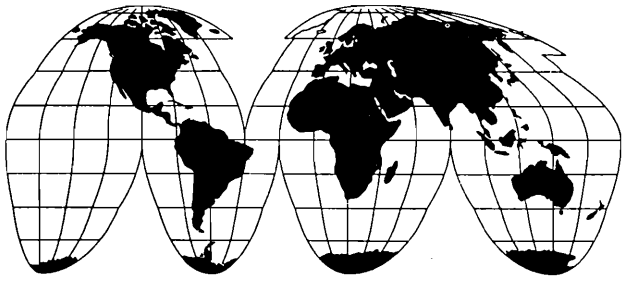
For information diffusion and training needs in understanding the gender role in development, these seven case studies draw upon experience in USAID-funded projects in Asia, Africa, Latin America, and the South Pacific. The editors have also contributed four technical papers for suitable context. In an opening essay, they point out both the past progress and the imperative need for rectifying current inadequacies, on both economic and equity grounds, among women of the developing countries—"the majority of the population . . . concentrated at the bottom of the ladder in terms of employment, education, income and status."

Edward B. Rice, **Extension in the Andes: AID Evaluation Paper 3A.** U.S. Agency for International Development: Washington, D.C., 1971 (552 pages).

Unfortunately, this is an old ghost that still hovers over the extension scene. More than a decade ago, it offered unflattering conclusions on what was achieved by U.S. technical assistance in agricultural extension in 12 Latin American countries with 30 years of effort and $30 million of U.S. expenditures. It concluded with negative answers on the attainment of the primary goals: building and leaving behind viable extension institutions and increasing agricultural production. Chief among the defects singled out was the excessive institutionalization of extension (putting it in a separate *servicio* with inadequate linkages to other institutions and services). Likewise, with inadequate research outputs, the type of extension transferred was too long on methods and too short on content, too purist about a strictly educational role, and too afraid of authority and "manipulative techniques."

The litany of defects nevertheless ends on a constructive note. Some residual, particularly non-economic, benefits are acknowledged, including favorable results with youth and women and an enduring *image* more favorable than concrete benefits justified. The author recognizes the extension function in technology transfer as essential. It simply must be improved. That means integration with the whole development process and more emphasis on overall impact than on separate identity.

When taken not as an indictment of a whole system (on the author's own terms, with his definitions and criteria) but as many insights into the operation of particular practices under particular conditions, this in-house study is still useful. The negative side, however, has been emphasized beyond both intent and merit.



Around the World

Up-from-Under Schools

When a rural community recognizes its need for educational help, the Palawan National Agricultural College, in the westernmost province of the Philippines, will help organize a Bayanihan School. By catering to underprivileged and out-of-school youth, schools of this type have "successfully integrated certain elements into an unusual secondary education-cum-extension program." The first two years emphasize practical agriculture, aimed at earning enough for student self-support in the last two years. The first phase may be completed flexibly, in a year and a half to four years, using part of the parental farm as a "laboratory," while the second period is graded and formal as a college-preparatory phase.

The "Bayanihan spirit," or cooperation for the good of all, is a key feature, as evidenced by community-provided land and a community-built classroom (with teacher hut) made of community-produced materials. A technology-transfer function is emphasized, with student projects as demonstrations for the community, the resident teacher as adviser and information source, and the technology materials as appropriate to Palawan. Cost-benefit studies show a fourfold return, plus greater social stability and the instilling of life-long values and attitudes for community improvement.—*from Madeline B. Quiamco, The PCARRD Monitor, January, 1985.*

Research-Extension Linkage in Bangladesh

Recognizing that research progress calls for an improved interface with extension, Bangladesh is providing remedies. Now that the Bangladesh Agricultural Research Council has relevant knowledge and technology to extend, extension is being harnessed for two-way communication to help both farmer and researcher. The Extension and Research Project, operating in the northwest region for four years, has shown the merit of a research-extension partnership rather than parallelism. This has resulted in the localization of recommendations based on agro-ecological conditions and improved competence of research and extension personnel through joint or integrated activities.—*from Agricultural Development Information Bulletin, December, 1984.*

"Through Farmers' Eyes" in Nepal

A stunningly colorful booklet with this title tells the story of a mountain village in Nepal, where cropping systems research has brought research and extension together for the "stern challenge" of Nepal's "elaborate agrarian tapestry." The central idea is collaboration in "finding out what farmers do and why they do it, and systematically applying that knowledge to test solutions to farmer's problems." Field trials test the worth of the technology and compatibility with the farmers' situation. Strengths and weaknesses are fed back to the experiment stations and on to the production programs.

Technology is the key: to produce it and to spread its use—to meld the farmer's unique understanding and the researcher's insights about options. Details, with results and prospects, are given in the 30 pages issued last year by the Integrated Cereals Project, Department of Agriculture, Katmandu, aided by the U.S. Agency for International Development under contract with the International Agricultural Development Service.

International Extension Association Proposed

Establishment of a new international extension organization was discussed and formally recommended at the Reading rural extension conference, held September 15–21, 1985. Building on European beginnings in 1984 under the acronym AREX (Advancement of Rural Extension based at Wageningen, The Netherlands), the conferees laid plans for further study of feasibility and financing. The central object is to foster worldwide cooperation and exchanges among professionals engaged in extension service.

Demonstrations vs. Deforestation

To "curb total disappearance of our forests," the Botswana Ministry of Agriculture's Forestry Unit has declared February 9 of each year the "National Tree Planting Day." Tree planting demonstrations are held throughout Botswana at clinics, schools, or in badly eroded areas.—*Mogotsi Matebesi, Agrinews, Botswana.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

More Courses Planned

INTERPAKS Director John L. Woods has announced plans to expand course offerings both at home and abroad. Because of the growing interest shown in two years of experience with the short course for senior-level extension administrators, plans are being made to offer the course twice a year hereafter, with special versions available overseas. The next campus offering of this extension operations and management course will be in June, 1986. Those interested in receiving more details as they develop should write to INTERPAKS. Other courses are under consideration in the subject areas of training of trainers, monitoring/evaluation, and agricultural communications.

Zambia-Malawi Joint Workshop

An INTERPAKS team composed of John L. Woods, John B. Claar, Earl D. Kellogg, and Sam Johnson III conducted a joint workshop in Kafue, Zambia, from October 28 through November 1 for seven participants from Malawi and ten from Zambia. The subject was research-extension linkages in farming systems programs. Funding was shared between the University's ZAMARE project and the University of Florida's Farming Systems Support Project, both aided by the U.S. Agency for International Development. Experience in this initial project will be used to design a workshop for replication elsewhere.

Director to Africa and Europe

In November, INTERPAKS Director John L. Woods visited Nairobi (World Bank and regional USAID offices) and Rome (Food and Agriculture Organization and the International Fund for Agricultural Development).

World Bank Participant

A World Bank representative known for his co-authorship of books on the Training and Visit System, Michael Baxter, recently visited INTERPAKS and participated in the instruction of the short course for international extension managers. Baxter is Senior Rural Development Officer, Western Africa Regional Office, Washington, D.C.

Joint Program in Mexico

Burton E. Swanson, Professor of Agricultural Education and Associate Director of INTERPAKS, was in Mexico October 10-11 in connection with a joint academic program of the University of Illinois and the International Maize and Wheat Improvement Center (CIMMYT). Under Swanson's supervision, Robert Raab of the CIMMYT wheat training staff is pursuing a doctoral degree, combining residence on the Illinois campus and work-connected research in Mexico.

Short Course Draws Administrators

The second annual INTERPAKS short course for extension administrators, held from September 15 to October 18 in Urbana-Champaign, drew twelve participants from Sri Lanka, India, Pakistan, Cameroon, Sierra Leone, and Zambia. They included a national extension director, top ministry of agriculture officers, several subject-matter specialists, and a professor of agricultural science.

Kellogg to Join CID

On December 1, Earl D. Kellogg, Associate Director of the Office of International Agriculture, Professor of Agricultural Economics, and an INTERPAKS Committee member, will become the Associate Executive Director of the Consortium for International Development (CID). The organization is headquartered in Tucson, Arizona.

Representation at Reading

INTERPAKS was represented at the international extension conference at Reading, England, in September by its Director and Associate Director, John L. Woods and Burton E. Swanson.

Malawi Case Write-Up

The six members of the INTERPAKS team, back from a month's work in Malawi, are now writing a report of this first of several case studies on national systems of knowledge/technology transfer. The team was impressed by the cooperation received and by the organization and operation of the Malawi service.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign March, 1986/Vol. 3, No. 1

Agricultural Change: Mid-America 1841–51

"Technology transfer" is a fancy name for an ancient process. Even the concept of "agricultural knowledge systems" is not wholly new. Starting in 1841 in Chicago (whose population was then 7,000), *The Prairie Farmer* began consciously aiding agricultural development by disseminating relevant knowledge, old and new; describing (indeed picturing) new farm machines; urging the adoption of new practices; and promoting education, particularly for "Western agriculture, horticulture, (and) mechanics."

After passage of the first decade, the January issue of 1851 took a retrospective view—one with illumination for development devotees even in 1986. What had happened in 10 years? The "great discovery" of lamp oil made from the lard of swine "meant death to the whale fishery, spermacitti and all," bringing joy to the "fat corn growing lands of the west," which would produce "boundless acres of swine." Harvesting wheat by the cradle was supposed to endure forever, yet now the reaper had just taken over. The new electric telegraph carried almost instant messages to the boondocks. "Ten years ago our prairies could not be plowed," but the new Illinois-invented steel moldboard plow had ended all complaint. In horticulture, inferior varieties had been succeeded by new fruit. As the problem of cutting grain had been solved, so now appeared "an implement for cutting grass by horse power."

Indeed, progress was so great ("the innovations so diffused," we would say today) that the editors begged relief from more detail and speculated on what the journal had itself contributed to improvements by "spreading them abroad" and "calling attention to the true principles." The conclusion was: "The mind of the country employed in agriculture will need help—the help which a mutual interchange of ideas affords—it will need the stimulus which reading imparts—it will need the caution and the discrimination which better opportunities for information on many topics enable the journal to give."

DEVOTED TO
WESTERN AGRICULTURE, HORTICULTURE, MECHANICS, AND EDUCATION.

Vol. XI. CHICAGO, JUNE, 1851. No. 6

Knowledge Transfer in 1851

Agricultural Institutions: Do They Need Changing?

by John L. Woods, Director of INTERPAKS

In most developing countries, many governmental units are involved in the agricultural development process, each addressing a specific assigned objective. These fragmented vertical structures have not necessarily led to increasing agricultural production or advancing socio-economic development in the rural area.

There is an old saying, "Farmers have problems, and universities/governments have departments . . . and the correlation is almost zero!" As a result of such fragmentation, there is growing recognition among government and donor officials that changes must be brought about in the agricultural bureaucracies before many development programs will have any major impact on farmers. This will require changing the organizational structure as well as operational procedures, incentives, management styles, policies, and work practices of the staff. It is not surprising that "insiders" are often reluctant to push for organizational change. However, it is surprising that donor projects, even when "institution

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

building" is the stated objective, frequently neglect the issue of organizational development and change.

Agricultural development is knowledge- and technology-based and depends on their successful application and use, which requires effective linkages among agricultural research, supply input, marketing, extension, and farmers and the organizations, both public and private, that represent them. This involves the working together of a very complex series of organizations presenting both horizontal and vertical interfaces.

There is an urgent need in the agriculture field to focus more attention on these relationships. In the private sector, where much of this type of work has been done, it is called "Organizational Development" or commonly "O.D." Unfortunately, almost no parallel work has yet been done with the public, technically-oriented development institutions, such as agriculture, health education, and family planning. O.D. is not to be confused with program planning coming out of adult/extension education, which focuses on training extension agents how to change the behavior of local institutions or individuals.

Capitalizing on what is now known and adapting O.D. techniques, a desirable first step would seem to be twofold: to recognize, perfect, and apply this new field of organizational development, and to infuse it into the training processes of universities and training institutes for retraining appropriate existing professionals; and secondly, to create a professional cadre who have, among other things, the skills to change organizational structure, policy, procedures, incentives, and work practices. The overall objectives would be:

1. To make agricultural development programs more effective, particularly in their problem-solving focus and their response to farmer needs.
2. To assure cost effectiveness, especially in the use of human capital, which is the largest recurring cost and the weakest link in most developing countries.
3. To institutionalize the change process within the agricultural system and its component institutions so that it is a constantly dynamic, interactive program to meet the current situation, whether general or unique, in terms of available technology, staff capability, farmer needs, and other impinging factors.

A central question is how to build in, or institutionalize, the change process. It would seem that first there is a need for a conscious determination to do it, then application of existing knowledge and skills, and finally, still more systematic research on O.D. processes in the agricultural sector. If space had permitted, we would had included here several specific questions that might be posed as a kind of checklist to help development decision-makers in introducing specific changes into their organizations. This was done recently in a workshop on "Agricultural Research-Extension-Farmer Linkages," presented in Zambia to stimulate discussion among participants from Malawi and Zambia involved in the management of agricultural institutions.*

The purpose of this article is to introduce an idea that will stimulate further dialogue. The central proposition that calls for further attention is the establishment of a discipline of organizational development/change for public agricultural institutions. Unfortunately, its importance is still not recognized by most people involved in agricultural development. If agriculture programs in developing countries are to move forward, both donors and government officials must begin to recognize that changes in institutional structure, procedures, and work practices must take place. This will have to be combined with policy making, overall management, and the human resource development process.

There is an urgent need for research and practical testing on this process so that training programs can be developed for people working for donor agencies and government institutions. The long-term success of agricultural development will rely on strengthening the management ability and institutionalizing the organizational change process so that agricultural development programs constantly evolve to respond to the current relevant needs of farmers and consumers.

What are your reactions, comments and suggestions? Are there examples of O.D. work we can share with others?

**A paper further developing this theme will soon be available from INTERPAKS.*

Essential Ingredients For Effective Extension

Rural development personnel in the World Bank are in a strategic position to survey and draw lessons from the whole world mosaic of the various kinds of extension systems. While the Bank has put huge resources into promotion of the Training and Visit System, it has also at some time supported all other major approaches. Looking over the whole experience, John F. A. Russell, Rainfed Crops Adviser to the Bank, concludes that no one methodology has a monopoly of merits but "rather that the strengths of different approaches should be recognized, and facilitate cross fertilization between systems."* His paper ranges over all the systems and winnows out what he calls "essential ingredients" for *any* effective system.

He begins with four systems to illustrate the spectrum of key methods: the commodity-focused approach (aimed at a single crop, usually with management by a parastatal board); the technical innovation-centered approach (the classical system of most African ministries of agriculture: essentially top-down, promoting separate technical innovations from *outside* the farm); the T & V System (on-farm diagnosis, programs for key impact points, regular visits to defined groups, and a continuous training schedule); and the "groupement villageoise" approach (participatory method involving the whole

village in continuous dialogue, self-analysis, and self-programming in interaction with extension specialists). Experience with all these methods, however different, shows that none can be effective unless certain ingredients are present.

What are these "basic principles that need to be respected" for improved extension performance? First, management must be improved for "more effective farmer coverage." The T & V System has put a premium on this emphasis, with improved messages on systematic delivery to select farmer groups, subject-matter specialists and field staff trained together, a single line of command, and staff incentives.

Second, an integrated approach should be taken to service delivery — to the input supply of seeds, fertilizer, and chemicals. While there is controversy about how involved the field-level worker should be, "he needs to be able to advise the farmer on his source of inputs from whatever source." The commodity-focused method often best illustrates the integration of both input and output (market) arrangements.

Third, extension messages must be made relevant to farmers' needs. Farming systems research is addressing this issue, with multidisciplinary research/extension teams giving a needed data base. Thus, not only are relevant problems identified but feedback is assured, and research-extension-farmer participation replaces the top-down danger.

Fourth, systematic means must be found for monitoring and evaluating the extension impact. There must be both analytical and remedial follow-up on adoption rates, on adaptive trials done by research and extension staff, and on reports from diagnostic surveys done by research/extension visits to farmers during the season.

Fifth, recurrent costs must be provided to match the intensity and coverage of the system. The author writes: "The first hurdle many African countries have to overcome is to counter the rundown of their extension services, which is happening through limitation of budget allocations to salaries with little or no provision of funds to enable staff to be operationally effective. As a rule of thumb, usually no more than 65–75% of the recurrent budget should be spent on salaries, the balance being available to ensure mobility, appropriate incentive field allowances and the necessary funds for trials, visual aids, etc." Some cost savings can come from more channeling of services and training to and through groups rather than individuals, and the supplemental use of other media, including radio, for example.

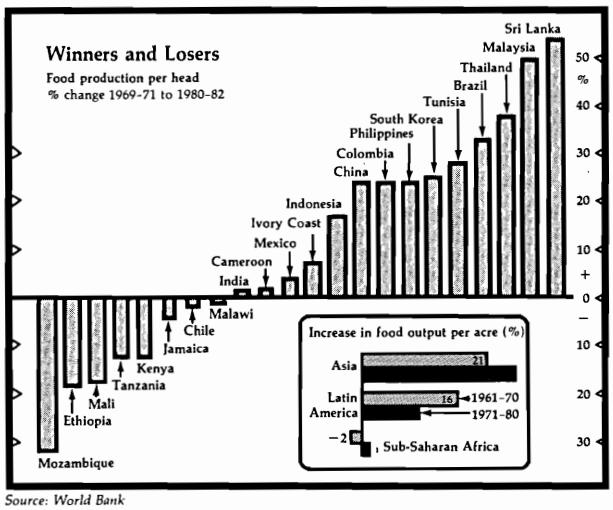
Finally, there is need for stronger farmer participation, both men and women. The farmer adopts or refuses all new technology, supplementing research by fine-tuning all recommendations to fit perceived needs and supplementing extension by advising interested neighbors. "All farmers' fields can be demonstrations of how or how not to grow a particular crop." The author then concludes: "So extension and research programs have to be designed *with* farmers, not *for* them, if we are to be certain they are relevant to their needs. . . . To disregard the farmer is to guarantee that research and extension activity will be irrelevant . . ."

*"Essential Ingredients of an Effective Extension Service and Some Issues Arising from World Bank Experience in Sub-Saharan Africa," presented to Zimbabwe's Annual Project Review Conference, May, 1985.

"In Praise of Peasants"

Under the above title, *The Economist*, February 2, 1985, explores how growing economies in the developing world distribute their gains between country workers and city workers. The article and accompanying chart derived from World Bank sources combine to make the following compelling points:

1. Inattention to agriculture, and over-attention to industrial development, is and has been an unwise, counterproductive policy.
2. As countries become richer, agriculture's contribution to the GNP decreases; however, as farmers become richer, the market for industrial goods increases markedly, tightly linking rural and urban parts.
3. In per-capita food production, Asia has dramatically outstripped Africa, resulting in an intercontinental shift in the threat of famine over the past 15 years.
4. Compared to the bigger farmers, the smaller ones put more labor into their soil, with higher productivity per acre. All farmers, however, respond favorably and productively to freedom from restraints in their decision-making.



Source: World Bank

Why Not Photo-Copy?

INTERPAKS INTERCHANGE would welcome photo-copying for circulation to a wider readership, beyond the current mailing list, as is now done in some offices.

Education Key in Activating "Portfolio of Production"

The time has arrived for hard data on the economics of extension. What exists is summarized and analyzed by Professor Robert E. Evenson, Economic Growth Center, Yale University, in "The Economics of Extension" presented at the Reading, U.K., conference in September, 1985 with extensive statistical documentation.

Of the three classes of economic studies, most attention has been given the impact of extension, less has been given investment determinants in extension, and little has gone to Evenson's primary interest: the efficiency with which extension resources are utilized. What can be derived from the existing literature on national and international investment in agricultural research and extension?

In the two decades after 1959, low-income and middle-income developing countries moved from spending twice as much on extension as on research, relative to the domestic value of agricultural product, to spending roughly equal amounts. That is, while extension showed little or no growth, research expenditures bounded ahead. During the same period, manpower intensities in extension (manpower in relation to GDP) began as five to seven times greater in developing countries than in the industrialized ones. They then moved to even greater differences as intensities declined slightly in the industrialized countries.

What motivated this startling difference between developing and developed countries in spending on extension manpower relative to research (that is, expenditure per extension worker compared to research worker)? Counting salaries and related costs, like those for laboratories and technicians, the "ratio of research costs to extension costs is as much as 20 to 1 for the low-income developing countries and only 3 to 1 or so for the industrialized countries." This reflects a fundamental point: a quality difference based on training of personnel, where extension workers have little training in low-income countries and advanced training in the industrialized nations. Therefore, "governments do respond to low prices for extension workers by hiring more extension workers relative to research workers"; and the result is "devised ways to build extension systems that can utilize the untrained and unskilled field worker."

What are the economic consequences, or impact, of extension investments? Data presented show positive impact on productivity, although "extension is less productive the more schooling farmers have" ("schooling and extension are substitutes"); and "one cannot justify extension program spending of much over 1 to 1½ percent of the value of the agricultural product." That is, it simply will not pay the added costs. Extension also "has a positive impact on farm and non-farm incomes" and has "increased the value of land and, over long periods, increased farm size."

While all this has direct implications for the design and management of extension systems, it lacks direct application because productivity depends on a range of factors, particularly the availability of technology. This points to the desirability of "a productivity-improvement program that includes several components." Such a "portfolio" would include investments in market improvement, technology absorption (extension services), farming systems research, applied agricultural research, and "pre-technology science" aimed at "invention enhancement."

These important components have several characteristics, including great hierarchical interdependence (e.g., extension is dependent on "upstream" components of the portfolio such as the backlog of technology available) and need for access to required skills levels for each component through each country's training capacity. Therefore, education and human resource development become key factors at all levels of the portfolio of production.

This leads the author to conclude: "A field staff lacking in basic scientific training can mechanically deliver messages but cannot provide in-depth advice and modify recommendations to meet local conditions. If the message-givers (the subject-matter specialists) have only a weak undergraduate background, they are not likely to be providing current research-based messages. Without a minimum level of training, even a well-organized extension system may not be able to complement a research system. It is pretty clear from many studies that most extension systems (and productivity programs generally in developing countries) have a great deal of room for improvement."

Who Makes it "Appropriate"?

Farmers make many things, including disappointed reformers. Why do farmers sometimes not change production methods even when offered appropriate technology? P. E. Hildebrand answers in *Agricultural Administration*, Vol. 8, 1980: "If it is agreed that small farmers are efficient in the allocation of their resources to known and appropriate traditional technologies, it means they have been motivated in the past to accept change. Hence, the problem is not one of motivation, as such. Rather, it is one of offering 'changes' which are *not appropriate as perceived by the farmers themselves*. It makes no difference to a farmer how a third person views any specific technology. If he, himself, does not feel it to be appropriate, he is not going to be motivated to accept it."

Circumlocutionary Clarity

"Economics is what economists do."
"News is that which the editor chooses to print."
"A 'system' is what an experienced field worker says it is."—*Professor N.W. Simmonds, Edinburgh.*

Since "no single definition of the concept was found . . . projects reviewed in this summary were selected because they were so entitled."—*U.S. Agency for International Development.*

Pig-in-a-Poke Packages: Handle with Great Care

Some packages are to be opened carefully. Those of the agricultural technology kind are at least not to be adopted uncritically, as a "pig in a poke." That conclusion can be derived from interdisciplinary on-farm research in the Andes highlands, conducted by the International Potato Center in collaboration with the Peruvian Ministry of Agriculture and the International Maize and Wheat Improvement Center.* Put to test was the widely held notion that developmental farming innovation calls for the adoption of complex technological packages.

Trials with low-cost, medium-cost, and high-cost packages including "recommended seed, fertilization, and insect control measures," designed jointly by researchers and extensionists, showed three problems. (1) Results were disappointing and varied greatly: the highest yield increase was 50 percent for the high-cost package instead of the double or triple increase expected; and the low-cost package showed no gain over what the farmers were already doing. A range of packages was suggested as preferable. (2) Single-factor trials, which were also used, showed that the use of improved seed alone "actually reduced net returns." (3) Farmers did not adopt the complete packages, as surveys showed two years later. They did adopt some of the components, but even then, without adaptation to specific needs and resources.

The research also suggested great caution in assuming that existing and tested technology has only to be applied by "transfer." First, such tested technology was found to be in short supply; and, second, farmers showed "creative adaptations" as "researchers and developers in their own right," rather than acting as passive recipients. Conclusion: farmers should be involved from the outset.

*Douglas E. Horton, **Social Scientists in Agricultural Research: Lessons from the Mantaro Valley Projects, Peru** (International Development Research Centre: Ottawa, Canada, 1984); and *Farming Systems Support Project Newsletter*, Third Quarter, 1985.

A Seed is a Seed is a Seed

What is "improved seed?" It is not so simple; in fact, there is more than one meaning, depending on the specialization of the respondent. To the plant pathologist, it means disease-free. To the physiologist, it means high-yielding. To the economist, it means increased net return. So learned the on-farm researchers in the Andes (see article elsewhere in this issue of *INTERPAKS INTERCHANGE*), who logically concluded that specialization impeded communication.

INTERPAKS

Expanded Courses Cover Management and Training

INTERPAKS will provide three course offerings in 1986 for professional personnel engaged, or planning to be engaged, in agricultural extension and research programs—two five-week sessions of a course previously given and a new four-week course.

Building on successful experience in the last two years, John B. Claar will again conduct "Organization and Management of Agricultural Extension Services: A New Look at Knowledge Transfer," June 16 through July 17 and September 15 through October 17. He will draw both upon collaborating University of Illinois staff and his own extensive experience as director of the Illinois Cooperative Extension Service and Associate Vice-President for Public Service. The course will aim at present and intended extension administrators or teachers of extension or administration, recognizing that management of extension services has its special, even unique, challenges often neglected even by those officers responsible for training everybody else.

The fee is U.S. $2,900 to cover training costs, health services, transportation during the course, and instructional materials, but not international travel or living expenses. The latter are estimated at U.S. $1,750 for the June course and $2,100 for the September course (reflecting increased housing costs).

A new four-week course will address the question, "What is the best way to train those who have professional responsibility for training others?" "Training of Trainers for Agriculture and Rural Development" is aimed at training directors in extension and research organizations, principals and trainers in extension training institutes, and teachers of adult or extension education. It will be offered June 16 through July 11, conducted by widely experienced members of the University staff under the leadership of V. M. Malone, Professor and State Leader, Extension Education, who has had extensive domestic and international experience. Alternating theory and practice, the course will capitalize on the student's past experience and future home needs and will allow individual or small-group work with selected University faculty members.

The fee is U.S. $2,500 to cover training costs, health services, transportation during the course, and instructional materials. International travel and living expenses are not included, the latter estimated at $1,400.

In the absence of INTERPAKS scholarships, sponsors for enrollees in the past have included employers, governments, and international agencies such as the World Bank, IFAD, regional development banks, FAO, UNDP, USAID, and foundations. For reservations, write **Director John L. Woods, INTERPAKS, University of Illinois at Urbana-Champaign, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, U.S.A. (Telex: 206957).**

Government in Development: Help or Hindrance?

What people should do collectively, through government, and individually, by themselves, is a subject for debate in any country. Since government is a human convention invoked when isolated individual effort seems less conducive to some desired end, it waxes and wanes (with politicians "whomping it up" for one or the other), although the historical net effect has been more waxing than waning. That net effect is apparent in agricultural development—in all countries, but especially in the developing ones. Government and its policies have become crucial and ever-present. That applies to any country, under any government, but it varies drastically, depending on the philosophy and role of government. The spectrum between the poles can run from laissez-faire to complete state control and central planning—from the non-existent classical economic ideal, through the Keynesian-influenced governments in America and Europe, to the all-encompassing states of the USSR and the People's Republic of China.

In most countries, the extremes do not prevail, but something in between does, something less marked or something consciously mixed and accidentally muddled. But the drastic differences of the extremes and their impact serve to remind us of the reality and potency of governments, whatever the mix. In every country nowadays, the government is some kind of a partner—some kind of shaping, determining, difference-making force—in agricultural development. Expression comes in two forms: the general philosophy and the specific policy—the pervading philosophy that bathes all human relations in the country; and the specific policies that relate to matters like prices, rural migration, land tenure, or research and extension organization.

Yet, all this may obscure more than it clarifies. The universality of a governmental role does not mean the same in all places—*a* role is quite different from *what* role. While government is involved in both, technology transfer by commune in China and by county extension in the U.S. are quite different. Much depends on the starting point (e.g., whether there is a pre-existing private sector) and on the need for mobilizing limited resources, like capital and trained manpower.

On all these matters, Michael P. Todaro has made some relevant conclusions from his study of economic development.* He writes, "But, whether one likes it or not, Third World governments must inevitably bear a greater responsibility for the future well-being of their countries than do those in the more developed nations." By "governments," he means "the public sector, whether centralized or decentralized, whether jointly with private enterprise or on its own."

Is this all bad, in view of the fact that "policies are ultimately made, not by economists or planners, but by politicians"; and that the "almost mystical belief in the efficacy and benefits of central planning in comparison to market forces has not been validated in Third World experience?" No, there is hope that some lessons have been learned. We should "avoid the cynical view that the 'social' interest, and especially the interest of the poor, the weak and the inarticulate, will never be considered short of revolution. . . . Although narrow elitist interests have tended to prevail in the past, the groundswell for a more egalitarian development process has now reached the point where politicians and planners can no longer ignore it or camouflage it behind noble but empty rhetoric."

*Economic Development in the Third World, 1977, pp. 384–386.

FAO Regionals Face Issues

FAO'S alternate year conferences were held in 1984 in all five regions. The Near East conference heard that the region has enough colleges to meet the high-level manpower needs in agriculture, although more practical field work needs to be included in the training. Also, inadequacies exist in the number of extension workers and in their technical capacities. The Asia and the Pacific conference recommended "learning from farmers" in rural development and approved concentration on the region's renewable energy sources (fuelwood, biogas, and animal power).

The African conference approved the Harare Declaration, giving high priority to agricultural development and recognizing that it "rests substantially on the efforts of our own government and peoples." The Latin American conference urged FAO to develop guidelines to aid countries in formulating national agricultural pricing policies, which are particularly troublesome in nations with contrasting large-scale and small-scale farmers. The European conference centered on agricultural policies, the protection of European forest resources, and the need for more female participation in rural development.—*FAO's World Report, 1985.*

Home Talent for Site-Specific Work

"Applied research in agricultural and the food sciences is highly site-specific. Profound differences in physical, cultural, and economic environments from country to country and region to region have a substantial effect on the productivity of the food supply system. Perhaps more than for any other area of science and technology, progress in the food and agricultural sciences requires indigenous scientists to adapt and apply solutions found elsewhere to their local needs, for those technologies cannot be transferred directly." — *Agricultural Information Development Bulletin*, June, 1984.

On Rereading Reading

The so-called "Reading Conference" in September, 1985 presented four major papers on the general theme, "Investing in Rural Extension." Three members of the Agricultural Extension and Rural Development Centre—Maurice J. Rolls, Gwyn E. Jones, and Chris Garforth—opened the conference by outlining some common assumptions and precepts that ought to be discussed.

After calling attention to the evolution of the broader term "rural extension," rather than merely "agricultural," they dealt with four "often-unstated assumptions" which are open to question and further analysis: "The first of these is that the provision of new technical information in itself enables rural people to improve their productivity, health or other aspects of their lives; the second, that technological innovations should properly originate from institutionalized scientific research; the third, that knowledge created by research and propagated by extension services is necessarily superior to the knowledge already available to and used by rural people; and finally, that the calculus of improvement in the lives of individual members of society inevitably produces an overall net gain in social well-being."

After exploring the vulnerability of such assumptions, the speakers asked the conference to look at the new dimensions: a broader scope for extension workers; a more open system for using "clients' in solving their own problems; new roles for media and information technology; "obvious implications for the training of extension workers"; the management factors involving policy and personnel; and much else of the "people" and "quality" dimensions that need attention along with the more elusive, if more measurable, matter of costs.

In the first of three theme lectures to follow, A. H. Bunting of AERDC, covering technical change, pointed out that many factors in rural development other than extension may determine perceptions of extension's success or failure. The pre-existing capacity and knowledge of producers are extremely important; hence, a producer-led system is seen as more productive.

Indeed, "change can occur using the existing knowledge of producers, without benefit of research, education or extension" if the following factors are favorable: government policy and practice; volume of effective demand for more production; the output delivery system or infrastructure; resources for additional production (land, water, credit, etc.); and technical methods for increasing output. The last, involving extension, is dependent on the first four, which create the "market for knowledge services." However, extension is far more than the transmission of messages, even if two-way between top and bottom. It has "a complex and intellectually attractive and rewarding task."

In the second theme lecture, Niels Röling of the Agricultural University in the Netherlands, discussed human resource development as "the other tradition in extension education," thus moving the conference from the traditional emphasis on technology to the need for more attention to the human factors.

The two traditions, each with its merits, often work in opposition rather than in mutual reinforcement or for mutual correction. Lacking the "hard criteria of efficiency" in human resource matters, we let science and technology set our values and "become deterministic of our futures." "Many HRD (human resource development) goals such as equity, emancipation, or participation are not politically neutral, in that they seek to affect the distribution of power and resources. Where TI (technical innovation) is political in its consequences, HRD is often political in its intentions."

What is needed in planned social change is a combination of "changing people and changing tasks," since TI and HRD in extension are "aspects of the same thing." The single-minded focus on TI has caused extension to abrogate its responsibility and to focus on the wrong agenda in many agricultural situations (e.g., neglecting the forced migration to cities, food surpluses among producers facing undernourishment among consumers, or growth without regard to ecological damage).

Röling then indicates seven major areas in which "the costs of TI can be redressed" by HRD approaches. In conclusion, he says: "I believe we as extension scientists, who know and can see the problems with TI, have a responsibility to use our professionalism to seek change and support for a more balanced mix of TI and HRD."

In the concluding theme lecture, the hard data presented by Robert E. Evenson of Yale University, U.S., seemed also to support the need for more attention to the education and human resource component. That lecture is summarized elsewhere in this issue of *INTERPAKS INTERCHANGE.*

North American Alert

"North American social sciences have been preoccupied with stable systems and particularly with organizations. This, I think, accounts for part of their inability to grasp phenomena that take place outside established structures like the military, bureaucracies, and the ruling party. This has imposed serious limits on the ability of the social scientists to anticipate events—they have been looking in the wrong places for significant historical actors to emerge.

"Another need of social science in the North is a greater recognition of the importance not of exporting models but discovering what the rest of the world has to offer by way of a model, that is, to accept the validity of reciprocity." —*Soedjatmoke, Rector, UN University, Development Forum, October, 1984.*

Decentralized Chinese System Of "3-in-1" County Extension

A country that now feeds and clothes one billion people from the intensive cultivation of a tenth of its land, on which 80 percent of the population live, must have learned much in its centuries of survival and in its radical experiments with change. The new face of agricultural China presents a "responsibility system" (covered in the March, 1985 issue of *INTERPAKS INTERCHANGE*), with priority given to extension services as a change from the commune system. Governmental units at different levels come into play (e.g., counties and townships) and become the structure for organizing extension services down to the peasant level. As a top official said, the guiding principle now is "relying first on policies and second on sciences."

The center of gravity in the extension system is at the county level.* Each county has or will eventually have a network consisting of a "3-in-1" Agro-Technological Extension Center and Agro-Technological Service Stations in both townships and villages, plus Demonstration Households who help other peasants in the proper application of recommended practices. In 1983, 300 County Centers existed, with 4,500 extension service stations and specialized demonstration stations. The other 2,000 counties will follow in the next decade.

The "3-in-1" refers to the three functions of experimentation, training, and extension, with "experimentation" surprisingly extended to adaptive research, on-farm testing, and technical input for farmers. "Extension" includes the services of subject-matter specialists to the local extension workers.

Above this county organization are provincial and national structures, chiefly of a coordinating and supporting type. The Ministry of Agriculture, Animal Husbandry, and Fishery created the National Agro-Technological Extension Center two years ago. It has an organization and management division and three divisions for different general crop types (cereals, cash, and sugar or oil-bearing). A national information exchange center in Beijing is planned for the future. At the provincial level, a division of the Provincial Bureau of Agriculture coordinates the work of the county services.

Are there problems? Much is obviously yet to be done. What has been done is heavily concentrated in cereal food-grain production. While the provincial agricultural apparatus quite consciously works to link with the Provincial Academy of Agriculture and its research stations at the prefectural level, the impression is left that the research-extension linkage needs to be stronger, as does the use of the provincial colleges of agriculture.

The seriousness of the drive to improve is shown by China's seeking financial and technical assistance from such outside sources as FAO, the World Bank, and UNDP. For example, FAO is assisting in the development of two county centers as models for replication elsewhere and has made recommendations on seed improvement, plant protection, farm management/production economics, field trials and demonstrations, fertilizer requirements, and research inputs for extension services. The thrust of the recommendations will move to a broader approach than the "agro-technician," with extension workers who also organize, mobilize, and expedite.

*Factual information is derived from Steve S.T. Yen, "General Aspects of Agricultural Extension Programs in China," *Proceedings on Agriculture in China*, Volume 1, Institute of International Development and Education in Agriculture and Life Sciences: Beltsville, Maryland, 1985.

Clarifying the Kibbutz

The last issue carried a summary of what *The Economist* wrote about "Down on the Kibbutz." *INTERPAKS INTERCHANGE* welcomes the following clarifying reaction from an authoritative source, Abraham Blum, Chair in Agricultural Extension, The Hebrew University of Jerusalem:

"The Kibbutz is not an Utopia, as *The Economist* describes it. Otherwise it would not have reached its fourth generation. Unlike some other communal forms which quickly disappeared, the Kibbutz has succeeded to adapt to changing situations. When agricultural development was the primary task of the time, the Kibbutzim were leading in the field. They still produce most of Israel's agricultural output. Like many Western countries, Israel today faces a problem of agricultural overproduction. What wonder, then, that the Kibbutz went the only possible way to survival: industrialization.

"The excerpt in *INTERPAKS INTERCHANGE* (or in *The Economist*—I did not read the original article) does not mention that much of the industrial income of the Kibbutz comes from processing agricultural produce, thus leaving more of the income from agricultural sources in the rural sector, and from manufacturing agricultural inputs like irrigation equipment. The Kibbutz believed and still believes in egalitarian principles, but not in a monastic ideal of poverty. When the standard of living rose in the country, so did that of the Kibbutz. When economic difficulties set in, the Kibbutz was the first to cut back its standard of life.

"The Kibbutz never was, nor will be, a mass movement. Just because it keeps its egalitarian principles, but adapts to changing situations, it survived other forms of communal settlement. It still attracts many young people from the world over who want to experience this unique form of living for some time. To call them 'foreign labor' is showing a lack of understanding of the situation."

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Helpful Ideas: Old and New

Norman T. Uphoff, editor, **Rural Development & Local Organization in Asia.** 3 Vols., Macmillan India Limited: Delhi, 1982 (Vol. 1, 549 pages; Vol. 2, 393 pages; Vol. 3, 399 pages).

This is a significant contribution to rural development literature. By case analysis, it shifts attention from technology to institutions in affecting change in 16 countries over a 20-year period. The criteria for change are agricultural productivity *and* welfare—"absolute, relative, and comprehensive increases" in the former and "various measures and indicators" in the latter. Coverage includes South Asia, East Asia, and Southeast Asia, with a volume for each.

The reported analyses compared the "more organized" countries and the "less organized," with significant conclusions. The former stood ahead in agricultural production, technological innovation, rural welfare (nutrition, health and education), rural security (access to justice and protection from disasters and violence), employment, rural participation, and equity of income (degree of equality). The authors concluded: "(W)e found there was a strong empirical basis for concluding that local organization is a necessary if not sufficient condition for accelerated rural development . . ."

H. N. Houerou, editor, **Browse in Africa: The Current State of Knowledge,** International Livestock Centre for Africa: Addis Ababa, Ethiopia, 1980 (491 pages).

Through the wonders of language, man and cow have much in common. Not least of all, they "browse." The distinction is not merely between "in the library" and "on the range," but also between verb and noun. The cow has both; so this book deals with the noun meaning *trees and shrubs on which livestock feed,* especially in arid or semi-arid areas. Based chiefly on papers presented to an international symposium in 1980, this compilation serves two general purposes beyond its largely specialized information: it summarizes the current state of knowledge as never done before; and it gives conclusions and recommendations affecting 60 percent of the production of rangelands, where "the role of browse is inversely proportional to the amount of rainfall." Among the conclusions: research should develop management models for pastoral ecosystems responsive to new technology/knowledge; and more emphasis should be put on curricula and training to implement such models, thus improving pastoral life and conserving resources.

Hubert Zandstra, Kenneth Swanberg, Carlos Zulberti, and Barry Nestel, **CAQUEZA: Living Rural Development.** International Development Research Centre: Ottawa, 1979 (321 pages).

With some indebtedness to and departures from the Comilla and Puebla projects, the five-year Caqueza project in Colombia attempted to improve the lot of small farmers by working from the bottom up, on real needs and constraints rather than on outside authority. This book gives attention to the work of the bridging mechanism (agricultural technicians) between the small farmers and the politicians and planners. The project approach was broader than the customary agronomic one, introduced an on-farm research emphasis, and took into account the non-technological factors influencing adoption rates for innovations.

Besides leaving this methodological heritage in Colombia, the project made significant impact on the national government's country-wide, five-year integrated rural development program, greatly upgraded staff education in the research and extension arm of the Ministry of Agriculture, and left behind the important new National Training Program for Rural Development.

Guiding Principles for the Design and Use of Monitoring and Evaluation in Rural Development Projects and Programmes. United Nations ACC Task Force on Rural Development Panel on Monitoring and Evaluation: Rome, 1984 (76 pages).

The title is self-explanatory as to purpose and users. "Monitoring is seen as a feedback system for problem-solving during project and programme implementation; evaluation as ascertaining that rural development projects and programmes attain their objectives, including that of benefiting the poor and the disadvantaged." Available through the panel convenor, the International Fund for Agricultural Development, Via del Serafico 107, 00142 Rome, Italy.

Susan E. MacKay, **Field Glossary of Agricultural Terms in French and English.** Purdue University: West Lafayette, Indiana, 1985 (180 pages).

Done in response to the recognized need for a practical and technical vocabulary of agriculture, particularly in West Africa, this pocket-size glossary will be valuable for those working in a French-speaking setting. It contains 6,000 entries in French-English and English-French.

Dudung Abdul Adjid, **BIMAS Programme: Rice Technology Transfer in Indonesia.** Food and Agriculture Organization: Rome, 1985 (47 pages).

In concise language, this short booklet gives insight into a system too little known around the world: the BIMAS program, combining agricultural extension for technology adoption with supply inputs and credit packages as a breakthrough for increasing rice production in Indonesia, particularly among small farmers. Implementation components of the integrated system are usefully described, including extension. After 10 years, 70 percent of the farmers have adopted the recommended technology, with production 47 percent higher than non-participating farms and income from 20 to 25 percent higher. BIMAS success has depended on the coordination it has brought about among the institutions at the village level.

Iftikhar Ahmed, editor, **Technology and Rural Women: Conceptual and Empirical Issues.** George Allen and Unwin: London, 1985 (383 pages).

While this study, prepared for the International Labor Office, intends to advance both theory and policy making, it is more helpful to the former than to the latter. The conclusions also contain suggestions for still further analytical and empirical studies. The authors, chiefly women representing the fields of economics, sociology, and engineering, move from conceptual framework, through Asian-African impact studies of technological change, to cross-national case studies from Africa.

Michael M. Cernea, John K. Coulter, and John F. A. Russell, editors, **Research-Extension-Farmer: A Two-Way Continuum for Agricultural Development.** The World Bank: Washington, D.C., 1985 (171 pages).

These timely papers address a critical problem, with many contributions from the direct experience of South and Southeast Asian representatives. The origin was the Denpasar, Indonesia, workshop sponsored in March, 1984 by the Bank and UNDP. The three editors begin with a cogent essay on "Some Current Issues." Each issue is then treated in a section, adding to the central theme that "technological know-how can best be incorporated into the agricultural production process if extension is used to build a *continuum* between research and its ultimate beneficiary, the farmer." For a collection of papers, the cohesion is remarkable, thanks partly to the editors' notes at the beginning of each section and Donald C. Pickering's overview at the end.

Peter Matlong, Ronald Cantrell, David King, and Michel Benoit-Cattin, editors, **Coming Full Circle: Farmers' Participation in the Development of Technology.** International Development Research Centre: Ottawa, 1984 (176 pages).

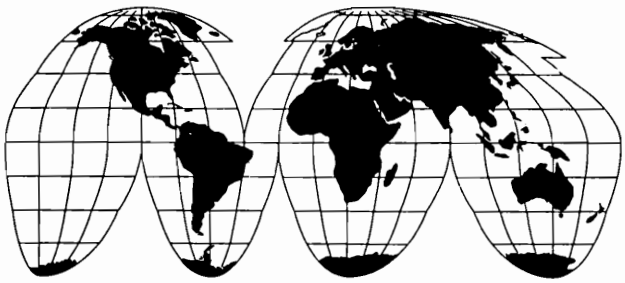
This small volume has a mission: to treat "what, when, and how farmers can contribute to the design and development of technology." It consists of papers and commentary presented by more than 50 farming system researchers who attended a conference in Ouagadougou, Upper Volta (Burkina Faso), in September, 1983. The conclusion speaks favorably of the "twin concepts of operational research and extension" and adds: "Researchers who are truly interested in improving the farmers' production must be willing to explore the social organization, attitudes, and production practices of the farmers; and agricultural scientists must be able at some stage not only to relinquish control of the testing but also to impart a sense of proprietorship and control to the farmers."

Report of an Expert Consultation on Education, Training and Extension for Shifting Cultivation in Developing Countries (Rome, December 12–16, 1983). Food and Agriculture Organization: Rome, 1984 (202 pages).

This expert-based report contains action recommendations designed to minimize the dangers and consequences of shifting cultivation, on which 250 million people are estimated to depend for their food. These are among the poorest of the poor. Recommendations cover policy action, involvement of the shifting cultivators, training of field and extension staff, needed areas of research, and the role of international organizations.

Robert F. Rich, editor, **The Knowledge Cycle.** Sage Publication: Beverly Hills and London, 1982 (222 pages).

Every practitioner of knowledge creation, diffusion, and use — or of parts or combinations thereof — should examine this book. If for no other reason, it will put it all into context — the outermost bounds and the innermost possibilities in which all work, historically and conceptually. If you profess to practice, then here is your needed theory. Here also is needed perspective and helpful insight. As one small example, have you thought about the significance and uses of the distinction among "data," "information," and "knowledge"?



Around the World

Audio-Visual Help in Nigeria

Media support linked to extension and training is a feature of rural development through the Kano State Agricultural and Rural Development Authority. The needed messages are first identified among technical personnel and then sent through the training department for information transfer via appropriate materials and media. Extension packages are communicated via radio, television, posters, transparencies, booklets, newsletters, and films. Presentation is aimed at the level of understanding of rural people. Both radio and television programs are shown weekly, often anticipating topics to be discussed between extension advisors and farmers. For the more remote rural areas, coverage is made by mobile vans equipped with public address systems, television sets, video cassette tapes and players, and portable generators.

The direct human touch is preserved by the presence of the area training assistant, who answers questions and carries back needs for new programs. The audio-visual unit also provides feedback through its recording of farming events, farmer interviews, and mass field day. Not least of the media uses in backstopping of the village extension advisors, who need both the latest information and the confidence of the farmers served—*Ruralscope, Ibadan, Nigeria, April–August, 1985.*

Old Channels for New Delivery

There are unexpected, and heretofore uninvited, agents of change via technology, even in such life-and-death matters as the fate of the four million children who die each year from diarrheal dehydration. Finding that 76 percent of the mothers in rural northeastern Brazil turn to the traditional healer as the first source of care, the U.S. Agency for International Development is studying how best to mobilize the traditional healers into the official health system and involve them in the promotion and use of the glucose-salt solutions in oral rehydration therapy. This procedure is estimated to have the potential for saving 70 percent of the lives at stake.—*Front Lines, USAID, November, 1985.*

Tell It to the Women

"An informal assessment of how smallholder and landless families in India allocate tasks related to food storage could provide extension workers with some fresh insights about the kind of approach likely to be most effective in disseminating information about how to reduce post-harvest losses. The survey, carried out in Tamil Nadu province by the Sri Avinashigam Home Science College, Coimbatore, under auspices of FAO's Programme for the Prevention of Food Losses, found that while men usually took charge of grain storage on the larger, better-off farms, on smaller subsistence holdings this responsibility fell to women.

"These findings, and those of a subsequent pilot project, covering about 700 families in 10 villages, carry some practical implications. For example, while it was helpful to have women extension workers trained in the requisite post-harvest techniques, it was also important to have such necessary supplies as pesticides and fumigants available locally, since women were often unable to travel to the next village for the supplies they needed to use the new methods they had learned."—*Ceres, No. 99, May/June, 1984.*

"Pipeline Approach" in Philippines

Making a continuum through the research system to the user system via the resource system (extension) is the objective of a three-year-old linkage between university and government—the Central Luzon State University and the extension arm of the Ministry of Agriculture. The University works with the government extension personnel in planning and implementing a comprehensive delivery system, including "tech packs" based on existing resources and client needs, training in their use, facilitating verification trials on fields of government-chosen farmer cooperators, publication of extension workers' brochures, and periodic assessment of results. Adoption of the technological package has been evaluated as significant, although "intensified efforts" are planned for the future, particularly to reach the poorer farmers and to encourage adoption of the whole rather than chosen components.—*from Thelma Santos-Cruz, The PCARRD Monitor, February, 1985.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Case Study in Jamaica

The second case study under the INTERPAKS model-building contract with USAID was begun in Jamaica in January. Burton E. Swanson, Associate Director of INTERPAKS and project director, headed a team including Robert P. Bentz, Cooperative Extension Service; Frederick C. Fliegel, Agricultural Economics; John A. Becker, USAID Officer currently with International Agriculture; and Carolyn Sands, INTERPAKS. Later case studies will include larger countries and differing systems.

Director in Swaziland

Working with the Academy for Educational Development, INTERPAKS Director John L. Woods served in Swaziland, November 5–16, 1985 as a consultant on more effective use of the government's broadcasting facilities for development purposes.

Service in Pakistan

Frederick C. Fliegel, Professor of Rural Sociology and INTERPAKS Associate, visited Pakistan in November in furtherance of the University's work under USAID funding to integrate agricultural research and extension in the Northwest Frontier Province.

University Outreach

Editor Eldon L. Johnson joined President Fred Davison of the University of Georgia and President David Knapp of the University of Massachusetts in a panel discussion of university public service, including extension and continuing education, at the November meeting of the National Association of State Universities and Land-Grant Colleges in Arlington, Virginia.

Work in Cameroon

John B. Claar, Senior Advisor, INTERPAKS, served as a consultant in Cameroon in December and participated in the FAO-USAID-World Bank workshop held in Yaounde to further the linkages between agricultural extension and research.

Advisory Committee Review

To review the Malawi case study and plan others, the external advisory committee for INTERPAKS met in Chicago on January 3. Present were Lowell Hardin, Purdue University; Glenn Johnson, Michigan State University; Vernon Ruttan, University of Minnesota; Bryant Kearl, University of Wisconsin; and Ernest Smerdon, University of Texas at Austin. Wendell Morse, project manager for USAID, also attended.

Visitor from CIP

Manuel Pina, Head, Training and Communications, International Potato Center (CIP), Lima, Peru visited with INTERPAKS and staff in the Office of Agricultural Communications in January.

African Visits

In February, Dean John R. Campbell, College of Agriculture, and Director John N. Nicholaides, Office of International Agriculture, made an executive visit to the University's ZAMARE project in Zambia (and to USAID offices in Nairobi, Kenya), accompanied by senior officers from collaborating institutions: Southern Illinois University and the University of Maryland-Eastern Shore. In returning, Director Nicholaides also visited IFAD and FAO in Rome.

Mission to Venezuela

Under USAID auspices, John B. Claar, INTERPAKS Senior Advisor, spent February 18–28 in Caracas, Venezuela on a follow-up to a U.S. Presidential Mission on agricultural development.

Workshop in Jordan

As part of a Washington State University project, V.M. Malone, Professor and State Leader, Extension Education; and Raymond A. Woodis, Extension Specialist, Office of Agricultural Communications and Extension Education, will conduct a workshop in Jordan during April on extension and communication methods. Both are INTERPAKS Associates.

INTERPAKS INTERCHANGE

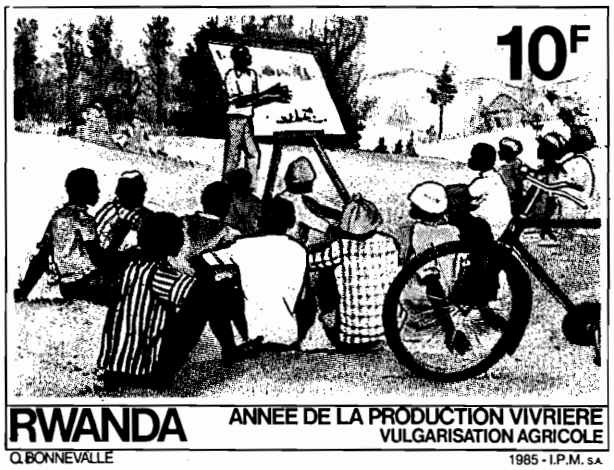
University of Illinois at Urbana-Champaign July, 1986/Vol. 3, No. 2

American Extension Choice: Change or End by Year 2000

In the highly-touted Information Age that is upon us, how will the Cooperative Extension Service in the United States change? What will it be like in the Year 2000? The answer may also hold some clues as to what is ahead, sooner or later, in similar organizations in other countries. Donald A. Dillman, Research and Extension Sociologist and Professor of Sociology, Washington State University, analyzes the needs and gives some answers.*

He first points out how Cooperative Extension has changed through three eras: the community control era, when the county agent "served as a broker with outsiders"; the mass society era, when educational efforts extended to new topics (e.g., health and community development), authority moved upward in a more hierarchical manner, less emphasis went to the agent and more to the specialist, and mass communication replaced home visits; and the current "astonishing revolution in people's abilities to organize, store, and retrieve and transmit information." Now we live in three overlapping eras. No one abruptly ended. The current challenge is not "wholesale change towards . . . the information age," but change at the margin for a suitable transition.

This leads to seven needed areas of change. First is a change in *clientele*. With about 2.7 percent of the U.S. work force employed in agriculture, public support "has about run its course" for "the family farm as a last bastion of family togetherness in the workplace." Indeed, the few farmers left will soon be so specialized that it will be questionable "whether whatever Extension does will make much difference in their operation decisions." In other words, agriculture may not be the primary extension audience, although rural people, rural problems, and rural economic development will remain, even though many people may "work in electronic cottages, telecommunicating long distances to work." An end to Extension? No, but adjustment of goals—to, for example, helping the remaining farmers adjust, working with those who find part-time farming their preferred lifestyle, helping preserve the threatened local institutions, and "facilitating rural economic development."



Postage Stamp on Extension

The second change will be coping with the *community development* problem. That means coping with institutions, both old and emerging, that are shaped by the technologies of overcoming "the friction of rural space." A particular need will be the development of "mutual interest networks that transcend geographical localities."

Third, *relation to clientele* will change. The extension agent will continue to be teacher and "the helpful-interpreter," but also *co*-teacher (with participating farmers) or one who learns *with* the clientele.

Therefore, fourth, extension will become the *principal access point* for information, to avoid "information overload" by showing clients how to access data banks for precisely-fitting needs. Another tailoring and targeted mechanism is narrowcast media, using low power and low cost for "a tiny fraction of the audience required by one of the major networks."

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

Fifth, the new *educational technology* will add "video cassette recorders, satellite dishes, a new rural telephone system with much greater capacity to facilitate interactive TV computer transmissions, and video telephones." These will be as essential to the agent as the automobile was in the 1930s and 1940s.

Sixth, a different *principle for assembling audiences* will need to be used, not geographical as in the past. Specific topics to meet unique needs will permit every targeted party, in whatever areas, to "be reached simultaneously and even brought into contact with one another using the appropriate technology."

Finally, the *mode of internal organization* for information flow will be less hierarchical, less concerned with clearance through several layers, and more direct back and forth from source to user. The impact on the traditional agent's role is clear. The time has come for reshaping "along the lines of functional networks" rather than the lines of agent-specialist distinction, which "creates more problems than benefits."

The implications of all this are far-reaching, even revolutionary in some cases. Both what it does and does not mean are important. It does *not* mean, in the author's opinion, that Cooperative Extension will soon be at an end. That system has the great merit of being here, established, accepted, and "institutionaliz(ed) into the workings of society."

Changing goals will be easier than "trying to build entirely new structures." The system has the great flexibility of being open-ended in its mission, not confined to a single subject-matter, even agriculture as often conceived. "Also, as an agency with the potential to straddle federal, state and local concerns in a cooperative way, as few other do, it is an important national resource." Therefore, the bell tolls, not for extension itself, but for many current goals and methods.

On the other hand, all this *does* mean starting the change now, facing the challenge with positive planning rather than mere lament, and readjusting both organization and services to the needs of the information age.

*"Cooperative Extension at the Beginning of the 21st Century," address presented at the National Community Resource Development Program Leaders Workshop, Utah State University, September 24, 1985; forthcoming in *The Rural Sociologist*.

The "Data Alone" Delusion

There is a great myth, dear to the hearts of some journalists and some teachers, that "if you just get them the facts," "tell it like it is," or "put out accurate reports," then a consensus will assuredly emerge. Rebuttal on which to think: as they gazed up at the unmistakable stars, the philosopher Immanuel Kant said he recognized the insignificance of man, but the artist James McNeill Whistler only mused that *he* could arrange them better.

Stopping What Got Us Here; Flawed Thinking on Surpluses

Drowning creates short-run plans. Therefore, some spokesmen for U.S. and European farmers who are drowning in agricultural surpluses propose a moratorium on agricultural research and technology development. "Such reasoning is seriously flawed," writes Vernon W. Ruttan, University of Minnesota, in *Science*, February 21, 1986. The idea is to stop the forces behind increased agricultural production and permit the market absorption of the surplus. But such rolling back, both temporarily and in the long-run, flies in the face of the fact that "American agriculture has achieved its preeminence in the world by substituting knowledge for resources," observes Ruttan.

That is not to say that knowledge is to be sought simply in the same old channels or from traditional sources. Success in the search will have a price, a price in terms of adjustment costs. Therefore, research should have a broader rather than narrower mission, providing "farmers and policy-makers with the knowledge needed to adjust to the changes driven by national and international economic forces." Needed also are "more efficient institutions" to protect both production capacity and farm income from the costs of adjustments to "integration of U.S. agriculture into world markets."

Still further research needs extend to the safety of producers, health of consumers, protection of the environment, and general enhancement of the quality of life. The "dramatic growth of scientific opportunity" must be accepted as just that—*opportunity* rather than an insoluble problem, calling for long-run adjustment rather than short-run resistance.

Setting Up Specialist Staffs For Technology Dissemination

by John B. Claar, former Director of INTERPAKS

There is a growing recognition in international circles that an adequate, effective corps of technical extension specialists, or liaison and support personnel, is essential to effective knowledge transfer and that satisfactory models are rare in developing countries. Traditionally, extension has been primarily a distribution system and has focused on its field operations.

Many countries in the developing world appear to have discovered the importance of a local agent and implemented the idea without an equally firm understanding of the parallel need for an internal technical support system. It is estimated that specialists make up about six percent of the extension staffs in Asia and Africa, as compared with about 19 percent in the United States and England. Therefore, it is time to correct the imbalance where it exists and to develop the entire extension system with greater emphasis on content.

The deficient system delivers too little information, with less than maximum impact. It is not cost-effective to operate an extension system with only part of it, the field part, in place. Most of the information needed by extension originates outside the organization and must be adapted and packaged into understandable terms and steps before it can be used effectively. Then the materials must be prepared; and training, backstopping, and impact evaluation must occur.

These are critical functions; and most developing countries simply do not devote the resources to this component that are essential to quality performance. Where such personnel exist, problems like the following are prevalent:

1. They may have little more training than the field staff and may not be accepted by research counterparts as peers with whom they can communicate and interact.
2. They frequently do not report to the extension director, but instead are in a parallel unit and have limited accessibility.
3. Their time may be usurped by administrative and liaison duties; or they may be spread too thin, as when only one specialist exists at the national level for the country's major crop.
4. They may have a rigid job description, with most of their time spent on lecturing in formal training situations.
5. They may not have the mobility and instructional support (e.g., communications tools) to be effective.
6. Frequently, they are not located for easy interaction with research colleagues and are not involved in field testing and demonstrations.

Content personnel, who can bridge the gap between research and extension, are usually specialized by disciplines or commodities—such as *vertical specialists* (commodity), *systems specialists* (farm management), and *cross-disciplinary specialists* (engineers). They are concerned with subject-matter availability, its accuracy, it applicability, and putting it into useful forms; and with in-service education, program development, evaluating impact, and feeding problems back to research. In other words, they assemble information and facilitate its use. At the invitation of the local agent, they also may take part in instruction and demonstrations with the clients, especially the more sophisticated ones.

How to build this component into a particular system has no uniform answer. However, as a start, the following checklist may help in calling attention to the essentials and some frequently forgotten aspects of setting up and operating an effective technical specialist group:

1. Develop a mutual-support relationship between extension and major knowledge sources, perhaps by formal memorandum of understanding, recognizing that facilitation of research is a part of each extension worker's job and facilitation of dissemination is a part of each researcher's job.

   What Extension Might Agree To Do in a Memorandum of Understanding:

   - Provide information to researchers about problems that are encountered in the field, with a meeting between appropriate people in the organization no less than once a year to discuss mutual concerns and provide assistance in making needed surveys.
   - Invite researchers, or otherwise facilitate appropriate research personnel, to visit farmers to see such problems first-hand and to discuss needs with farmers.
   - Help identify and make contacts with farmers needed in facilitating research activities and field-testing technology.
   - Make personnel available to assist with the day-to-day supervision of field tests and demonstrations.
   - Maintain a corps of technical liaison personnel whose major assignment is to facilitate the above functions and enhance the transfer of information to extension for dissemination.
   - Assign extension personnel as appropriate to work groups on research task forces, such as Farming Systems Research groups, who have extension-related functions to perform and regular need for farmer contact.

   What Research Might Agree To Do in a Memorandum of Understanding:

   - Cooperate with extension personnel in performing the various research functions which involve farmer contact and identification of problems needing research. These functions and how extension will be involved need to be spelled out in detail.
   - Take part in the training of extension personnel as feasible and needed.
   - Take part in field days to help explain research.
   - Make farm visits on request by extension to help identify problems with which extension needs help.
   - Work with extension personnel to help decide what should be recommended to farmers based on research results. This involves extrapolating from specific research results, as well as simplification without loss of validity.
2. There is no perfect place for specialist personnel to be housed, but other things being equal, the accessing of information and its introduction into the extension system will be enhanced by close proximity to research personnel.
3. Work with research counterparts will be benefitted by having similar organizational structures in extension and research, with the same subject-matter components and role definitions.
4. High priority should be given the employment of specialists with credentials and attitudes that will enhance their acceptability to researchers. They

need the ability to understand and communicate with technical sources and to reduce complex things to understandable terms. They also must have the capacity to relate to extension agents and farmers, with genuine concern for their performance and welfare.

5. Provide a flexible, rather than an inflexible, role for the technical specialists, because their "backstopping" role is diverse. For example, their responsibilities for training and facilitating the performance of extension personnel encompass both formal teaching situations and work with agents in farm situations. Also, they must either have transportation or be located close to both knowledge sources and field personnel.
6. Use mass media and other aids in tandem with field programs. Technical specialists can work with communications and extension field personnel to achieve coordination.
7. All specialist staff working with research colleagues must be concerned with evaluating progress and determining new problems. Good judgment on these matters is essential to developing an effective plan of work for the next season and to helping guide research and field testing.
8. Specialist personnel must clearly not be administrative personnel, because they must be viewed as friends and helpers of the agents; however, administrative personnel must be able to ask them for appropriate help, such as providing backstopping for specific personnel, but with no responsibility whatsoever for personnel actions.
9. Resources and time must be provided to help specialists keep themselves up to date and well informed. Little is gained when people are placed into the technical specialist role who have about the same training and access to information as the field staff.
10. The role of the specialist staff is to enhance the use of agricultural information to solve problems and to support development, with special but not exclusive reference to extension personnel. Input suppliers and others who contact farmers also are important clients who, if they know what extension is stressing, can supply both a needed product and reinforcing information. Technical specialists can take the leadership in providing liaison with input suppliers, markets, etc., including conducting relevant continuing education programs.
11. Technical specialists who are expected to perform these roles are such an integral part of the extension system that they should report to the extension director (or designee). Frequently, such personnel are found in counterpart units and are not really available to extension to perform these functions as a priority activity.

In summary, the technical support function in extension, especially in Africa and Asia, is relatively weak. It frequently is a major reason for unsatisfactory linkage with research and for less than optimum impact. In some countries, the kind of training required for the technical support specialist is not available and special training steps may be needed before placing personnel in this role.

Those who have had experience in farming systems research may be good candidates for such positions because they normally have had experience in problem identification, in working with farmers, and in the use of a holistic management approach. In fact, making investments in adaptive research teams may be a convenient way of developing the technical capacity needed by extension in the subject-matter areas covered by such teams.

Regardless of how it is brought about, a technical support system is an essential ingredient of effective extension work. It is time to complete the system and close the research/extension gap.

Trickle, Trickle, Up or Down?

There must be more than one road to development, or we could not have such directional contradictions as starting from the top and starting from the bottom, both with ardent advocates. Doubting the "trickle down" theory as tested in practice, some critics have launched a countervailing Trickle Up organization, which is now partially funded by the United Nations Development Program.* Starting with business at the smallest, through the infusion of seed money, Trickle Up has grown since 1979 to an international network of 2,300 businesses in 80 developing nations, with 516 local coordinators.

The induced production and marketing process is shockingly simple. A group of five or more with a business plan may qualify by filling out an application, get a $50 grant (no more, no less), and start an enterprise. After three months and 1,000 hours of effort, with at least 20 percent of the profit reinvested in the business, another $50 is forthcoming. Of money thus advanced, none has to be paid back.

How can this $100 total do anything? It is for the poorest of the poor, already unemployed, who think it is a fortune—something that generates self-confidence, dignity, and a "can do" spirit to show that the trust will not be betrayed. Eighty percent are women. Also, mere production of something is not enough. Line 1 of the application adds marketing, or the intent and prospect of selling locally. Hence, both the product and the money stay in the community, ratcheting upward.

Trickle Up is modest in other ways, too. It has no full-fledged fund-raising campaign—only word-of-mouth sharing of the successes, plus UNDP aid. And it does not pretend to be the whole truth for the whole world. Indeed, its founder says: "'Trickle Up' then meets 'trickle down,' because there are some cases where 'trickle down' is useful . . . when capital-intensive projects are needed. The best is a balance between the two."

*Kristin Helmore, *Christian Science Monitor*, April 15, 1986.

Talk of Technology Transfer! Mind-Boggling Era Ahead

No, imagination is not merely running amuck when we are told about the new frontiers of artificial intelligence and computerized agriculture, even if some of the projected scenarios seem to be straight out of science fiction. Man's historic extensions of arm and muscle by tools is now being succeeded by extensions of mind and behavior. "Now these thought tools, by far the most powerful tools of all, . . . will revolutionize agriculture," says Donald A. Holt, Director of the Illinois Agricultural Experiment Station, University of Illinois at Urbana-Champaign.*

The great potential is implicit in what is already known and even already developed: something as small as pocket calculators but more powerful than early mainframe computers, and something as potent as supercomputers; something as simple as computer disks, and something as complex as vast information networks. And the agricultural software is coming along to match the hardware.

Even the superconfident expectation of "artificial intelligence" is being realized. This machine-mimicking of human behavior has three aspects: natural language interfaces (machine understanding of spoken or written common language); pattern recognition (machine vision, hearing, and touch); and expert systems (knowledge-based). The last is most relevant to agricultural development, both to research and to the delivery of results to farm users. Director Holt says, "One of the great potentials of expert systems is that they will allow farm managers and others to use very complex management tools, such as simulation models and detailed business analysis programs, without having to have a team of specialists on hand to operate and interpret these programs."

These knowledge-based systems manipulate symbols as well as numbers and are "programmed with the problem-solving approach and knowledge of experts, including their judgment and experience." Such systems and software can be developed in prototype form in a few weeks or months, followed by testing and refinement with the reactions and aid of potential users.

Professors at the University of Illinois at Urbana-Champaign have developed two expert systems. These include the first of its kind, PLANT/ds, perfected by James Sinclair and Barry Jacobsen of the Plant Pathology Department. Director Holt describes PLANT/ds as follows: "It is a true artificial intelligence application, containing both diagnostic rules provided by human experts and machine-induced rules, derived by a computer from a database of soybean disease observations. It is extremely user-friendly, permitting almost any person who can read the English language and knows the difference between leaves, stems, and roots to diagnose soybean diseases as accurately as an expert."

Thomas W. Fermanian of the Horticulture Department also has developed AG ASSISTANT, which is software for expert systems development applied to agriculture. It facilitates the making of systems used for identification of weeds and diagnosis of diseases, for example, where use of an identification key would normally be required. Other U.S. universities and corporations in the private sector are generating similar tools.

Who needs such help? Holt names four groups: *farmers* (to "predict the outcome of various management strategies under a number of combinations of possible weather and economic conditions"); *agricultural policy-makers* at all levels ("to evaluate more accurately and realistically the possible outcomes of agricultural, monetary, financial, and trade policy alternatives"); *agribusiness* (to have "similar decision support capabilities"); and *agricultural scientists and administrators* ("to help make research, extension, and teaching decisions"). The range is from the farmer to the research teams who require the computational capacity of supercomputers.

Whatever form "computerized farming" may take, it is clear that the farmer will have some mental or decision-making relief, as he or she in the past has had physical relief. Electronic sensors will help on the farm, and relevant information will be retrieved from databases geared to levels ranging from the local to the global.

As for research teams, Holt's colleagues at Illinois have already identified over 40 projects that can *only* be done with supercomputers. As an invaluable spin-off, development and choice of the technology may be instructive on the real nature of agricultural systems—their tremendous complexity, "involving small- and large-scale physical, chemical, biological, economic, and social phenomena."

Holt brings it down to the everyday experience and comprehension of all of us who are telephone-dependent, when he concludes: "The computer network will be an absolutely essential part of each farm business, each agribusiness, each college of agriculture, and each policy-making group, even more so than the telephone network of today."

*"Artificial Intelligence and Supercomputers: New Frontiers in Agriculture," address to the International Conference on Computers in Agricultural Extension Programs, Lake Bueno Vista, Florida, February 4, 1986.

Be Happy, Bewildered

Scientists pondering the Voyager 2's data gathered on its rendezvous with the planet Uranus say they are puzzled about the atmosphere, about the spin, about the tilt, about the magnetism, about the vapors, about the currents, about the clouds, and, above all, about the masses of data. If it sounds like another day at the office on planet Earth, take courage: the scientists say they are "happily bewildered."

Progress in Malawi Shown in Case Study

Reporting on a study of the agricultural technology transfer system in Malawi, an INTERPAKS team led by Burton E. Swanson found "impressive progress," with the leadership well aware of weaknesses needing early remedy. The nation's small farmers are "very price responsive." However, lack of financial resources owing to low income, limited credit, and inefficient farm size are some of the on-farm factors that constrain technology use.

As used by the team, the analytical framework addresses four subsystems—policy, technology development, technology transfer, and technology utilization—and measures performance by a series of objective system indicators. Both descriptive information and indicator data show "a strong, positive policy toward agricultural development since independence in 1964." That applies to price policy, as an incentive to production, and to increased purchase of fertilizer and chemical inputs, although availability of credit is a constraint reflecting the country's extremely low income level.

Technology development is derived from heavy emphasis on applied and adaptive research and focuses on commodity and adaptive research teams. New agricultural organization allows increased national direction, puts scientific leadership in the hands of the best-trained personnel, and improves the research-extension linkage. More than 90% of the research personnel are Malawians, and 45% have post-graduate degrees. Use of external technology is high, chiefly through the international agricultural research centers, which the report finds to be an "efficient allocation of resources" for a low-income nation.

Technology transfer is done through the Department of Agriculture with eight development divisions, 28 rural development projects, 180 extension planning areas, and 1,700 sections, where a similar number of field agents are assigned. An integrated agricultural development approach is followed in a modified Training and Visit System. A parastatal body is the sole supplier of inputs and the chief marketing agency. A common development problem is emerging: the increase in extension's recurrent costs from external donor financing to the point of challenging the government's capacity to sustain that level long-term.

The percentage of subject-matter specialists with university degrees is "unusually low"—less than 2% of the total personnel, as compared to 18-20% in Europe and North America, 13% in Latin America, and 6% in Asia and the remainder of Africa. Field assistants spend 80% of their time on knowledge transfer and 20% on credit-related matters, but are handicapped by lack of teaching tools, mobility (40-50% lack bicycles), and technical backstopping.

On the flow of technology into productive use, a government approval process for innovations is slow, cautious, and sometimes self-protective, particularly for new technology originating in the private sector.

On technology utilization among smallholders, the larger farms (with 3+ hectares) have the best record and the smallest the poorest (i.e., in use of fertilizer, crop varieties, and credit), confirming a direct relation between farm size and technology use. The progression in use of purchased inputs moves down from high use on the estates, to moderate use on larger smallholder farms, to "very limited or non-use" on very small farms.

This is the first in the INTERPAKS comparative case study series done under a cooperative agreement with USAID. The report, **Agricultural Technology System in Malawi,** was submitted to the Malawian Ministry of Agriculture in March 1986. A final version will be available later this year for general circulation.

Jumping the Credit Chasm

Although access to credit is a highly-touted way of bootstrapping the poor out of their powerlessness, where are the banks that will welcome the landless? Where are the required assets? A place of greatest need has come up with greatest promise. In 1976, Professor Mohammed Unus of the University of Chittagong in Bangladesh launched the Grameen Bank, which has since made more than 40,000 small loans to men and women with no assets except imagination and energy. *Surprises:* the default rate is under one percent, and women are the most dramatically advantaged.

The key is group interaction and responsibility. Required are groups of five to join together for loans and weekly meetings with a bank officer in a non-intimidating setting, where each customer lays out plans publicly. No more than two of the five in the group may seek loans at the same time; hence, three are waiting with vested interest in timely repayment by the first two, a condition of future loans. Repayment is by weekly installments of two percent of the principle over 50 weeks, with interest lower than the moneylender rate.

Professor Unus reports that borrowers have had "an incredible change in their lives—particularly the lives of the women." As earning members of the family, women have undergone a positive change in status, with less dependence on husbands and more investment in children. The cycle of poverty has been broken and access opened to economic reward. The chief female enterprises have been the purchase of rice-paddy husking machines and milk cows, with other businesses in lime-making, weaving, pottery, cycle repair, and rickshaw taxi operation.

With support from the International Fund for Agricultural Development, the Grameen Bank has loaned more than $3,000,000 through branch offices now numbering 150, with 500 expected by 1989. Thus a resounding affirmative has been given the question, "Are poor people really bankable?"—*from Agricultural Information Development Bulletin,* December, 1985.

T & V Revisited—Again

It is both unnecessary and futile to speculate on why the T & V Extension System has stirred so much debate while enjoying so much success. The fact of the paradox is a sufficient starting point for a look into the future. In an address at a conference at Michigan State University last spring, Nigel Roberts, East Africa Projects Department, World Bank, gave his assessment.* The gist is that while the T & V *principles* need not be changed, since they are vindicated by experience, the way the principles are applied in concrete situations may need to be modified to avoid some obvious dangers.

What has experience shown? Most pointedly, it has shown that *any* extension system "is only one cogwheel in the agricultural machine, and rarely the most important one at that." The totality of the "machine" includes "a functioning research apparatus" as a necessary pre-condition for extension and a package of such complementary parts as supply and credit inputs, market mechanisms, and price incentives. These parts, in turn, cannot function well without extension. It follows that neither the T & V System, nor any other system, should be criticized for gaps or failures elsewhere in the system. Critics have not always made that distinction.

Two criticisms, however, do call for more research and more care in the future. While the T & V principles recognize the need for two-way communication and participation, "it is not uncommon to find extension staff distributing undifferentiated 'blanket' recommendations to farmers," with an unfortunate break between the farmer on one side and research/extension on the other. Other systems, some of which the World Bank has itself supported, are less "top down" and "supply-driven," notably the French "animation rurale" and Farming Systems Research. Therefore, a possible future development is "a systematic attempt . . . to see if T & V and FSR can be married up as an integrated extension methodology."

This increased democratization of extension, with "increased accountability of extension agents to farmers' groups," leads to the further suggestion that such groups might be induced to pay part of the extension costs. That relates to the second criticism that T & V must counter in some way—the criticism that T & V, with its concentrated efforts, builds up extension costs without any mechanism for covering recurrent local costs when the external funds cease.

To this, the speaker has two answers. First, there are ways of restraining costs. T & V is not an inflexible blueprint. The "classic" mode used in Asia may be modified in Africa with some variation in "the constituents of the management system." Also, donor and recipient representatives should work jointly on appropriate methodology and in testing new systems on a pilot scale before national adoption. Finally, of great importance is a 10 or 15 year commitment of donors to the support of the new system.

After telling what he "would hope to find in a public-sector extension system," the speaker gives his personal view that help from private sources might be sought on the cost issue, as from "fee-paying extension associations." The advantages would be responsiveness to the marketplace or "true consumer evaluation" and the rebuff of "over-expensive extension designers." That is both "an attractive prospect and worth a little research."

Whatever the further course of the debate about the T & V System, World Bank representatives can and do, as in this case, point out that more than 20 countries have adopted this system nationally and 20 more have done so for sectors or regions; and that both Bank experience and Bank policy refute the "perception that the World Bank is selling the methodology as *the* Universal Extension System, often inflexibly, and with little sensitivity to the needs of particular situations in individual countries."

*"The World Bank and Agricultural Extension: The Training and Visit System in Sub-Saharan Africa."

Precision by Guessing

"It is rather curious that in economics, which is a social science, where absolute precision is impossible, people are inclined to place so much importance on accurate numerical forecasts and give awards to what are essentially guesses, largely ignoring the methodology or the contribution to theory. In the physical sciences, where precision is often possible, people are rewarded for the substance of their theories, for their reasonings, for their contributions to the literature which can be used by anyone. The irony of this is overwhelming."—*Leif H. Olsen, Economic Consultant to Citibank.*

ACRONYMIA: A late twentieth century nervous disorder apparently brought on by increasing reliance on rganized efforts to solve societal problems. Symptoms are easily recognizable in both spoken and written attempts at communication. The disorder appears to be progressive in nature, leading to a complete breakdown in communication. At present, total isolation of the affected person is the only available means of control. The following sentence illustrates the symptoms at an advanced stage:

"This ART is actually administratively attached to extension in the ADD, rather than to the NRC for ARTs in the DAR." (**An INTERPAKS Case Study of the Agricultural Technology System in Malawi,** p. III-38.)

—Phobius Acronymius

(Note: While poking fun is condoned among colleagues, INTERPAKS would want it known that the document was an in-house version in which the meaning could be derived from the earlier text.)

The World According to Rip

When old Rip Van Winkle awoke after his long sleep, he took one look out his window and called the County Farm Adviser's office.

"Is this the Extension Office?"

"No, it's the Office of Agricultural Knowledge Systems and Technology Transfer."

"Well, maybe you can help anyway. It's about my crops that looked so good yesterday. I *think* it was yesterday."

"Could be something systemic. Have you been taking a holistic approach?"

"Don't wholly know, but I planted the potatoes on St. Patrick's Day."

"Perhaps one of our specialists might help you — an agronomist, a plant pathologist, an entomologist, a sociologist, a home economist, an agricultural anthropologist — but, on second thought, it might be better to start with the technological package we recommend. Covers about everything."

"But will it kill weeds? I can hardly see the pumpkins."

"Well, now there's a whole new body of growing literature on that. Just a minute (pause). The computer says to send you our new brochure, 'Innovation Diffusion: Weeds in Particular.' And have you used herbicides?"

"These ain't herbs; they're just plain weeds!"

"You can *try* it, and we'd sure appreciate having the feedback."

"Feed what? That's the problem. Horses are gone. Only scythe and hoe left, but I thought you might —"

"We sure do. There's a dozen kinds of gang plows to suit your size tractor, and even one computerized for chemical treatment; you bet, we'll help you with appropriate technology. I'll also ask Gene, our biotech man."

"Sir, this must be a bad connection. I'm talking about *weeds;* and if I can't lick 'em there'll be hell to pay with the banker, the grocer, the doctor, the whole community!"

"Community? Yes, we have two short courses to give you the whole contextual background of your problem — inputs, outputs, options, risks, cultural constraints, and the stress factor. One is 'Rural Community Development' and the other 'Integrated Rural Development!' This year we're merging them into same teacher, same time, same stuff really. Your last chance actually, because we're substituting 'Farming Systems Research' next year."

"But if I just had —"

"Of course, if you already have a college degree, you might want our continuing ed — you know, non-formal, distant learning by radio, television, cassette, or computer disk."

Sometime later, when he thought back, the Farm Adviser could remember only three terminal sounds: a fading voice still mumbling, "Weeds!," a long yawn, and the thud of a falling receiver.

"Did he say 'Van Winkle?' I've heard my granddad talk about the Van Winkles down at Sleepy Hollow."

Development as Learning Geared to Social Change

Development has been called many things — what it is and what it isn't. "If development is not growth, not resources, not wealth alone — what is it?," asks Rector Soedjatmoko of the United Nations University.* He then answers, "I think it is, above all, learning." That means adjustment — to new technologies, new population mixes, new modes of production, and new stages of political awareness.

It also means a broad definition of learning: both formal and non-formal, new delivery systems, equal access to information, and the converting of traditional societies into "information communities" capable of responding creatively to information flooding upon them. Access to such learning is a problem everywhere, but a special problem in developing countries.

He lists four challenges in particular: to wean education from the rote method; to break away from "narrow disciplinary approaches" that impede synthesis and disguise complexity; to meet higher enrollment pressures by innovative extensions beyond the classroom; and to address the problems of poverty as well as the problems of science.

New policies are needed to replace those that have "misguided" development heretofore. "Changing the balance between the urban and rural sectors in the developing world, and integrating into the national mainstream the previously disenfranchised and marginalized, will amount to a fundamental change in the distribution of economic and political power." That means risks, but "the risks of continuing to ignore the problem may prove even more catastrophic."

*Work in Progress, U.N. University, July, 1985.

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Helpful Ideas: Old and New

Arthur T. Mosher, **Getting Agriculture Moving: Essentials for Development and Modernization.** Frederick A. Praeger: New York, N.Y., 1965 (191 pages).

This little classic provides training material as relevant today as when it appeared more than 20 years ago. It gets down to the basics. It is simple, logical, and clear, yet comprehensive. It covers the full sweep of the development dynamics of "the biggest industry in the world" with the economy of language of an annotated syllabus.

It originated as a project of the Agricultural Development Council, which then provided an accompanying training manual and related readings for use in the developing world. Attention is focused on the "essentials" for agricultural development, and what would help. The former are markets, new technology, local availability of supplies and equipment, production incentives, and transportation. The accelerators are education for development, production credit, group action by farmers, land improvement and expansion, and national planning. Education in its broadest sense is also an essential, but in this context, it means unending learning for agricultural improvement and for people of all ages.

For agriculture "to get moving," cooperation is required among many specializations, which have in common the characteristics of work, learning, experimentation, and empathy. The author has a closing hint for all who practice such specializations: "Reading a book like this is like stopping one's work for a few minutes to look at the whole task to see how the job is coming along and to be reminded of what needs still to be done."

P. Oakley and C. Garforth, **Guide to Extension Training.** Food and Agriculture Organization: Rome, 1985 (144 pages).

This is a revised and rewritten edition of a 1966 text by D. J. Bradfield. It is impressively comprehensive and painstaking, aimed at both agricultural and non-agricultural extension agents. While it is a text for the pre-service and in-service training of extension personnel, it is also a useful guide for agents in many field activities. Thoroughness is shown by chapters which deal with social and cultural factors (even ceremonies and festivals), extension and communication (even audio cassettes and flip charts), extension methods (even checklists), the extension agent (even public speaking), program planning and evaluation, and special targets (women, youth, and the landless).

Irwin Feller, Lynne Kaltreider, Patrick Madden, Dan Moore, and Laura Sims, **The Agricultural Technology Delivery System.** Volume 5, Overall Study Report: Findings and Recommendations. Institute for Policy Research and Evaluation, Pennsylvania State University: University Park, 1984 (296 pages).

This concluding volume in a study for the U.S. Department of Agriculture summarizes key issues, gives findings, and explores options for change. Roles in the transfer of agricultural and food-related technologies are covered at both the federal and state levels. Future policy options discussed at the end give three possibilities: (1) continuation of present trends; (2) incremental change with modestly increased activity; and (3) fundamental change or major departures from the present.

Changes contemplated for extension move clearly toward "a more technical orientation." The second option would mean hiring extension personnel with strong subject-matter knowledge, and the third option would "entail a *de facto* transformation of agricultural county agents into specialists." There would be more emphasis on constant upgrading in communications skills and technical specialization and need for "the acceptance of an ability to perform applied, adaptive, or developmental research." How the extension organization presently sees itself in the technology transfer function will have to be reexamined.

International Rice Research Institute, **Insights of Outstanding Farmers.** Manila, Philippines, 1985 (114 pages).

Listening to real farmers is a widely recommended practice for research and extension workers. Here is a little book that recites the successful experiences of 14 farmers from 10 nations chosen, among other things, for their use of modern technology, their development of innovative low-cost farm practices suited locally, and their willingness to share and communicate with fellow farmers. The idea of the book is not to present typical farmers (instead, these "would most likely have achieved success in whatever walk of life they had focused themselves"), but to present experiences showing the factors that can be "manipulated to help other lives."

At the end, a chapter on insights identifies several useful lessons to be learned. Among commonalities, all the farmers are distinguished by their "total acceptance of farming as a profession"—as "a livelihood, not just a way of life"; and all are good communicators, willing to be "gateways to the nonprofessional world of rural people." The message for extension is "the value of enlisting farmers as professionals in the two-way learning process."

Michael M. Cernea, editor, **Putting People First: Sociological Variables in Rural Development.** Oxford University Press for The World Bank: London and New York, 1985 (430 pages).

Social-scientist authors, including several familiar ones, discuss lessons learned from rural development experience in Bank-assisted and similar projects. It is the first book to analyze the World Bank experience with sociological work, although other international experience is also included. The central thesis is that "people are—and should be—the starting point, the center, and the end goal of each development intervention." (The book editor's earlier comments on this theme were published in the November, 1985 issue of *INTERPAKS INTERCHANGE.*)

Hans P. Binswanger, Vernon W. Ruttan, and others, **Induced Innovation: Technology, Institutions, and Development.** Johns Hopkins University Press: Baltimore, 1978 (423 pages).

This is a seminal contribution to the large body of literature on the induced innovation hypothesis first suggested by Sir John Hicks in 1932. To the major role of the two named authors, nine others contribute, with much economic history and theory, higher mathematics, and complicated analysis. Several cases are presented to test the induced innovation model, with empirical evidence from the United States, Japan, Brazil, and Argentina. Closing essays expand the hypothesis to include the process of institutional as well as technical change, with testing by application to the "green revolution" and its "dialectical interaction between technical and institutional change" in agricultural development. For full understanding and use of the book, many extension professionals will wish that they themselves could have the intermediation of a transfer agent.

Women in Development: Looking to the Future. Hearing, Committee on Foreign Relations, U.S. Senate, June 7, 1984. U.S. Government Printing Office: Washington, D.C., 1984 (159 pages).

Useful statements are recorded on the contributions of government, the private sector, the media, public education, business, and labor in enhancing the role of women in economic development overseas. Figures supplied with the testimony of H. Peter McPherson, Administrator, U.S. Agency for International Development, reveal that females made up 18 percent of the 9,000 training participants funded by USAID in 1983.

Alain de Janvry and Jean-Jacques Dethier, **Technological Innovation in Agriculture: the Political Economy of its Rate and Bias.** The World Bank: Washington, D.C., 1985 (90 pages).

This is Study Paper Number 1 of the Consultative Group on International Agricultural Research. Market forces are not sufficient to explain more than "a fraction of changes in investment and productivity in agriculture;" therefore, institutional forces that distort the market and act independently of prices must also be taken into account—in particular, the action of the state.

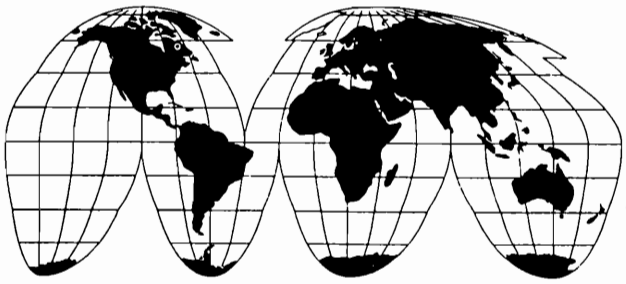
The emergence of the private sector in greatly reducing the role of the ministries of agriculture and other traditional sources of innovation is noted, but with the conclusion that "research that benefits the weaker segments of the population should remain the financial responsibility of the public sector." Likewise, the definition of research priorities should get more attention, with more collaboration between natural and social scientists, and more participation by research beneficiaries to offset the undue influence of the "socially more vocal and powerful sectors."

Marilyn Carr, **Blacksmith, Baker, Roofing-sheet Maker . . . Employment for Rural Women in Developing Countries.** Intermediate Technology Publications: London, 1984 (144 pages).

Fifty-five case studies are presented on illustrative projects that generate income for women in work *other than* handicrafts. The two parts are significant—the need for cash, and the source less dependent on "small, fickle, elite markets in urban areas and overseas." While the cases exclude subsistence agriculture, they concentrate on production or provision of goods and services for which there is a local market. The intent of the book is to help Third World women (and their advocates) find alternatives to handicraft production—and to break out of the trap of "female activities," which often lingers even as the developmental role of women is recognized.

International Rice Research Institute, **Publications on International Agricultural Research and Development.** Los Banos: Laguna, Philippines, 1985 (691 pages).

This is the latest version of a convenient, indexed catalog of publications of all International Agricultural Research Centers and 10 non-CGIAR centers, available for $10.20 from IRRI, P.O. Box 933, Manila, Philippines.



Around the World

Credit Reduces FSR Constraint

The farming systems research strategy, with its integrated extension education activities, has addressed the middle spectrum of agricultural development in Africa with some success. Research, extension, and small farm production are happening hand-in-hand to a significant degree, assisted by American land-grant university personnel. However, the poles of the development continuum are more difficult to manage. Inputs, credit, and marketing are among the problem areas.

Washington State University advisors in Lesotho have made notable gains in these areas, the most recent being a breakthrough in the realm of credit and loans. Earlier in the project, team members in such fields as agronomy, horticulture, plant protection, and farm management made recommendations to Coop Lesotho, thereby influencing the acquisition of appropriate seeds, fertilizers, and pesticides. Marketing personnel worked to identify marketable surpluses and recommend marketing policies, with notable work in hides, skins, and vegetables. It remained for extension workers to assist in the matter of credit and loans.

In an evaluation of FSR extension education programs founded on 1979–1984 data, it was discovered that farmers reported no benefits from farming systems research in the area of credit and loans. Likewise, the second most serious constraint to practice change as perceived by those same farmers was the lack of finance to enable desired innovation. In response to that finding, FSR extension workers labored throughout 1985 to consolidate farmer contact groups under farm cooperative charters, the benefits of which included eligibility for credit and loans.

It is a gratifying turn of events that the first cooperative chartered, bringing together 10 farmer contact groups, has in 1986 secured a loan equivalent to $3,075 for the purchase of improved maize and sorghum seed and recommended fertilizers. The loan was secured from the Agricultural Development Bank and the purchases made through Coop Lesotho.

The Lesotho experience thus becomes one in which FSR practitioners have become active in all aspects of the development formula, and one in which the persistent constraint of credit and loans has been substantially reduced. —*David Youmans, Extension Specialist, Washington State University's Farming Systems Research Project in Lesotho.*

No Schooling No Obstacle

A study in India challenges the conventional findings that educational level is an important determinant of differences in agricultural productivity among countries.* It found that while formal education had an independent effect on yield, it was not significant; whereas "a farmer's non-formal education which is *measured by his understanding of the technology* has a significant and greater influence on yield (*italics added*)." In capitalizing on this encouraging human potential, two cautions are in order: the research was done in a "technologically advanced" area with no serious production constraints and thus does not permit generalization to all of India or elsewhere; and while the "uneducated farmer" can understand and use modern production technology, the technology must be "communicated to him properly."

*K.P. Kalirajan and R.T. Shand, "Type of Education and Agricultural Productivity: A Quantitative Analysis of Tamil Nadu Rice Farming," *Journal of Development Studies*, January, 1985.

Australian Outreach

Strengthening of post-secondary educational institutions by staff development, particularly in the Southeast Asian-South Pacific region, is the special mission of the International Development Program of Australian Universities and Colleges (IDP). Aided by the federal government, Australia's 19 universities and 46 colleges provide educational service to overseas students, faculty, and institutions. Upon request from the developing areas, their universities and colleges are aided by training courses, technical assistance, and institutional development programs. More than 30 such institutions in Southeast Asia now participate in the core and contract programs.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Director's Activities

Director John L. Woods attended the South American and Caribbean workshop on agricultural communications held in Cali, Colombia in April. Afterward, he and Manual Pina, Head of Training and Communications for the International Potato Center, visited United Nations organizations in New York on the workshop's proposal for a network in agricultural communications and information for South America.

Also in April, Director Woods presented a paper in an International Science and Education Council/ BIFAD seminar on "International Education and Training" and conducted an extension-oriented seminar at the World Bank, both in Washington, D.C.

Swanson Named Editor

Burton E. Swanson, Associate Director of INTERPAKS, has been named North American Editor of *Agricultural Administration*, edited in England by John Pearce and Gwyn E. Jones of the University of Reading.

New Egerton-Illinois Partnership

A partnership relation is being established between Egerton College, an agricultural education institution in Kenya, and the University of Illinois at Urbana-Champaign on a cost-sharing basis, to which the U.S. Agency for International Development will contribute $2,000,000 for the first five years. The executing agency at the University of Illinois will be the Office of International Agriculture in the College of Agriculture.

Targeted components of collaboration are Egerton staff training, administrative management, curricular planning and evaluation, the production of educational materials for classroom and extension, and the promotion of research and outreach. Liaison committees and coordinators, one on each campus, will exchange visits and design plans for joint action.

An Illinois design team spent six weeks in Kenya in May and June, led by Burton E. Swanson, Director of the INTERPAKS-USAID Research Project. Other teams members included Eldon L. Johnson, Roger L. Courson, Mildred B. Griggs, Thomas A. McCowen, John W. Santas, John E. Terwilliger, and Warren K. Wessels.

Reading-Wageningen Connections

In recent visits to the University of Reading, England, and the Agricultural University, The Netherlands, Associate INTERPAKS Director Burton E. Swanson presented seminars on the INTERPAKS case study of Malawi and served as guest lecturer in two workshops at the International Agriculture Centre in Wageningen. The latter was the first exchange activity under the proposed consortium among INTERPAKS and the institutions at Reading and Wageningen.

Recent INTERPAKS Visitors

Recent visitors to INTERPAKS to discuss common interests have been John Lindt, an agricultural officer in the East Asia Projects Department of the World Bank, and Howard Ray, Director of USAID's Communications Technology Transfer in Agriculture Project. Ray also presented a seminar on the project's work.

Panama Evaluation

John B. Claar, senior INTERPAKS adviser, took part in an evaluation of the USAID-sponsored Panama Agricultural Technology Development and Transfer Project during July.

Communicators Meet in Colombia

Agricultural communicators from 16 Latin American and Caribbean countries met in Cali, Colombia for a four-day conference at the International Center for Tropical Agriculture (CIAT) in April. Some participants also came from North America as well as observers from Winrock International; the Academy for Educational Development; International Agricultural Programs, University of Florida; INTERPAKS, University of Illinois; and the Consultative Group on International Agricultural Research (CGIAR).

Organized by CIAT and its sister Latin American Centers, the International Center for the Improvement of Maize and Triticale (CIMMYT) and the International Potato Center (CIP), the seminar focused on improving communications between the international centers and national agricultural research programs as a means of strengthening technology transfer to Latin American and Caribbean farmers.

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Chief Characteristics Of Extension in Poland

by Nikodem Sakson, Center for Education and Progress in Agriculture, Poznan, Poland

There are 2,842,000 farms in Poland, which constitute 13,551,000 hectares of farm land. Since the 1920's, a number of extension organizations have been established to support modernization of agricultural production, increase farmers' income, and better the living conditions of rural population. Within the last 40 years, extension has undergone several changes because of the policy of the state (attempts to collectivize agriculture) and changes in the administrative division of the country.

Organizations focusing solely on extension have been formed since 1975 as a state service administered at the province level, through what are called provincial agricultural progress centers. Apart from such state service, extension is also carried out by trade and branch unions and associations, specialized services of the state food and agriculture industry, and dairy and horticultural cooperatives. In these entities, however, agricultural extension plays a secondary role.

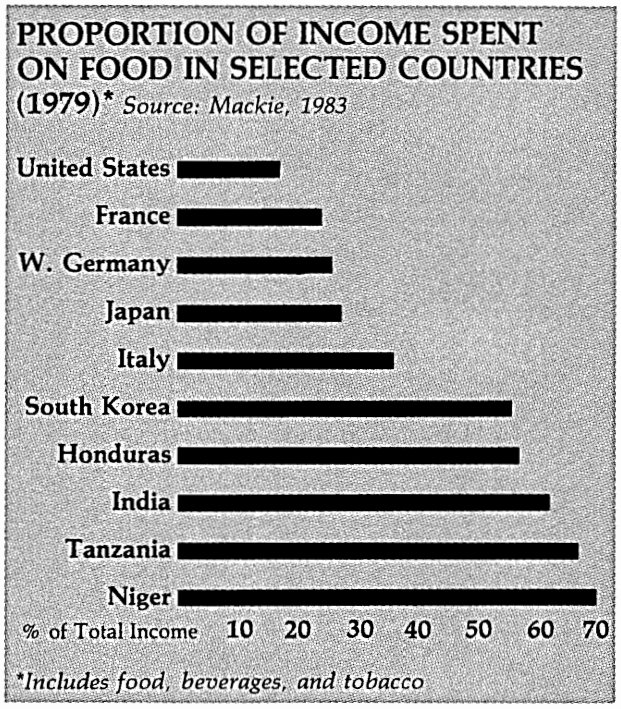
The most important objective of agricultural extension in Poland is to increase agricultural output and farmers' income through (1) technology transfer and (2) professional training of the producers. Modernization of the rural household is also an important goal.

State extension service propagates the agricultural policy of the state and carries out tasks set by the administrative authorities of a province. The clientele are all the farmers and rural women. Since extension is based on the diffusion of agricultural innovations, the extension staff concentrates on work with innovative and large farmers. The methods used are of an educational nature and consist of demonstrations, visits, training, etc. The prime objective is the transfer of research results.

Extension is not fully effective because of lack of both new and traditional inputs (fertilizers, feed, tractors, etc.) and frequent reorganizations of extension entities.

Food Chart

The following chart, from an article by Nyle C. Brady in *The Peanut Farmer*, July, 1986, shows the relative importance of food in the economies of selected nations, "developed" and "developing."



Research

Agricultural research is conducted mainly at 16 branch institutes under the Ministry of Agriculture, and at nine agricultural academies independent of the ministry. After completion, the research results are sent through various channels chiefly to the provincial extension centers, where they are tested. After positive results, they are adapted and diffused.

The present organizational system does not provide for any flow of information about farmers' needs into the agricultural institutes and academies. Research into the organization and methods of extension is carried out by the Center for Education and Progress in Agriculture.

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

Provincial Centers of Agricultural Progress

Extension personnel aim in the first place to support the realization of the state agricultural policy by:

— technology transfer;

— individual and group advising;

— promoting farm specialization (transforming multicommodity production into specialization);

— assistance in the modernization of the rural household;

— education of farmers and rural youth at the vocational level;

— training of farmers, youth and women; and

— assistance in planning and coordination of the extension activities of other organizations.

State extension service is organized at the province level and is fully financed from its budget. There are 49 such provincial centers, which employ 10,015 persons, as follows: 1,558 provincial specialists, 2,032 local specialists, and 6,425 general agricultural and rural household advisors. These centers do not have identical organizational structures, although provincial and local levels are present in each center, as well as corresponding organizational sections, with varying groupings and budget allotments.

Also at the provincial level, the specialists are organized into sections of plant production, animal production, economics and organization, rural householding, scientific and technological information (with the publication subsection), and methodology and organization.

Local service is divided into regions, made up of several communes. Regions are directed by managers. Some provincial centers employ, in a region, two to four local specialists, 10 to 15 general advisors, and three to six female household advisors, plus administrative and technical staff. Each center has its own farms, with the area ranging from several hundred to several thousand hectares, where managerial and administrative staff and farm workers are also employed.

Clientele

It is generally assumed that advisors work with all farmers in their area, usually from 250 to 600 people. They work directly with from 20 to 30 farmers from different groups, representing model farms, young farmers, and impoverished and specialized farms. State service also cooperates with the private farmers' unions, thus guaranteeing clients' participation in planning and evaluation of extension work.

Methods

Technology transfer starts at model farms, which are most often owned by the best farmers. Individual advising is provided for selected groups of young farmers and farmers from specialized and impoverished farms. Because of the very limited communication possibilities (inadequate telephone services, mobility problems), the range of individual advising is quite restricted.

Educational activities, based on plans made within the budget year (July 1–June 30), have a fairly wide range and are designed to serve as substitute agricultural schools and colleges. Significant changes have been taking place for the last two years. Assistance in farm management, which aims at raising farmers' income, has become an important issue. This is the result of changes in the state agricultural policy.

Line programming is used for production planning, with calculations done on personal computers. There are also attempts to base advising activities on problem-solving strategies and to introduce advising programs, including the social, legal, and ecological. In the future, the state extension service will concentrate on advisory services regarding economic organization and management.

Branch Unions and Associations

There are also voluntary organizations which group producers of a given commodity. Their aim is to protect the group interests in relations with customers and administration. They also act as agents in providing farmers with inputs and in selling the output, although extension activities are of secondary importance. At present, there are 17 such unions and associations, the largest one in the production of pigs, cattle, potatoes, and sugar beets.

These organizations, some subsidized by the state, employ full-time personnel but their number and their contribution to extension activities rank far below the state service. Extension is carried out through producers' groups, technology transfer is the main objective, and specialized training is the main activity.

Other Services

Some producer services are also given by the state food and agricultural industry and the horticultural and dairy cooperatives. Such activities are conditioned by the contract between the farmer and the contracting food industry or cooperative, or by the farmer's membership in a cooperative. Services include assistance in obtaining modern inputs, information about their use, and other advising if needed. As the stress is on production, extension activities are marginal.

Mass Media

Forty-nine professional periodicals for farmers are put out in Poland. There is a state publishing house specializing in agriculture. Also, 930 hours of radio and 180 hours of television are broadcast yearly as agricultural programs. Mass media are either autonomous or controlled by the central government.

In conclusion, considering the wide variety of extension organizations, it is crucial that their activities be coordinated both in the planning phase and in the realization of tasks. This is a problem that has not been solved satisfactorily.

China's New Leap Forward

Agrarian reform in the People's Republic of China has caught the attention of everyone, including the World Bank, which calls it the "most far-reaching . . . of the past decade." The **World Development Report 1986** is impressed by the comprehensiveness of the changes, affecting "all aspects of the organization of agricultural production, pricing and marketing of farm products, and allocation of labor between farm and nonfarm activities. . . ."

"China's remarkable success story" can be seen by a look at "before" and "after" pictures, starting at 1978. Between 1955 and 1958, the old system of 100 million families farming less than one hectare each was reorganized into cooperatives first and then into 55,000 communes with direct planning and control over acres sown, output, and procurement targets.

Some successes followed in the next 20 years up to 1978: improvement in development and use of modern seed varieties; great advances in irrigation, both in area and in technology; and a large, modern chemical fertilizer industry. Nevertheless, the agricultural sector "contributed only modestly" to the economy. The output of the most important crop, grain, was no more than it was two decades before. Soybean production had shrunk 30 percent in a decade; and production of cotton, China's second crop, was a quarter lower than 10 years earlier. So, in 20 years, average rural real income had moved up only slightly, self-sufficiency in grain had been lost, and China was importing grain for 40 percent of its city population.

Then began the reforms of 1979 and later, based chiefly on more incentives for farmers and less intervention by planners, and some change up from the bottom rather than down from the top. Major changes were:

- A 25 to 40 percent increase in farm prices in 1979
- Alteration of prices of various farm commodities to encourage regional crop specialization for efficiency
- Relaxation of prohibitions on grain sales in rural markets
- Management and organization changes which by 1983 permitted "about 95 percent of farm households to manage their own plots under contracts from collectives," meaning "individual household management, if not formal ownership"
- New relations permitted with the land: some subletting allowed, some farmer guarantees of the right of land management for 15 years, and some new provincial laws allowing the handing down of farms from parents to children

The result, according to the Bank's report: "Output has soared since 1978." The table below shows the impressive *annual* percentage increases through 1984. The compounded annual totals show that production of cotton tripled, oilseed crops doubled, and meat rose 80 percent. China shifted from importing grains to becoming a net exporter of coarse grain, all adding up to the "largest agricultural trade surplus in thirty-five years." Also, within this short period, real rural income has exceeded the previous gains of three decades.

Perhaps as surprising as the success is the explanation: productivity increases resulted chiefly from "using existing resources more efficiently," with no big technological breakthroughs nor increases in farm inputs except for chemical fertilizer. Other factors, like human incentives and marketing reform, clearly played a major role.

Growth in production of selected commodities in China, 1957–84
(average annual percentage change)

Commodity	*1957–58*	*1978–84*
Grain	2.1	4.9
Soybeans	−1.1	4.2
Cotton	1.3	18.7
Oil-bearing crops	1.0	14.6
Sugarcane	3.4	11.1
Sugar beets	2.8	20.5
Tea	4.2	7.4
Tobacco	7.0	15.2
Meat	3.7	10.1
Fish	1.9	4.6

Source: Lardy (background paper).

Growth Versus or With Equity?

The "with" answer is indicated by the World Bank's experience, as reported by then President A. W. Clausen in an Atlanta address, "Poverty in the Developing Countries 1985." Such experience shows that "economic growth and overty reduction are but different aspects of the same process." In fact, "they can be entirely complementary to each other."

Redistribution of income and assets must be accompanied by economic growth. That means "drawing the poor directly into the growth process" through action where the poor live—in rural areas. It means improved technology, better roads, price incentives, efficient markets, and "a good extension service."

Also, forcing a choice between the private and public sectors is as misdirected as an "either/or" choice between growth and equity. In many countries, only "selective government intervention" can do what is needed in education, health, family planning, and help to the utterly helpless. At the same time, "There is no more powerful force for progress against poverty than the initiative and ingenuity of poor people themselves."

The test of policies is effectiveness in attaining the desired objective, on which the Bank's experience adds an encouraging note: "the elimination of absolute poverty in this world of ours is a feasible project."

Extension Education Impact Through FSR in Lesotho

A summary has recently been made of the positive extension education experience as part of the farming systems research done since 1979 in Lesotho, with technical assistance from Washington State University and funding by the U.S. Agency for International Development. Done by David V. Youmans, Extension Specialist of WSU, it evaluates the extension impact in the overall research represented in a series of research bulletins published by the Ministry of Agriculture, the host-country sponsor.

The evaluation is in terms of the impact on three clienteles: farmer contact groups, chiefs and head persons, and government extension workers, as seen by the clients themselves. Youmans concludes from the respondents that the extension education programs as part of FSR made "impressive, at times dramatic . . . changes" in knowledge, attitudes, skills, and aspirations among the three groups. Practice change, while more variable, was also significant.

What was the end result among contact farmers? The answer: "such real benefits as better meals for families, higher crop yields, improved conditions of animals and increased incomes." Also the same farmers had become effective disseminators, "reaching nearly nine other farmers each."

Other conclusions were also drawn. FSR may not be a blueprint for Africa, but "it is a useful and dynamic development strategy" in which extension education is "both central and critical." Women must be brought into the design and delivery of extension programs, as they were quite successfully in Lesotho, where they "constituted nearly 75 of the farmer contact group membership and were responsible for most of the documented innovation." They also "held 45 percent of the chiefs and headperson positions."

Finally, it is the author's conclusion that the experience confirmed that the changes in knowledge and behavior and the material benefits of "any agricultural innovation rise in direct proportion to the intensity and frequency of extension education programs."

Tables and figures graphically present the reactions of the respondents in the study. The full 31-page summary is presently available only from the author at his institutional address at Washington State University, Pullman, Washington 99164.

INTERPAKS INTERCHANGE

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What Has USAID Been Doing?

A nine-year study tells us how the Africa Bureau of the U.S. Agency for International Development has allocated its expenditures through its portfolio of development assistance projects in Agriculture and Rural Development (as distinguished from the Bureau's other non-agricultural projects like health, education, refugees, etc.).* From 1978 to 1986, technology development was a category of increasing relative importance, technology transfer remained fairly constant, and agricultural education (including institution building and participant training) declined.

The latest figures show planned obligations for FY 1986 were as follows in percentages of the total agricultural portfolio (excluding the confusing and variable category of Agricultural Sector Support):

• Technology development	23.3%
• Technology transfer	21.8%
• Agricultural marketing	21.5%
• Agricultural education	14.8%

The only other double-digit purpose was rural roads, 17.2 percent.

Sub-sector analysis shows these targeted funding efforts as planned for FY 1986 (again percentages of the total):

• Crops	42.6%
• Crops and livestock	15.8%
• Livestock	2.8%
• Fisheries	3.2%
• Forestry	1.0%
• Rural development	24.6%

The last category includes rural institutions and infrastructures, such as community service organizations, rural industry, and cooperatives. USAID's efforts in Africa have emphasized two strategies: "improved policy environment" and "strengthening institutions."

***Agriculture and Rural Development: Functional Review, FY 1978-86,** Agriculture and Rural Development Division, Office of Technical Research, Africa Bureau: USAID, July, 1985.

Ingredients for Success

In its **Potatoes for the Developing World,** the International Potato Center tells "how quickly an effective commodity research and extension program was established, practically from scratch, in one of the world's poorest countries—Rwanda." The keys to success were strong support, financial and otherwise, from the Ministry of Agriculture; utilization of farmers' views and needs through on-farm research; focus on a few priority actions on the most pressing needs not requiring sophistication and complexity; and a good country-wide seed distribution service.

Astonishing New Lessons From City-Country Nexus

It may be hard to believe, but about two-thirds of the users of U.S. extension services live in cities. This is a far cry from the historical rural origins. Of course, 75 percent of the U.S. population now live in cities. People-oriented extension has followed people into the cities. But why do these city people still want extension services?

Two University of Kentucky professors have some answers and comments.* Basically, studies show that current use patterns derive from the rural origins and past participation of current city dwellers. Having played a part in 4-H, the youth program, is even more important than mere rural origins. Specifically, city adults from the country and small towns are twice as likely to be current extension users as those reared in cities of 50,000 or more; and adults who were 4-H members are more than twice as likely to be extension users as those not 4-H participants.

There may be implications generally, beyond the American experience—on the importance of youth work ("the influence of early exposure on later use patterns"), the subtlety of unperceived extension trends, and a host of other impacts. But there is more on the American scene itself: the past phenomenon of having half the urban population grow up in the country is not going to be repeated. The country-to-city trend has declined with signs of reversal. Migration cannot be changed but extension programs can. They will have to adjust. "The future of Extension is being written today."

As for the 4-H youth program itself: "The vitality of future Extension programs depends on a strong 4-H program today." Furthermore, city-dwelling alumni of 4-H programs need to be identified and recruited for leadership in more effective urban programming.

*James A. Christenson and Paul D. Warner, "Extension's Future is Today," *Journal of Extension*, Summer, 1985.

Engraving on the Skin

Non-formal learning passes under many erudite names, but its spirit is grippingly described by Maxim Gorky's memoir with the satirical title, **My Universities:** "I understood at a very early age that men are created by their resilience to their environment. . . . I did not find John Stuart Mill very fascinating and soon realized that I was very well acquainted with the basic principles of economics—I had learned them from direct experience of life and they were engraved on my skin. . . . You must study, but not so that books hide real people from you. . . . All learning comes from man. People teach more painfully than books and they teach crudely. But what you learn takes firmer roots."

Ecuadoran Extension Exercise

A preliminary report can now be made on the work of the team which recently reviewed research-extension-farmer linkages in Ecuador, as reported under "INTERPAKS Activities" on page 12 of this issue. This was the first field application of the diagnostic framework, organizational mapping tools, and other procedures derived from the ongoing INTERPAKS-USAID Cooperative Agreement.

The team worked with Ecuadoran officials and USAID in gathering information on how technology-transfer activities could be strengthened through joint public and private sector program activities. An organizational inventory matrix was designed to give policy-makers key information on governmental and non-governmental organizations actually or potentially involved in the technology generation and transfer system. Approximately 130 organizations were initially identified.

Recommendations were made to the government and to USAID on where additional assistance might strengthen the transfer mechanisms the team identified. These related to creating a cadre of research/extension liaison specialists, establishing a technical information storage and retrieval system, strengthening communication support activities, and developing comprehensive in-service training programs for both public and private sectors.

The team also suggested that more work needs to be done in the area of organizational development and change—on structures, policies, and procedures—to facilitate these activities, perhaps with a more in-depth analysis to develop a baseline for monitoring progress hereafter in Ecuador's innovative program.

Is Better Technology Better?

There is a growing feeling that technology had better be developed with regard to something more than increased agricultural output, even in countries needing more output. Among the "something more" is the environmental or quality-of-life effect, says Kenneth R. Farrell, Director of the National Center for Food and Agricultural Policy Studies, Resources for the Future, in Washington, D.C.*

For too long, agricultural research and extension have emphasized "technological determinism," with agricultural policies encouraging producers "to employ technologies that sometimes have adverse environmental effects." Some degradation of the environment is common and tolerable, but there is a threshold beyond which a crisis looms.

It is time now "to begin to do some forward thinking, research, and analysis about the possible costs of various biotechnologies." Technological development can no longer be blind to its side-effects and trade-offs. It needs to take into account the entire setting, the institutions, the agricultural policies, and the economic implications.

*An interview in *Ceres*, November-December, 1985.

Investment in Human Capital Explains Punjab Differences

The essentials of agricultural development would become clear, or clearer, if we could adequately explain the differences in agricultural performance under similar circumstances. Therefore, much light is thrown on the perennial question by a World Bank study of the recent comparative agricultural performance in East and West Punjab (the states of Punjab and Haryana in India as East Punjab, and the province of Punjab in Pakistan as West Punjab).*

While there has been significant development in both areas, a major divergence in favor of East Punjab began in the mid-1970s in growth rates of gross value output of crops. The report says, "both casual observation and statistical analysis show clearly that East Punjab has experienced relatively faster growth rates over the past decade, and that the basis of development has been broader than in West Punjab." Not only has crop output increased more, but so have other development indicators. This change came after the quantum leap of the "green revolution," or the first growth cycle of new technology and increased infrastructure, when the growth rates were remarkably similar.

It came in the second growth cycle, the "fine-tuning and adaptation of technology to localized conditions, institutional and infrastructural consolidation." Then the results went beyond what could be attributed to direct physical production inputs. What was at work? "Most notably," the report says, "investment in human capital and institutional development in East Punjab agriculture seems to have achieved a higher level, with the result that farmers are generally working at higher levels of productivity, aside from the level of higher institutional support to agriculture in that region."

This comparative review of agricultural performance is comprehensive, testing a wide variety of hypotheses about the factors that determine the differences. These include differences in agro-climatic conditions and the physical resource base; intermediate inputs like credit, extension, and research; institutional and policy considerations; and the implications on the demand side, such as East Punjab's relation to a country of 700,000,000 and West Punjab's relation to 85,000,000. None of these seemed to be determining in accounting for the divergence of growth.

Detailed analysis then turned to the *direct* inputs with supporting statistics and graphs—fertilizer, improved seeds, agricultural machinery, credit, agricultural prices, and infrastructure (irrigation, roads, electricity). Again, while these factors accounted for some difference, the report concluded: "The evidence suggests that a substantial part of the differences that can not be explained by the direct effect of inputs may be due to disparities in the level of management of more refined and sophisticated technologies. This, of course, depends on farmers' ability to learn and apply new technological advances, which is governed by the strength of institutions to educate and assist farmers in technology management."

The evidence shows that the rate of change is determined by the farmers' level of education and ability to manage—to know and to use the options open to them. It is also determined by "the level of competence of technical, professional and administrative staff in supporting institutions, and the relevance of their training." Such institutions determine the generation of new technology, its diffusion to farmers, and their adaptation and use of it on the farm. In other words, the more advantaged Punjab region had "a wider general education base and stronger institutional development, and hence formation of managerial capacity—or so-called human capital. . . ." That region also had the stronger research and extension institutions.

The report concludes with some suggestions for the future, including observations on what might be studied further to test the hypothesis in detail. Operationally, policy and development should suit the total agrarian structure with its complex network of growth factors and should emphasize those factors and institutions that demonstrably produce results.

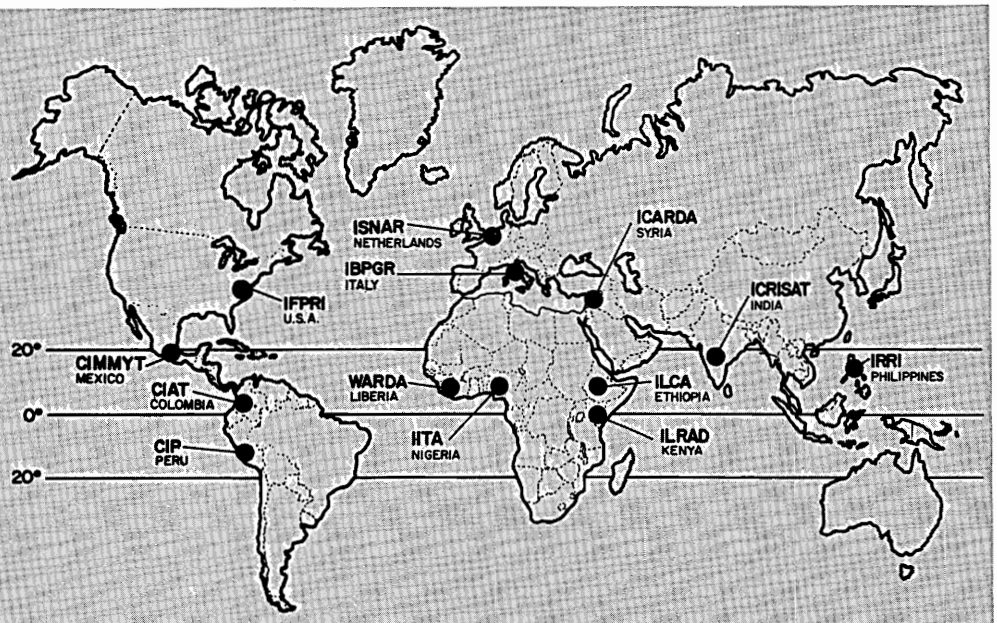
Other more indirect implications can be derived from the study—the folly of conceiving extension as a job of peddling simple technology; the danger of planning horizons that are too short; the importance of the management capacity of farmers; and the dependence of any lasting heritage on human rather than technological factors. The development of the farmer is more important than the development of the technology he uses.

All parties involved in agricultural institution-building in India in the 20 years after 1952 may see the report as a compliment to the enduring effect of their efforts, where emphasis was placed on the human capital rather than the technology, and on the long-run investment in institutions rather than the short-run spreading of mere technology. In comparative terms, the inference may be that optimism about the efficacy of machines and media, even if bereft of educated senders and users, can indeed be wasteful rather than economical in both time and money. Likewise, the mere availability of research, without interpreters, agents, and human linkages, may not reach the intended farmer; or if it does reach the farmer who is without management and decision-making skills, it will surely, in apt metaphor, fall on barren ground.

*"Review of Comparative Agricultural Performance in East and West Punjab," internal working paper prepared principally by Dirk M. Leeuwrik, Senior Agriculturalist, Irrigation 1 Division of the South Asia Projects Department, under the general guidance of Tae-Hee Yoon, Division Chief, September, 1983.

INTERPAKS

Centro Internacional de Agricultura Tropical (CIAT); Centro Internacional de la Papa (CIP); Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT); International Board for Plant Genetic Resources (IBPGR); International Center for Agricultural Research in the Dry Areas (ICARDA); International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); International Food Policy Research Institute (IFPRI); International Institute of Tropical Agriculture (IITA); International Laboratory for Research on Animal Diseases (ILRAD); International Livestock Centre for Africa (ILCA); International Rice Research Institute (IRRI); International Service for National Agriculture Research (ISNAR); West Africa Rice Development Association (WARDA).



Global location of the 13 CGIAR-supported international research and training centers (1985). Source: IITA*

Transfer by Training

It is common to say there are 13 international agricultural research centers, giving no indication that they are also technology transfer centers as well. While they leave most applications and follow-up activities to national agricultural systems, they do perform an important transfer role through training.

That practice is well articulated in the last (1985) **Annual Report and Research Highlights** of the International Institute of Tropical Agriculture, Ibadan, Nigeria: "All the centers work closely with national agencies. The linkage is vital to keep the work at centers oriented to the needs of the farming communities they are intended to serve. In fact, the gains made by scientists at the centers will get translated into actual food output only when the national agencies take up the results, adapt them to local conditions, and carry them to their farmers. This is why great importance is attached to training programs. To date, the centers have trained more than 18,000 persons, mainly from developing countries."

Green and Not So Green

The 1974–84 decade was green in Asian agricultural production but colorless in dietary improvement, still leaving more than 300,000,000 in the region undernourished. The two problems—the good news of increased production and the bad news of undernourishment—were considered by the 18th FAO Regional Conference for Asia and the Pacific in July, 1986, with 29 nations represented. The region entered the decade in the expectation of a great decline in cereal production but emerged as a net exporter of rice and enough wheat to stabilize imports. *—from FAO at Work, June/July, 1986.*

The Public/Private Balance: Some Possible Options

In the swelling world revulsion against "let the government do it," the scales are being tipped toward "privatizing" much that has long been public. How that can be applied to agricultural extension seems to be worrying the U.S. Agency for International Development, which expresses unhappiness with the current state of affairs.*

A little more than a year ago, the Administrator of USAID, M. Peter McPherson, informed his staff, "I believe that we have achieved substantial advances in our support to agricultural research over the past four years, but that the results of our technology transfer efforts have been disappointing." All the extension models USAID has worked with (U.S.-derived, the country's pre-independence type, and T & V) "tend to rely on an extensive cadre and hierarchy of public sector extension personnel." Therefore, a shift in balance is proposed, apparently from personnel to media and from traditional extension to "alternatives to complement government extension models." The media approach is to make greater "use of private sector channels for technology dissemination."

Recognizing, however, that the developing world needs something more than developed-country models, the Administrator concludes with some "options for improving the effectiveness of existing extension services":

(1) relieving extension agents of non-production (e.g., credit administration, marketing, tax collection and regulatory enforcement) responsibilities;

(2) strengthening training, technical backup and mobility of extension workers;

(3) focusing research and extension more sharply on improved technologies for priority crops and animals;

(4) increasing interaction between extension workers and researchers, including joint participation in on-farm research and demonstration and feedback to research (this is often accomplished under the aegis of farming systems research projects);

(5) supporting farmer training programs (including literacy, numeracy, basic science and farm management training) and vocational agriculture programs;

(6) closely coordinating public sector extension with mass media approaches and private sector activities;

(7) improving attention to the needs of low-resource farmers and women by increasing the number of female extension agents and developing appropriate techniques to reach these farmers; and

(8) development of more rigorous planning and setting of objectives and methodology for the public extension service.

*Internal communication, June 10, 1985.

Improved African Extension: Development/Diffusion Merged

Many doctors are giving prescriptions for ailing African agriculture. The Green Revolution seems not to be the answer, unless greatly modified and adapted to widely varying local conditions. Traditional extension has brought no big advances. T & V has worked better elsewhere. Even the latest, Farming Systems Research, is being criticized for falling short.

On some approaches, if not remedies, Julie Howard has made some persuasive suggestions in an internal memorandum, March 31, 1986, prepared as she completed an internship of participation and observation in the U.S. Agency for International Development. First, she commends a willingness to settle for something less than blinding insights and major breakthroughs. More attention might well be given a combination of major biological innovations suited to Africa and minor advances using "less glamorous incremental and low-resource technology." Attainable marginal and incremental progress need not be abandoned while looking for uncertain quantum leaps.

A major proposed change involves the extension agents—different training and different use, with more emphasis on district-level subject-matter specialists and less on the local paraprofessional, generalist type. The focus would be on *what to extend.* That would clearly link research and extension. So both the training and use of agents would emphasize competency to collaborate with researchers in the development of farmer-needed technology (assuring something to extend) and better delivery than as "a one-way 'radio transmitter' used to relay packaged technology messages to farmers." Another negative on "relaying one-way canned messages" is that private firms and mass media can do the same.

Caution is needed also in the illusory remedy of turning it all over to the market forces of the private sector. That presupposes "a backlog of farmer-ready technology available for dissemination," something which much of Africa does not have. Therefore, public extension services are still needed, particularly if they are organized to "play a critical role in technology development by helping researchers test technology on farm fields and by bringing farmer problems to the attention of researchers." Public extensionists can thus become the catalytic agents in producing what is now missing—adequate technology development.

Keeping on With Excellence

With all the talk of high technology and monumental changes in a new era, old-fashioned extension may cringe in its corner. But should it, or need it? Michael Quinn Patton of the University of Minnesota thinks not.*

Being innovative can get to be an end in itself. Changes, yes, but extension should stick to what it does best. What is that? What is its core business? It is "getting people to apply knowledge and use information." "It is people-oriented, knowledge-based, and problem-focused." That is its success, and that is its future.

In a world flooded with information, the key is knowing what is relevant and worth having, avoiding the mere compounding of discrete trivia. The extension and information focus will, of course, change. It will give more attention to "issues of quality" than to increased quantity. It will emphasize problems of distribution rather than production. It will not focus on determining right versus wrong—the one right way. Instead, "we shall have to learn to manage uncertainties, compare options, and recognize that we can never know for sure whether we took the single best path."

Whatever the changes, the human being will be the common thread. Extension is not the machine but the human at the controls—in fact, a state of mind. The genuine "high tech" is the state of mind "that works with people in applying knowledge and information to solve important problems and thereby create a better world." That is excellence because it is and always will be the central business of extension.

*"Extension Excellence in the Information Age," *Journal of Extension,* Summer, 1985.

That's Pretty Indefeasible!

"When enthusiasts get busy on a feasibility study, they invariably find that it is feasible!" — *Lord Ritchie-Calder.*

Helpful Ideas: Old and New

Peter von Blanckenbury, **Agricultural Extension Systems in Some African and Asian Countries.** Food and Agriculture Organization: Rome, 1984 (75 pages).

This information-packed FAO Economic and Social Development Paper 46 is an excellent summary of findings in eight country analyses commissioned by FAO itself and 21 country papers presented at international conferences at Kuala Lumpur, Accra, and Dakar in 1981–82. Comparisons are then reported at the end, with some general recommendations.

The combination of description and analysis is presented succinctly, in readily usable form, with coverage of extension's chief features, organization, resources, farmer relations, concepts and programs, main activities, methodology, and constraints. One's understanding of extension and its problems in Asia and Africa can be enhanced by a quick perusal of this monograph.

Geoffrey Moss, **Stimulating Agriculture: A Manual for Training Agricultural Extension Workers.** UNDP Development Training and Communication Planning: Bangkok, 1986 (271 pages).

Many agricultural extension manuals, ranging from the theoretical to the how-to-do-it, are issued by national and international agencies. This one from the UNDP is aimed at the training of extension personnel, with such aids as suggested assignments, discussion topics, and "thinking exercises." It ends with a section on the T & V System, widely used in Asia. This is a completely rewritten version of what appeared as an official New Zealand publication in 1977 and has been field tested in Sri Lanka, Bangladesh, and Vietnam.

J.M.A. Penders, editor, **Methods and Program Planning in Rural Extension.** H. Veenman & Zonen: Wageningen, The Netherlands, 1956 (324 pages).

In the evolution of extension handbooks, attention may be redirected to this 30-year-old publication of the International Agricultural Study Centre, edited by the then Inspector of Agricultural Extension Services, The Netherlands. Made up chiefly of contributions from European professionals, it was intended to improve extension with more effective techniques. Therefore, major sections deal with the agricultural advisory role, organization for development, methodology, and evaluation.

The International Role of Extension: Future Directions. Conference Proceedings. Cooperative Extension Service, Michigan State University: East Lansing, 1985 (95 pages).

These highlights and recommendations flow from an effort "to put action behind the ECOP generated statement of 'The International Mission of the Cooperative Extension.'" Keynote addresses, panel presentations, and small-group discussions feature representatives from USAID, the World Bank, USDA, UNDP, foundations, universities, voluntary organizations, and consulting firms. The National Association of State Universities and Land Grant Colleges was a co-sponsor of the conference. Copies are available from the Cooperative Extension Service, Michigan State University, Room 48 Agriculture Hall, East Lansing, Michigan 48824.

Navin Chandra Joshi, **Planning and Technology in Developing Nations.** UDH Publishers & Distributors: Delhi, 1984 (256 pages).

The preponderance of development literature is written from the perspective of the developed countries: too little is heard from the people with the problems. Here is a voice from the muted side, and that point of view is its chief merit. An opening section gives a theoretical framework, geared to India, and the remainder deals with separate countries in the Third World.

We learn that "present industrialized nations should no longer remain as models of development." They have unsuitable technology, produce "for elite consumption," create economic inequalities, reduce social participation in decision-making, discourage locally developed technology, and generate a regrettable "system of values in terms of people's attitudes towards nature, society and human resources."

Modernization of agriculture is the prime need, with the adoption of improved technology. But if it is to be imported, it should not "make collaborative enterprises an appendage of the giving party."

Jan W. Low, **The Economics of Tilapia Culture in Kasai Occidental, Zaire.** Cornell International Agriculture Mimeograph 109, Department of Agricultural Economics: Cornell University, Dec., 1985 (43 pages).

Animal husbandry is not always a high extension priority and one of its simplest forms, aquaculture, is still more neglected despite its potential benefits for low-income farmers under the right conditions. This research report on a labor-intensive project begun and then expanded by extension efforts tells what worked and what went wrong in this promising way of supplying tasty fish for home consumption and supplemental income.

Michael Lipton with Richard Longhurst, **Modern Varieties, International Agricultural Research, and the Poor.** Consultative Group on International Agricultural Research Study Paper No. 2. World Bank: Washington, D.C., 1985 (139 pages).

If you want to get inside the debates about what the Green Revolution did or did not do for the poor, or for equity as well as for production, this professionally informed paper will do it. The biological, economic, and sociological are deftly interwoven, with criticism, caveats, and qualified conclusions. The literature review, based on 20 pages of bibliography, does not bring clear answers but suggests new research agendas for getting such answers.

Negatively, at present, the wrong questions are being asked, and only the first-round effects are being looked at. Positively, for the future, the international research institutions, freed from national pressures, should fix their research on the crop priorities of the poor rather than the powerful, with awareness of the dangers of being closer to the "international scientific establishment" than to the "poor peasants, workers or consumers."

The bottom line is that *without* modern crop varieties, the poor would have been still poorer. "If the farmers of the Third World today used the same cereal varieties as in 1963-64, and everything else were unchanged, then tens of millions of people would this year die of hunger."

George H. Axinn and Sudhakar Thorat, **Modernizing World Agriculture: A Comparative Study of Agricultural Extension Education Systems.** Praeger: New York, 1972 (217 pages).

This is another old but good source. Opening and closing chapters bracket descriptions of 12 national extension systems. The chapters are analytical, lucid, and enduringly useful, with hypotheses and insights to provoke the reader's further thought. The in-between cases are unavoidably dated, admittedly "action shots" of on-going change.

The conclusion is that the world's systems are more alike then different. All have the common features of a target system or clientele, a change system or organization, a staff of change agents, and a sponsor, with sensitivity and responsibility to whatever body politic prevails.

Much is made of the fact that every rural society has some kind of a system of education/extension, but it has to work as part of a larger system made up of six interrelated functional components: production, supply, marketing, governance, research, and education/extension. At the end, comparisons are made, with a courageous statement of "the broader generalizations that might apply throughout the world."

Per Pinstrup-Andersen, **Agricultural Research and Technology in Economic Development.** Longman: New York, 1982 (261 pages).

The little attention this book gives to extension or systems of technology transfer (despite its emphasis on the total system with total strategy) can be quickly summarized: (1) many developing countries are spending a disproportionate amount on extension in comparison to research; and (2) extension is too often a one-way system of handouts when it ought to provide a flow *from* the farmers to the research institutes for use in the proper design or redesign of technology.

The Green Revolution shows that research and technology are "extremely powerful tools" for agricultural production. What about distribution of the gains, or equity? Yes, evidence indicates a problem, but it is chiefly one of "political inertia" or "faulty economic policy." In case of conflict between growth and equity, investment in agricultural research should not suffer. It may, however, be redirected away from the common practice of doing the research on optimal soils under optimal conditions—by definition not the position of most farmers and, least of all, the poorest.

Tropical Forests: A Call for Action. World Resources Institute: Washington, D.C., 1985.

This is the report of an international task force convened by the World Resources Institute, the World Bank, and the United Nations Development Programme "to advance the argument for increased action against deforestation from the narrow confines of the forestry community to the wider area of public policy." Three separate parts cover "The Plan," "Case Studies," and "Country Investment Profiles."

The point is made that "effective forestry extension services in developing countries are still rare" and that personnel should be retrained at all levels, with structural changes in government agencies and better financial support. This is an area of technology transfer that is getting greatly increased attention but, so far, incommensurate action.

World Development Report 1986. Oxford University Press for the World Bank: Washington, D.C., 1986 (256 pages).

This is the latest of the familiar World Bank reports assessing development issues, based on Bank experience. It is loaded with colored maps, graphs, and tables dispensing hard-to-find worldwide data. The last third is devoted to 31 World Development Indicators, with a storehouse of information on the social and economic features of development in more than 100 countries.

Around the World

The How Jumped Over the Moon

How-to-do-it is an important part of new technologies. Satellites are important new transfer mechanisms with space-defying capacities. Thus, Miami Children's Hospital in Florida transmits the latest on pediatrics to doctors in South and Central America; Canada helps in diagnoses in doctor-scarce countries as brain scans are telecommunicated from Africa; and University College, Dublin, Ireland, gives bimonthly lectures to 300 Jordanian students and professionals on water management and engineering.

Universities of the South Pacific and the West Indies have long pioneered in reaching their scattered clients by satellite, as the People's Republic of China is now doing through a "TV University." Promoting the practical use of this new technology is the special business of Project SHARE (Satellites for Health and Rural Education), INTELSAT, 3400 International Drive, N.W., Washington, D.C. 20008-3089.

Assured Farmer Link-Up in Taiwan

Taiwan has a different way of assuring that extension does not miss its target, the farmer. Of fees the government pays the farmer associations for performing certain public services, 70 percent must be spent on extension. Therefore, such associations recruit and supervise (hire and fire) most of the nation's extension agents. Accountability, relevance, and profitability are the objectives.

Alley Revolution for Africa?

If there is to be a Green Revolution for Africa, maybe it is to come from "alley farming", an agroforestry practice of growing crops between hedgerows of trees or shrubs. Developed by researchers from two African-based international research centers, the system has many merits: soil conservation with maintenance of productivity; use of prunings as a mulch for food crops and a browse for livestock; provision of fuelwood and staking material for viney food crops; supplying biologically fixed nitrogen from leguminous trees or shrubs; use of low levels of inputs like fertilizers and herbicides; and continuous cultivation without long fallow periods or land degradation.

International backing is mounting. With 100 representatives from a score of countries, a fostering workshop was held in Nigeria in March with participation by the International Institute of Tropical Agriculture, the International Livestock Centre for Africa, the International Development Research Centre, and the U.S. Agency for International Development. Also national institutes in Africa, India, Indonesia, and Australia are conducting alley trials. Consensus of the workshop was that multidisciplinary efforts, with a strong social science input, can solve the limitation problems, such as land tenure restrictions on tree planting and harvest and the possible reluctance of farmers to give up land for trees rather than arable crops.

In the opinion of a representative from Ghana, "Alley farming has come to stay. . . . (I)t will revolutionize agriculture as far as the peasant farmer is concerned."—*from R. Bitterli in IITA Research Briefs, June, 1986.*

Right Technology for Botswana

Innovation with appropriate technology is brought to Botswana through private-public cooperation in the Rural Industrial Innovation Centre. The objective is better to serve rural people through small scale rural industries aided by research, testing, and distribution of materials and methods. Achievements include solar, wind, and biogas energy-producers, improved water pumps, a plow-planter combination, a sorghum thresher, and training programs in baking, blacksmithing, tanning, and carpentry.—*from Lopang Dikgang, Agrinews, Botswana, April, 1985.*

Israel's CINADCO

Agricultural development services, including training and technical assistance, are provided by Israel's Centre for International Agricultural Development Cooperation, Ministry of Agriculture. It sends specialists on short- and long-term assignments in developing nations and since 1960 has trained 18,000 trainees in courses held both in Israel and in the host countries. Its core staff of 26 draws also upon professionals in the extension and research arms of the Ministry and in the Faculty of Agriculture at Rehovot, a branch of the Hebrew University of Jerusalem.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Nicholaides on Project Visits

In September and October, the Director of the University of Illinois Office of International Agriculture, John J. Nicholaides III, visited FAO in Rome and University projects in Pakistan, Zambia, and Kenya. While in Nairobi, he participated in pre-contract negotiations on the Illinois-Egerton partnership.

Ecuador Review

In September, INTERPAKS provided three UIUC faculty for a unique review to strengthen Ecuadoran agricultural research-extension-farmer linkages through an integrated public and private sector program. The Illinois team consisted of Michael Sager, Woodford County Agriculture Advisor; Michael E. Irwin, Entomologist, Office of International Agriculture; and John L. Woods, INTERPAKS Director.

The team leaders were Kenneth Swanberg, who is USAID/Washington Project Manager for the INTERPAKS-USAID Cooperative Agreement; and Bolivar G. Navas, Save the Children Alliance and representative of the Ecuadoran Government. Other members were Quentin West, Sigma One Corporation; and Eric Abbott, the Communication Technology Transfer in Agriculture (CTTA) project. The team also worked closely with Arthur Coutu and Douglas Gross from North Carolina State University.

Short Courses Again

A new short course will be offered next year, under INTERPAKS auspices, on "Retrieval and Dissemination of Agricultural Information." It will be taught by an INTERPAKS Associate, Wilfrid Lancaster, Professor of Library and Information Science and an international consultant on the subject.

Two courses previously given will be repeated: one on extension management for senior administrative staff, led by John B. Claar, former Director of both INTERPAKS and the Illinois Cooperative Extension Service; and one on the training of trainers in extension, taught by Violet M. Malone, Professor and State Leader, Extension Education.

Dates will be fixed later, but present 1987 plans call for the last-named course to be offered in May and the others in September.

Swanson to Kenya

Burton E. Swanson, Director of the INTERPAKS-USAID Research Project, was in Kenya in September to initiate activities under the new Illinois-Egerton University College partnership agreement, with USAID assistance. He will be campus coordinator for this new activity. He will also visit Nairobi in December to participate in the World Bank's 16-country Technical Workshop on the Sub-Saharan Agricultural Research Review for Eastern and Southern Africa, a project on which he has worked.

Claar in Panama

John B. Claar, Senior INTERPAKS Advisor, made a brief return to Panama in mid-September in connection with the USAID-sponsored Agricultural Technology Development and Transfer Project.

Case Studies in Mexico and Taiwan

Two more case studies of agricultural technology development and transfer systems are being made under the INTERPAKS-USAID Research Project headed by Burton E. Swanson. One in Mexico in October was led by Swanson, who was joined by Earl R. Swanson, Emeritus Professor of Agricultural Economics; John C. van Es, Professor of Rural Sociology; and Warren Peterson, Research Assistant.

Another in Taiwan, known for its distinctive system, will be made in January by Eldon L. Johnson, Senior INTERPAKS Advisor and team leader; John L. Woods, Director of INTERPAKS; Frederick C. Fliegel, Professor of Rural Sociology; and Mel Chih-Yu Chu, Biologist, Department of Horticulture.

Management Course

The INTERPAKS-sponsored five-week course on extension management, taught by John B. Claar, former INTERPAKS Director, in September and October, attracted extension personnel from Venezuela, Sri Lanka, Ghana, Zambia, Haiti, Zimbabwe, and Panama.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign March, 1987/Vol. 4, No. 1

Rural Successes in Korea Shown in FAO Case Study

The remarkable industrialization of South Korea has created problems for agricultural extension, such as robbing it of adequately trained and motivated personnel; but the positive aspects of extension are nonetheless numerous, and the achievements impressive. While extension is only one factor, it is clearly a major one deserving study in the phenomenal development of agricultural production, as shown by a 1984 case study done for the Food and Agriculture Organization, **A Study of the Agricultural Experience in the Republic of Korea.** The contracting authors, Yong-Bok Chung and Youl-Mo Dong, are Korean agricultural officials.

General Features

Korea is one of the world's most densely populated nations, with more than 38,000,000 people (385 per square kilometer) dependent on small-scale farming, with each household cultivating only one hectare on the average. Of the 22 percent of the total area which is arable, 59 percent is used for growing rice.

Government policy has favored industrialization, while continuing to invest in agriculture. As a result, from 1962 to 1980 the farmer proportion of the total population was cut in half (from 57 to 28 percent), and agriculture's contribution to the GNP declined from 33 to 17 percent. To meet the resulting severe shortage of farm labor, appropriate technology arose: one small mechanized hand tiller for every 7.4 farm households; a larger number of motorized sprayers; rice transplanters and harvesters available through government credit; large government-constructed fertilizer plants for more chemical use; virtually universal household electricity; and 86 percent household ownership of television sets, 100 percent radios, and 66 percent newspaper subscriptions. At the same time, illiteracy has been reduced to eight percent, and longstanding land reform has transformed many tenants into landowners.

Rank Order of Crops

Production and economic value of 10 leading food crops in all developing countries.

Crops	Production (million t)	Area (million ha)	Yield (t/ha)	Value (billion US$)
Rice	382.6	139.5	2.7	65.0
Wheat	162.4	142.1	1.1	24.0
Maize	153.9	78.3	2.0	18.3
Potatoes	91.1	8.7	10.5	12.9
Sweet Potatoes	137.0	9.3	14.7	12.2
Cassava	127.4	14.4	8.9	8.9
Bananas/Plantains	61.9	no data	no data	6.6
Sorghum	43.7	40.1	1.1	5.4
Groundnuts	16.9	18.0	0.9	5.0
Millet	26.9	40.2	0.7	3.9

Sources: Estimates of 1981 Chinese production of cassava, potatoes, and sweet potatoes are from Stone, B. Notes on interpreting PRC root and tuber crop data, *The China Quarterly* (forthcoming). All other production estimates are 1980/82 averages derived from FAO. Farm-level prices for 1977 are from FAO.

— from Potatoes for the Developing World, International Potato Center, 1984.

Extension History

Before the first experimental agricultural research station was established in 1960, non-systematic word-of-mouth techniques were used to disseminate scientific knowledge and technology, although some learned men did glean information from successful farmers and some written materials appeared in manuals and calendars. After the Korean War, the Agricultural Extension Law was passed in 1957 for post-war rehabilitation and economic development. The new scheme separated extension as well as research from the common governmental system and made it "an informal out-of-school educational system free of unhelpful interference . . . keeping political neutrality and rejecting non-educational methods."

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

As time went on, the original organization changed, particularly to avoid duplication (as with the community development program), to enlarge the scope, to include parallel financial support from the provincial and local governments, and to put all under the Office of Rural Development (ORD) in 1962. While planning can now be in line with the policy and plan of local governments, paper work has sometimes come to compete with field activities.

Program Features

Organizationally research and extension are integrated as "two interdependent administrative functions" under a national Administrator of ORD, an arm of the Ministry of Agriculture and Fisheries. The Research Bureau has 13 specialized institutes and stations. Extension programs are done by two bureaus: Rural Guidance and Technical Dissemination, with four and five specialized divisions, respectively. Also, a Technical Information Office handles information activities and extension materials.

At the provincial level, nine offices cover the country—the Provincial Offices of Rural Development (PORD), which are part of the provincial government. Each has a Research Bureau and an Extension Bureau, headed by a Director-General. These bureaus conduct research and extension related to provincial needs and circumstances. At the local or city/county level, only extension activities are performed, not research. Such local offices are under the control of the PORD but also function as part of the city/county governments, where part of the dependence is for financial support. Finally, at the bottom of the research/extension pyramid are 1,465 grassroots organizations functioning under the county offices and carrying out both local programs and nationally financed programs with local applications.

This organization assures that research results "are immediately evaluated in joint sessions" and decisions on technical innovations worthy of extension adoption "are realized through a meaningful and satisfying exchange between research and extension personnel."

Two organizational linkages are important—with an agricultural cooperative system "primarily responsible for agriculture credits and supplies, and the rational marketing of farm products"; and with the agricultural colleges, whose professors are harnessed into joint appointments, collaborative research, and action-oriented rural development programs.

Personnel

All extension personnel are paid from the national treasury: 106 of them at the national ORD level, 226 at the provincial level, 2,997 at the county level, and 4,651 field agents (7,980 total). Only about five percent are in the home economics category. On the average, there are 25 senior specialists in each provincial office.

Problems do exist in the recruitment and retention of personnel. Industrial employment is often preferred, and the proportion of employees with college education has declined from 48 to 21 percent in the last 15 years. To offset this as much as possible, extensive training programs exist for induction, in-service, refresher purposes through clinics, and college correspondence opportunities affiliated with Seoul National University.

Budget

Financial support is shared. The national government pays all salaries and provides basic facilities and national projects, while the provincial and local governments pay for local projects. Of the $74,730,000 budget for 1980, the national government supplied $44,669,000.

On the average, a motor vehicle is available for each county office, with a motorized scooter for every two agents. All offices are well equipped for non-formal educational purposes.

Farmers' Clubs

Encouragement of farmer organizations has extended the extension arm further through Farm Improvement Clubs (almost 400,000 adult men in the villages), Home Improvement Clubs (550,000 housewives under guidance of home economics agents), and Rural Youth Clubs (608,000 rural boys and girls).

Other Features

The latter half of this study then deals with the major extension programs and the nationwide scheme of community development (New Community Movement), based on "diligence, self-help, and cooperation through voluntary participation." In the authors' opinion, the extension programs laid the foundation on which the Saemaul Undong has achieved great success, grounded in "a higher standard of education, advanced farm technology, and a progressive attitude to improve one's lot in life." On the material side, the average farm household income increased from $740 in 1972 to $3,847 in 1980, or five-fold in less than a decade.

Current Problems

Despite its successes, problems remain. The greatest is in recruiting and retaining extension agents of the quality demanded by diversified and specialized farming. Mere dissemination of farm technology is no longer sufficient. Attention is now required on "social affairs guidance" (as in youth, rural life, and citizenship programs) and on management and marketing as well as cultivation techniques. Extension methods should also be improved and broadened, with more emphasis on "a comprehensive group system", as in collective marketing, rather than "the conventional method of individual activities."

Finally, extension cannot do it all alone in Korea. Linkages are important, particularly with other agencies for integrated rural development, with educational institutions, and with relevant international bodies.

Extension Developments: New with Old Variables

Since 1975, agricultural extension worldwide has felt the impact of a $2,400,000,000 commitment from the World Bank. Financing now extends to 102 extension projects or projects with extension components in 50 countries, with the majority in Africa. Contrary to common impression, various extension approaches are funded. The widely supported Training and Visit System is not the Bank's official or exclusive approach.

It is revealing to see what themes are being emphasized or what old problems are being kept under attention. These are discussed by Michael Baxter of the World Bank staff in his personal views expressed at the Sixth International Farm Management Congress, held in Minneapolis, July 2, 1986.* Five "new" developments are covered.

First, far-reaching changes are taking place in communications systems and technology as strong adjuncts to extension services, especially in educating farmers and extension workers on market-oriented agriculture and the "increasing complexity of input requirements." Assuring topical relevance is the big challenge. Small video cameras—highly mobile, unobtrusive, and operationally simple—can greatly improve field staff training, farmer-support from specialists, and diagnostic feedback from field and village. Likewise, interactive video-computer systems hold great promise with training modules, especially for technical staff (e.g., on pump maintenance and irrigation water management) and for feedback from extension to research.

Second, attention is being given the popular idea of privatization and cost recovery of extension services. That idea has merit but also limits. Private extension is rarely coordinated with governmental extension, and it concentrates on particular cash crops, neglecting "the food crops that are usually fundamental even to the farmers who produce the cash crop in question." There is also danger of topical and locational imbalance in both the service and the feedback, with bypass of the poorest isolated farmers in favor of those already up front economically.

Third, the form of agent/farmer contact (individual or group) continues to be debated. What should not be overlooked is the intended object of extension—the individual farmer has to be reached eventually. Therefore a mixture of group and individual approaches is likely to be needed in any one location. Whatever maximizes extension's access to the widest range of local production and resource conditions should be utilized. In working with village or farmers' groups, care must be taken not to assume that such activity will eliminate the need for extension agents or that individual farmer contacts (as in T&V) are necessarily unrepresentative of the village at large. They need not be.

Fourth, the old bugaboo of extension-research gaps rather than linkages is being addressed by farming systems research, wherein the chief merit is bringing "farmers' conditions and needs into the practical focus of extension and research." A parallel new development is extension attention to the non-crop interests of farmers—his/her total productive activities, perhaps including livestock production, farm forestry, and farm fisheries.

Finally, the most difficult challenge is "the successful implementation of effective agricultural extension activities for women as farmers." The importance and need are obvious; however, many constraints such as ingrained cultural habits, inappropriate technology for women, the common composition of most extension staffs, and restraints on traveling freely, will be hard to remove. Priority may well be given small projects that serve as learning devices while also creating awareness of need for change.

In reviewing all these "new" developments which are "basically iteration of established issues in extension," the author has a conclusion to commend to all involved parties: "In agricultural extension systems design and operation, . . . one's premise should be that the most simple and direct method of ensuring frequent and systematic contact between farmer and extension worker, and between extension technical specialist and agricultural researcher, is, until proven otherwise, the best."

*"New Developments in Agricultural Extension."

The Trickle-down that Didn't

Trying to move information from progressive to non-progressive farmers has not worked in Kaduna State, Nigeria, where a World Bank project has been evaluated by Erasmus D. Monu of Brandon University, Canada.* The idea was to increase agricultural production and income among 88,000 farm families through an extension strategy of innovation diffusion from better-off farmers to those of lower social and leadership status — "snowball fashion, largely through word of mouth, until most people in the social system adopt it."

The result: 80 percent of the farmers ignored by the project staff; failure of the trickle-down theory; refutation of the notion that traditional farmers lag behind progressive ones (at least in the adoption of maize new to the area); evidence that the privileged farmers tend to devote more of their resources to cash crops than to food crops (contrary to the national goal of self-sufficiency in food); and the danger of "lopsided development which could eventually force small farmers to leave the land."

The moral: develop an alternative strategy that will give "equal" access to development opportunities.

*"The Diffusion of Innovation Model in Action: the Funtua Agricultural Development Project, Kaduna State, Nigeria," *Agricultural Administration*, Vol. 13, 1983.

What's the Matter in Africa?

That question needs an answer if a long-term, post-famine solution is to be found. FAO's **World Food Report 1986** gives six answers:

1. Population overgrowth
2. Uneven resource distribution, with poor infrastructures for any correction
3. Slow technological progress: lack of incentives/inputs; export-oriented research; and more attention to well-watered than arid lands
4. Misdirected development strategies: urban preoccupation; policies signaling disincentives to farmers; and treatment of women with neglect and discrimination
5. External economic factors: weakening international competitiveness; debt problems
6. Political instability

Answers, or possible roads to African recovery, are suggested in the **Report** as four "ins"—incentives, input, infrastructure, and institutions." That means new cultivars tolerant to Africa's conditions, higher level of trained manpower, better veterinary medicine services, and a commodity action program "to recover Africa's share of the market."

On the organization and management side, changes will be required, too—decentralization of agricultural development, more assumption of responsibility by local communities, and new links with the private sector. Extension will not be exempt either: in fact, "many state marketing systems and extension services are large and ineffective, and will have to be replaced."

FAO is confident that, with attention to such matters, "many of Africa's existing constraints to increased production can be removed."

Africa: A Second Opinion

After the doctor's diagnosis, a second opinion is sometimes sought. Such an opinion on Africa is contained in **Compact for African Development**, authored in 1985 by the Committee on African Development Strategies. Its section on "What Has Gone Wrong in Africa" is roughly congruent with the diagnosis given in the article above, except for less concern about population matters. The major ills are neglect of agriculture, the obverse concentration on "unfeasible industrial programs" resulting in bureaucracies aimed chiefly at employment-generation, and governmental policies restricting creativity. Two new factors are added: elite-favoring corruption sometimes replacing effective management and governmental preoccupation with "wasteful prestige projects" aimed at show rather than development.

But then a new element is introduced: what the "well-intentioned outsiders" have done, since "Africans alone are not to blame." Donors have given aid and technical assistance that is often short-term, uncoordinated, and disruptive of host-country priorities. Worse, the aid is often self-serving: aimed at "domestic political and economic considerations in the country providing the money," at international "security concerns . . . disguised as development imperatives," and at purchases limited to donor-country suppliers alone. To top it off, commerical banks have made imprudent loans, and donors (most of them, the Committee says) "have jumped from one fad to another . . . from the support of infrastructure development, to a concern with basic human needs, to the most recent heavy focus on agriculture and encouragement of the private sector."

If a third doctor's opinion were sought, he or she might warn against treating the continent of Africa as one patient. As plant breeders, researchers, and extension specialists have learned, diagnoses and remedies have to be location-specific.

Teaming Up with Conflict

The good idea of bringing social sciences into a farming systems research team may produce some bad effects. The same risk may be run as an extension worker moves into the natural science team to make it FSR/E instead of FSR. Confining himself to the social scientist, Simon Maxwell, University of Sussex, analyzes the problem.*

Conflict is often the result, particularly in the early stages. Five interrelated explanations also carry implications for remedy: *personal inadequacy* (real and as mutually perceived); *interdisciplinary communication barriers* (with opposing notions of strengths or virtues); *poor group dynamics* (inept conflict management and team leadership); *inadequate structure* (perhaps with more hierarchy and little participation); and *power struggle* (based on status, resources, personality, expertise, etc. held in different degrees among the contenders).

There are practical lessons, some rather obvious, for both social scientist and team colleagues. Much responsibility rests on the policy maker, who can clearly define objectives and methods of operation "for research managers on the one hand and social scientists on the other." Policy-makers can also attend to institutional change along with program change, if need be; lay the groundwork with training and staff development; give leadership in conflict avoidance and resolution; and employ or change the system of rewards.

The author concludes with ideas for further research, but in the context of his conviction that while some conflict is inherent, "it is important to end by emphasizing that the benefits of multi-disciplinary farming systems research far outweigh the cost associated with the introduction of these new perspectives."

*"The Social Scientist in Farming Systems Research," *Journal of Agricultural Economics*, January, 1986.

Technology Transfer: Making It Work Better

Agricultural technology transfer sounds simple and direct — simply from what is discovered to what is used, or simply from where it is known to where it is needed. If it were so simple, there would not be so many failures despite the best of intentions.

First of all, it is a complex interlocking system, not just a clear direct line. Technology transfer involves not merely a piece of hardware, however wonderful its invention or however easy its adoption may seem. It also involves "software," or a knowledge or know-how component. Last, but by no means least, it has a *social* dimension. A change in one affects the other two. An optimal change takes all into account. This process is analyzed, with constraints and solutions, by W. Gerald Matlock, Professor of Soils, Water, and Engineering and Director of the Irrigation and Water Management Institute, University of Arizona, in the June, 1984 issue of the *International Journal for Development Technology.**

What are the causes of technology-transfer failure? The author discusses five in his order of importance. *Misunderstanding of users' problems* heads the list. This deficiency arises from failure of the transfer-making personnel to identify the problems properly or to deal with the many complicating factors (organizational, political, and economic) that affect the users and their decisions. Another cause is the *lack of developers/adapters* of new technology — simply not enough of them (scientists and engineers properly trained) or they are working on the "wrong" problems ("topics in which *they themselves* are most interested").

Ignorance and lack of awareness of the new technology come from the users who are not aware of the technology or incapable of understanding and using it, or from the supplier who does not know of the need and potential use. *Failure of change agents and facilitators* means an insufficient number to make an impact on the potential users and/or ineffectiveness in transference.

Last is a *possessive and restrictive attitude toward new technology.* The holder of the technology may not release it except at "prohibitive cost" or with unacceptable restrictions, but the author clearly thinks that "little agricultural technology of relevance to the less developed countries" is deliberately withheld.

Overcoming these constraints calls for fairly obvious remedies through a reversal of direction, but another needs special attention. That is the reduction of the many misunderstandings in the relationships among the many "actors" in the system (and it is a *system*) of agricultural technology change — chiefly the technology users (farmers), the developers/adapters (scientists and engineers), change agents (in extension, community development, and vocational education), external donors of assistance, and government organizations (the bureaucracy), especially of science and technology. "Another critical determinant . . . is the infrastructure which supports the agricultural sector" — roads, markets, input services, and information. The interactive nature of all these "actors" must always be taken into account, and any improvements will have to be made in concert, not piecemeal.

What is needed is improvement in both agricultural technology *and* the system, with "its strengths exploited and its weaknesses strengthened."

*"Problems and Solutions in Agricultural Technology Change or Transfer."

"It Ain't Necessarily So"

Healthy skepticism is often an appropriate response to sure-fire, never-fail remedies prescribed by problem solvers. As a refrain in an American musical comedy says it, "It Ain't Necessarily So."

Case No. 1. It is sometimes thought to be axiomatic that extension workers ought to be the vehicle for feedback—for communicating ideas and needs from the field back to the researchers and administrators. But a World Bank expert team found that many senior extension staff in Indonesia thought village extension workers were *not* a good medium for feedback. Since such agents are tied to "work targets" and work mostly with atypically progressive farmers, it is better to rely on small farmers to organize and "use their organizations as a medium for generating feedback."

Case No. 2. Dozens of handbooks in developed countries tell us that the extension function should be purely educational, wholly freed from the distractions of management, supply, credit, and regulation. No mixing, please. However, the World Bank's expert committee doubted the merit of blanket application of such an assumption, particularly in countries which lack "an alternative private-sector mechanism for providing essential inputs and services." In countries which are in "a first phase in the evolution of extension services," an integration of the transfer functions *can* work, putting technical advice, inputs, and credit all together. At least not all first-phase integrated systems have to be taken apart in the name of efficiency.

Are cantankerous critics always lying in ambush, or could it be that few so-called solutions are applicable everywhere, all the time, regardless? (The source here is *Agricultural Research and Extension,* as noted in the "Helpful Ideas" section.)

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To Change or Not to Change?

The converting of resources into things needed or desired (technology) has changed agriculture from time immemorial, and that process is not about to be halted. In fact, a new revolution is upon us, the fourth. The first featured the wheel and hand tools; the second, the industrial and commercial revolution of the eigtheenth and nineteenth centuries; and the third, the mechanical, chemical, and biological revolution after the 1920's, with "massive substitution of capital for labor" and millions leaving the farms. The fourth will feature biotechnology and electronics, with computers, lasers, and telecommunications. The implications are spelled out by Luther Tweeten, agricultural economist, Oklahoma State University.*

He states the case for and against technological change and believes "social scientists cannot resolve these value conflicts." They can, however, make a major input into public policy, which will play a role in the "pace of technological and structural change along with measures to cushion impacts on losers in the process."

Farmers have been and will be kept on "the technological treadmill." The inference is that, as in the past, change will not stop; and as in the past, adjustment must be made. In the U.S., emerging technology will move "toward more sophisticated and challenging management and marketing, toward larger and fewer commercial farms, toward greater capital intensity, and toward greater separation of management from ownership." Public policy cannot be expected to stop such changes; rather, it can help strengthen human resource investment, cushion the adjustment, and ease the pain.

All this is heady stuff for the so-called "change agents," who themselves will have to change.

*"Agricultural Technology—The Potential Socio-Economic Impact," presented to the Oklahoma Network for Continuing Higher Education Leadership Development Seminar, Stillwater, October 2, 1986.

Back to Bank's Basics: One Recipe for Reform

If you were governing a developing country, where would you go for advice on agricultural policy? Whatever your predilections or your choice, you would no doubt "consider the source," as folk wisdom says. Among the candidates with impressive worldwide experience would be the World Bank — and it does happen to have something to say on the subject.*

First, the Bank would give you encouragement, particularly if you would join others who are doing the "right" thing. Increasingly, developing countries are following policies and investments that justify "optimism about the long-term prospects of food production increasing faster than population." Second, the Bank would remind you of your country's dependence on an interdependent world, where pricing and trade policies everywhere affect everyone, including "the hundreds of millions of very poor people . . . who depend on agriculture for their livelihood."

Then what are the areas that merit careful consideration for reform, recognizing that "their nature, design, and timing are largely determined by country circumstances"? The "most important priority": be sure that the profitability of farming is not artificially depressed by public policies, either agricultural or economy-wide. These are often biased against agriculture. Among the worst are the wrong tax options, those on farm outputs, such as taxation of exports and import-competing crops. Public spending should be avoided on subsidies for modern inputs, credit, and machinery because the ultimate effect is really to benefit the wealthy farmers and restrict availability.

Food subsidies for low food prices for urban consumers are similarly misguided: they do not hit their intended targets, the poorest people. Less across-the-board uniformity and more "well-targeted food distribution programs" would better reach the "especially disadvantaged", as would policies to increase incomes and employment. This would also avoid the worst result: "suppression of producer prices . . . in rural areas where most of the extreme poverty is often to be found." Likewise, excessive reliance on "public sector marketing agencies" should be avoided because they "charge excessive margins, implement their policies inefficiently, and often require large subsidies from the government." The elimination of monopoly privileges for parastatals would promote efficiency in marketing.

These are the basics, the context for all else. Is this simply a plea for untrammeled market forces in everything and little or no *public* expenditures on agriculture? No, because there is another agenda, either parallel or subsequent, that must be addressed also: "Governments provide many essential services and facilities that private markets cannot, such as irrigation, research, extension, rural roads, and education." That is where public money on agriculture *should* be spent.

*World Bank, **World Development Report 1986.**

Feedback and Follow-Up

"Angry villagers in Nigeria's southern state of Benue recently rounded up and beat 27 rain-makers whom they blamed for the region's lack of rainfall. 'The rain-makers were paraded before villagers who booed and jeered at them,' the *Vanguard* newspaper quoted a witness as saying. An official of the local development association told the *Vanguard* that although the rain-makers were released, the association would hand them over to the police if there is no rain within a couple of weeks." — *The Nation, Nairobi, Kenya, May 13, 1986.*

New Light on Growth/Equity

The twin goals of growth and equity in development are easily embraced, but their appropriate mix is not so easy. Some say, go at it directly, attacking poverty by direct measures to meet "basic needs." Others say, just rely on long-term economic growth, which will raise incomes for everyone, including the poor. One approach emphasizes equity, with government intervention; the other emphasizes growth, with less government. Both approaches are a bit extreme for most countries, and competent scholars do not always agree on what explains what we are seeing, and why, in a particular country.

Therefore, two World Bank staff members have reexamined the development of Sri Lanka since 1960 and arrived at an important reinterpretation.* That country is commonly cited as a successful example of the direct approach: large social expenditures as the chief cause of a high standard of living (e.g., long life expectancy, low infant mortality, and high literacy level). The authors quarrel with the methodology previously used because it did not take into account the initial conditions of the countries being compared. When that was corrected, with analysis beginning at the initial level of development, Sri Lanka's improvement in living standards and its simultaneous 2 percent per capita growth rate were not exceptional from 1960 to 1978, during the large government transfers for increasing welfare.

The more impressive rate followed the policy shift which began after 1977, with reduced social expenditures and more reliance on the strategy of growth. From 1977 to 1984, economic growth doubled, lifting all sectors (agriculture, industry, and services), and the unemployment rate set a historic low. Food and total expenditures of the poor also rose, suggesting "that the poor may have been somewhat compensated for their loss in government transfers through increases in jobs and incomes."

What can be concluded? The authors believe "that the post-1977 policies have not been detrimental to equity objectives and may offer more promise than those which they replaced." That is not to say, however, that there is clear or wise choice between alternatives taken at their extremes, or in "pure" forms. In fact, the shift in governmental policy made the administration of food subsidies more efficient through a targeted food stamp program, with gradual decreases "over the years," and the growth promoted was made less onerous by the labor-intensive kind. Therefore, what is known and not known will still have to be set off against each other: "While it is unlikely that a government can (or should) take either of the extreme alternatives, the nature of the appropriate mix is also unknown."

*Surjit S. Bhalla and Paul Glewwe, "Growth and Equity in Developing Countries: A Reinterpretation of the Sri Lankan Experience," *The World Bank Economic Review*, September, 1986.

Production Investments: What Have We Learned?

With his usual insight, Vernon W. Ruttan of the University of Minnesota takes a critical look at major development investments to expand agricultural production and comes up with some notable conclusions.* He looks at investments in the design and development of extension services as well as research institutions, land and water resource development, land tenure reform, and agricultural credit markets.

What have been the payoffs? They have been very high to research and high to land and water development. The return to extension is described as "low" or "modest," a conclusion "fairly widely accepted among agricultural economists." But low relative to research "does not negate the importance of public extension programs," where strength lies in their strong interaction with research. Furthermore, "a relatively high payoff" is suggested for "continuing experiments in the organization and management of extension programs"—what Ruttan calls "institutional innovation."

The study of the literature on all these investment experiences yields three important conclusions. First, investment areas have shown a "continuous cycling of program priorities and thrusts." In extension, for example, there was development emphasis in the 1950s, de-emphasis in the 1960s, and a re-emergence of attention in the 1970s. Similarly, research went from emphasis on national systems in the 1950s and 1960s, to developing the international systems in the 1970s, and now back to building up the national systems. The second conclusion is "the failure to learn from failures"—often ineffective articulation of the technical and the managerial.

The final conclusion is that the major theme in all this experience has been and is being neglected—"the dynamic interrelationship between technical and institutional change." Agricultural development needs both elements: technical change that will generate new income streams at low cost; and institutional infrastructures that will facilitate the conversion of the technology into economic growth.

The presence of technical change also gives incentive to investment in physical and institutional change. But in this interrelationship, "a major source of failure" has been insufficient attention from development assistance agencies to institutional design and reform. This is grounded in the common assumption that what is needed here can be had in developing countries through consultation and technical assistance. On the contrary, just as biological technology must be relatively location-specific, so must institutional design and reform. That means, if learning by trial and error is to be overcome, "larger investments by the donor community in social science research."

*"Assistance to Expand Agricultural Production," *World Development*, January, 1986.

Two Great Neglects: Forestry and Women

Literature on knowledge systems and technology transfer in the developing world is much more prolific on crops than on anything else, to the relative neglect of livestock, for example. Forestry is another neglected area, but one coming into its own, with increasing attention from myriad sources, national and international. When this is combined with another area of neglect now also coming into new prominence — women in development — the compounded result is noteworthy. That is the subject covered in an article, "Women in Subsistence Forestry," by Louise P. Fortmann of the University of California at Berkeley.*

Permeating the article are the myths, both professional and cultural, that are stumbling blocks. One overly tenacious professional myth is that forestry is "the large-scale production of fiber for commercial use." On the contrary, it "is no longer limited to big trees and chain saws wielded by men." Indeed "land area and economic values represented by subsistence forestry and the populations dependent on it often exceed those related to commercial forestry." The technique of rotating slash-and-burn and fallow use sustains 300 million people on half the land in the tropics. In India, fuelwood is 90 percent of all the wood used; and in Nigeria, the gross income per land unit for certain tree plantings (e.g., teak) intercropped with farm crops exceeds income from commercial plantings of the same species.

It is in this subsistence, rather than commercial, forestry that women are often dominant. Women are the primary collectors (e.g., 90 percent of the firewood in Tanzania) and the primary users (for heating, cooking, livestock fodder, and sale of derivative products). Several studies show that women know more about forest resources than local men or outside foresters. They know what plantation of wood will or will not meet local needs. They are also forest managers, perforce, because deforestation makes them travel longer distances for fuel and fodder and for water no longer in local springs. Thus, women have become the backbone of many conservation projects, both in advocacy and in labor.

What is to be done? First, some attitudes must change. Myths are not confined to primitive societies. Foresters in developed countries still do not give "equal and respected status" to women in their profession. Can they be expected to accept the real or potential value of women in a dramatically different setting? Also the position of women with respect to land ownership and access to credit is a major impediment.

Where does extension fit in? It is handicapped by the lack of women foresters. Cultural prohibitions often make women the best or only communicators with other women. Talking to men, in the expectation that a message will be passed on to the women, is a demonstrably defective technique. Furthermore, men are simply not there in a quarter or a third of the rural households, which are headed by women.

How barren is the so-called respect for the expertise of local people and recognition of their problems if we fail to deal with the women who *are* most of the "local people" in subsistence forestry! "The fate of forestry projects in developing countries is decided not in air-conditioned offices in capital cities but in hot dusty villages and not by bureaucrats but by local people and often by women."

**Journal of Forestry*, July, 1986.

Missing the Target

If targeting, with quick results, is one of the merits of farming systems research, there is an important but neglected catch: the target is moving, rather than static, calling for a "10-15 year time horizon." The customary methodology insufficiently takes into account the dynamic change and continuous movement that characterize farming systems. So writes Simon Maxwell of the Institute of Development Studies at the University of Sussex, U.K., in *World Development*, January, 1986.

Too much emphasis has been placed on "rapid rural appraisal," early identification of research priorities, and quick solutions for farmers. "But if it is true that farming systems are in a constant state of flux, this reinforces that case for an approach . . . that is continuous, dynamic, and interactive. Better to take slightly longer and hit the moving target than to assume it is stationary, act quickly, and fail to hit it at all."

The Best of Both Worlds

It is hard to have the best of both worlds if only one exists. Happily, a public world and a private world do exist side by side in many countries, and the missing private part is emerging in many others. Hence, all might take note of Luther Tweeten's conclusion after he studied agriculture's past three revolutions: "Modern revolutions originate from increasingly sophisticated science and are most successful with close cooperation between *public basic* research and *private applied* research and development (italics added)." (See reference to Tweeten article on page 6 of this issue of *INTERPAKS INTERCHANGE.*)

Fitting with Misfits

In attacking world hunger through foreign assistance, agricultural development has been approached as "a 100-year-old problem, addressed with five-year plans, staffed with two-year assignments, and financed by annual appropriations."—*Don Paarlberg, Purdue University.*

Helpful Ideas: Old and New

Thomas Wessel and Marilyn Wessel, **4-H: An American Idea, 1900-1980.** National 4-H Council: Chevy Chase, Maryland, 1982 (353 pages).

If the non-American reader wants to learn about the "American idea" of extension work with youth, this fact-laden book will tell more than needed. It is the officially commissioned history of the organization symbolized by the four-leaf clover, each leaf with an "H", signifying head, heart, hands, and health.

The beginnings at the turn of the century, in Canada as well as the U.S., were spontaneous, up from the grassroots, evolving through early volunteer leadership, school sponsorship, private and public support (and sometimes conflict), and an eventual place within the U.S. Cooperative Extension Service, with special 4-H agents. The book also traces development through corn-growing contests, garden and canning activities, urban work, farm and fair demonstrations, soil and seed testing, production projects and awards, enrollment past the million mark by 1936, and the organization of the National 4-H Foundation and the National 4-H Center.

The international dimension is a major story also: farm youth exchanges, including those with the Soviet Union, Poland, and Hungary; adoption and adaptation of the idea in other countries, eventually more than 80; and the significant addition of the words "and my world" to the members' pledge in 1973.

The informal educational program conducted cooperatively at federal, state, and county levels through the state land-grant universities, involving 5,000,000 boys and girls between the ages of nine and 19, is worthy of a meticulous history. This is it.

Ted J. Davis, editor, **Development of Rainfed Agriculture under Arid and Semiarid Conditions.** World Bank: Washington, D.C., 1986 (412 pages).

This is the voluminous report of the proceedings of the Sixth Agriculture Sector Symposium. It continues the welcome tradition of reporting on the Bank's annual conference on a development topic that combines Bank experience and thoughtful discussion by experts worldwide. The theme relates to 70 percent of the world's farmers—farmers outside the "green revolution" whose productivity has not fared well in comparative terms. The opening paper and one of the five major sections deal with technology.

Agricultural Research and Extension: An Evaluation of the World Bank's Experience. World Bank: Washington, D.C., 1985 (110 pages).

This evaluation resulted from a study made by an international team of ten consultants from universities and research organizations (including Burton E. Swanson of INTERPAKS). It covers 120 Bank projects in ten countries over the 1974-80 period, concluding with findings and recommendations. The analyses of the research/extension process give insights useful in the reader's own situation; in fact, the opening, summarizing pages give a generic recommendation on what research and extension "should emphasize."

While the evaluation shows the Bank's experience "has been positive to date" with many enumerated achievements, improvements are also suggested. For example, more emphasis seems to have been put on physical research facilities than on either their management or institutional arrangements for their proper use. Also, while Bank-aided projects have given small farmers better access to integrated technological packages, this emphasis has sometimes been premature because of "the dearth of suitable technical messages flowing from research," and it has sometimes been pushed out of parallel with the need for "actual extension" as an effectuating mechanism.

S. C. Joshi and S. N. Jha, **The Tuki System: A Brief Introduction.** Integrated Hill Development Project: Kathmandu, Nepal, 1986 (18 pages).

This brief booklet minimally describes the Tuki idea of the "active self-propelled agricultural and village promotion and extension worker" and the achievements in the hill area, with the cooperation of Swiss technical assistance (SATA). Address: IHDP/SATA Liaison Office, P.B. No. 113, Kathmandu, Nepal. The Tuki system was the subject of an article in the July, 1984 issue of *INTERPAKS INTERCHANGE.*

International Potato Center, **Potatoes for the Developing World.** Lima, Peru, 1984 (148 pages).

Well into its second decade, the Center (CIP) reports on how progress is being made in production of this "most rapidly expanding major food crop in the third world," with a doubling of consumption every 10 to 15 years. All publication techniques are used for impact and readability — photos, color, graphs, charts, boxes, tables, and cartoons. It is an impressive story, concluding with seven illustrative country studies of the effect of CIP-generated technologies on production at the farm level.

Robert J. Berg and Jennifer Seymour Whitaker, editors, **Strategies for African Development.** University of California Press: Berkeley and Los Angeles, 1986 (603 pages).

This is the bulk of the studies commissioned by the prestigious, broad-based Committee on African Development Strategies, created by the Council on Foreign Relations and the Overseas Development Council. Sectoral strategies are emphasized, with sections on economic management, physical resources, agriculture, industry, human resources, and trade. An opening chapter gives a useful thumbnail sketch of the evolving debate on policy reform needed in Africa, leading to "a new consensus" here presented. While attention is given agricultural research and technological innovation, little notice is taken of the means by which farmers are to be reached. New knowledge and new technology are not self-executing. A strategy is required there, too.

Gwyn E. Jones, Editor, **Investing in Rural Extension: Strategies and Goals.** Elsevier Applied Science Publishers: London and New York, 1986 (297 pages).

These 22 papers are the product of the 1985 international conference organized by the Agricultural Extension and Rural Development Centre, University of Reading. All aspects of the subject are covered in five topical sections, with an extended bibliography. The major contextual papers were summarized in the March, 1986 issue of *INTERPAKS INTERCHANGE.*

Mary Pat Williams Silveria, editor, **Research and Development: Linkages to Production in Developing Countries.** Westview Press: Boulder, Colorado, 1985 (316 pages).

The subtitle gives the theme: how to link R&D with productive use. The treatment is general, with no special attention to agriculture. It takes off from the report of a panel, "a working group of experienced experts" (also the papers' authors), assembled by the United Nations Centre for Science and Technology for Development.

Overall, the study recognizes that where excellent research and development work is being done in developing countries, it is often "unutilized and underutilized" because of the absence of linkages and of networks among the many major actors. The "demand" for R&D is often missing; hence "bridges between these two parallel developments are overlooked" (e.g., when the demand from user feedback lacks channels of expression). Applications to agriculture have to be extrapolated from the text.

R. Crotty, **Cattle, Economics and Development.** Commonwealth Agricultural Bureaux: Farnham Royal, Slough, England, 1980 (253 pages).

This is the story of man's historical and potential use of the world's pastureland — two-thirds of the agriculturally useful land, as compared with one-third devoted to crops — and it is the story of "misdirection, rather than the adequacy, of concern and resources." The task undertaken and stated with conviction is the elucidation of the laws governing society's relations to, and exploitation of, pastoral resources.

Full use is made of history, sociology, statistics, and econometrics, leading to a mathematical model of the decision-making process by cattle owners. That model is then used to examine the cattle-keeping situation in the developed nations and in four developing regions (South America, Africa, South East Asia, and India).

A final chapter, admittedly somewhat tentative and speculative, moves "towards a rational exploitation of pastoral resources," where "If it is true that those whom the gods would destroy they first make mad, pastoral man appears ripe for destruction."

Mason E. Miller, editor, **International Agricultural Programs and Agricultural Communications.** Association of U.S. University Directors of International Agricultural Programs and Agricultural Communicators in Education, 1985 (245 pages).

These two national organizations present the proceedings of their first joint conference, held in St. Louis, Missouri, February 13-15, 1985. Three major concerns are addressed in 25 papers: better understanding of the importance and need for U.S. international assistance programs, what communicators can contribute to such programs, and what can be done to develop and strengthen agricultural communications as a profession in other countries.

Robert F. Rich, editor, **The Knowledge Cycle.** Sage Publication: Beverly Hills and London, 1982 (222 pages).

Every practitioner of knowledge creation, diffusion, and use — or of parts or combinations thereof — should examine this book. If for no other reason, it will put it all into context — the outermost bounds and the innermost possibilities in which all work, historically and conceptually. If you profess to practice, then here is your needed theory. Here also is needed perspective and helpful insight. As one small example, have you thought about the significance and uses of the distinction among "data," "information," and "knowledge?"

Around the World

British Courses for Women

"Women working for development" can now know the many training opportunities they can find in Britain, both in and outside the universities. They need only to examine a 30-page booklet bearing the title from the quotation marks above, published by the British Council. The courses (with content, costs, and dates) have two objectives: to give women training in management and planning for their upward mobility and to help develop managerial skills in the "food cycle technologies," both for subsistence and income generation. The idea is not "simply to identify clever women and bring them to Britain for training," but rather to encourage women when trained to go back to their own countries to train others. Inquiries should go to the Science and Technology Group of the Council, 10 Spring Gardens, London SW1A 2BN.

More Localized Training

Instead of scheduling so many of its training courses at its headquarters near Aleppo, Syria, the International Center for Agricultural Research in the Dry Areas (ICARDA) is increasingly conducting training programs in the cooperating countries. Last year, short-course enrollments were 35 percent larger in-country than at headquarters. Training reached a total of 215 participants.

Other International Centers

The map showing the 13 CGIAR-supported international agricultural research centers, *INTERPAKS INTERCHANGE* for November, 1986, gave one reader the impression that other IARCs (those without CGIAR support) had been neglected. B.T. McLean, Head, Office of Information Services, Asian Vegetable Research and Development Center, wrote: "Among the IARCs not mentioned . . . are: Asian Vegetable Research and Development Center (AVRDC), Taiwan; International Center for Living Aquatic Resources Management (ICLARM), Philippines; International Irrigation Management Institute (IIMI), Sri Lanka; International Centre of Insect Physiology and Ecology (ICIPE), Kenya; International Council for Research in Agroforestry (ICRAF), Kenya."

Bands of Iron with Bamboo

Bamboo cement technology is something new out of Nepal. In village construction for drinking-water tanks, irrigation uses, and housing, splits of bamboo are being used in place of expensive or unavailable iron rods. The ready-at-hand material is versatile, flexible, and simple in skills required. More research is needed, however, on the merits of bamboo over iron for long-term durability. —*from Agricultural Information Development Bulletin, September, 1986.*

New Development Journal

A professional journal for the dissemination of research results relevant to policy choices and processes in developing nations has been launched by the World Bank, with the first issue in September, 1986. *The World Bank Economic Review* is free of charge upon request for the first two years of its publication.

Morocco Conference

An international conference on "Theory and Practice of Rural Extension: Case Studies" will be held in Meknes, Morocco, June 16-18, under sponsorship of the National School of Agriculture in Meknes. Coverage will extend to communication, methodology, policies, experiences, and management.

New Development Research

The UN University's Finland-based World Institute for Development Economics Research (WIDER) has among its three research themes, "development and technological transformation — the management of change." It will study transformation in 15 developing countries and two developed nations (Japan and the Soviet Union) in order to evolve a coherent framework to explain differential growth rates. The idea is to form operational insights that others may use to emulate successful experience. Non-economic factors, regarded as important also, will not be neglected. — *Work in Progress, UN University, May, 1986.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Egerton-Illinois Exchanges

The first exchange of visits has been completed by liaison committees from Egerton University College, Kenya, and the University of Illinois at Urbana-Champaign under the long-term partnership with USAID support. The Kenyan representation in Illinois during December, 1986 included Wilson Nguyo (academic registrar), Alan Shabira (planning), P.K. Karau (animal husbandry), Peter Misiko (engineering), Naseem Machooka (home economics), Mary Kiragu (Ministry of Education), and Maria Mullei (USAID/Nairobi).

The Illinois group in Kenya during January, 1987 included Burton Swanson (project coordinator), Mildred Griggs (home economics education), Violet Malone (extension education), Kent Mitchell (agricultural engineering), Emerson Nafziger (agronomy), Arthur Siedler (food science), Wesley Seitz (agricultural economics), and David Thomas (animal sciences). Collaboration between the two institutions includes the areas of agricultural research, extension, and teaching.

New Research Publication

A new publication will soon be available from INTERPAKS: "Analyzing Agricultural Technology Systems: A Research Report." In it, Burton E. Swanson presents the analytical framework that has evolved from the INTERPAKS-USAID Research Project, which he directs.

ICARDA Discussions

Lawrence Przekop, Head of Training, International Center for Agricultural Research in the Dry Areas, Aleppo, Syria, visited INTERPAKS in November, 1986 to discuss common training interests.

Washington Negotiations

Director John L. Woods spent a week in Washington, D.C., in December, 1986 conferring with staff in USAID, the World Bank, and the Office of International Cooperation and Development (OICD), U.S. Department of Agriculture, on current and future projects in agricultural extension abroad.

Director in Southeast Asia

Following his participation in the INTERPAKS case study in Taiwan in January, John L. Woods, INTERPAKS Director, spent two weeks in the Philippines, Indonesia, and Thailand conferring with representatives of international research centers, donor agencies, and development organizations. One week was spent in Indonesia at the request of the government and USAID on the Secondary Food Crops Development Project.

Claar in Africa

The University of Nebraska has asked John B. Claar, Senior Adviser to INTERPAKS, to participate in a review of its USAID-funded agricultural research project in Morocco in late March and early April. He has also been asked to participate in preparing a new project in agricultural research and extension in Cameroon under the joint auspices of USAID, the World Bank, and the FAO Investment Centre. This involves one month, beginning in May, in Cameroon and one month in Rome.

Work in Peru

John L. Woods, Director of INTERPAKS, and Burton E. Swanson, Research Director, will go to Lima, Peru, in May to begin cooperative work with the International Potato Center (CIP). They will be applying to a single commodity (potatoes) the analytical framework recently developed by INTERPAKS under its Cooperative Agreement with USAID for the diagnosis of systems of agricultural technology development, transfer, and utilization.

Repeat Training Courses

Two extension-related courses for international personnel will be offered again by INTERPAKS: "Training of Trainers for Agricultural and Rural Development," May 25 to June 20; and "Organization and Management of Agricultural Extension Services: A New Look at Knowledge Transfer," September 6 to October 3. The respective coordinators will be, as previously, Violet M. Malone and John B. Claar; and the course fees U.S. $2,500 and 2,550, respectively.

INTERPAKS INTERCHANGE

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Taiwan Technology System Yields Impressive Results*

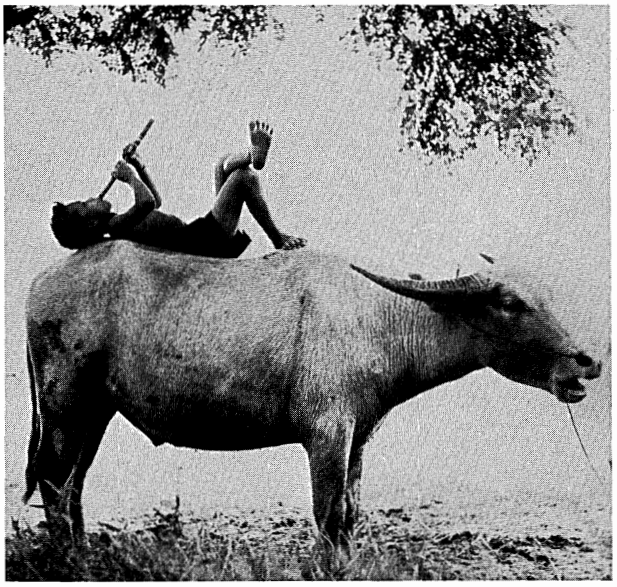
Taiwan is no longer a "developing" country. It is one of the success stories of the Pacific Rim (with Singapore, Hong Kong, South Korea, and Japan). It has a per capita income of more than $3,700 and confidently predicts the $4,000 mark soon. In fact, *The Economist* has calculated that if Taiwan and the U.S. progress in the future at their respective growth rates over the past 20 years, Taiwan's per capita income will exceed that of the U.S. by the year 2023.

The marks of widely shared prosperity are visible everywhere — in the volume and variety of consumer goods, the growth of service industries, the broadening diet, the bank savings and foreign currency reserves, and the startling statistics on farm ownership of modern equipment: 114 motorcycles and more than 95 television sets, refrigerators, gas ranges, and rice cookers per 100 families.

The agricultural part of Taiwan's success will be documented in detail later. Suffice it to say here that agriculture enjoyed remarkable growth first in its own right, then as a means of sufficient materials and foreign currency for rapid industrialization, until agriculture is now the junior partner in the total economy, with government policy directed at food self-sufficiency and a mutually reinforcing "balance" between agriculture and industry.

The old successes cannot easily and continuously be repeated; hence agriculture in Taiwan may now face dramatic changes. What the system for technology development and transfer has done so well in the past is likely to be challenged by the urgent need for new successes through new methods in an increasingly competitive world. Ironically, the system now in place may be more relevant in some respects to some other country's early stage of agricultural development than to Taiwan's present advanced stage.

How much the technology system really contributed to the agricultural successes in Taiwan is impossible to measure with accuracy free from easy challenge. The same, of course, can also be said for the other factors involved. What is incontrovertible is that the system of technology/knowledge development, transfer, and utilization was present and fully in use, without any significant evidence of chronic bottlenecks and slow-downs. It was an integral part of the overall agricultural system, from inception of innovations to farmer use for increased production and rural benefit. It must be evaluated as significant and crucial, sharing the accolades that go to the entire system and its impressive results.



Rural rhythm: a photo-editorial.

The strengths of Taiwan's system are numerous. Major examples include good financial support; government policies sensitive to farmers' profit-making motives; a strong central government planning body for agriculture, staffed by well trained professionals (many U.S.-educated and many with Ph.D. degrees); heavy emphasis on human capital development; superior island-wide research facilities and scientific personnel; government links with and use of universities and colleges and their faculties of agriculture; abundant and heavily used inputs (from

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

fertilizers and pesticides, to credit on favorable terms); explicit, cultivated linkage between research and extension in the six district improvement stations; local participation through farmers' associations; an effectively monitored flow of new technology from inception to farmer use; and well-educated farmers as well as citizens in general.

Nevertheless, Taiwan's agricultural technology system is not without blemishes and critics, although mild ones. There is some muted comment about too much government and too much complexity. Some links in the technology chain point questioning if not accusatory fingers at other links. The extension part of the system is not a model of integration; rather, it is an eclectic patchwork of inheritances and innovations shaped by Taiwan's pronounced pragmatism. How much to rely on tradition is again an issue. Several legislative options for structural changes are now being actively considered, both inside and outside the government.

The most likely point of change is precisely where some outside observers have seen a public-private balance worth lauding and emulating. That is the extension role of the farmers' associations, those multi-purpose enterprises which hire and fire the majority of extension agents who bear the chief burden of educating and aiding farmers directly. Such associations, however, are not as private as often assumed. In fact, government regulations for the associations now total 1087 pages in a compendium two inches thick. It is available (only in Chinese) for US$14, private-sector style.

The debate now is on how "public" the extension service ought to be — more extension personnel on the civil service rolls or continuation of things about as they now are? Reformers want better trained extension personnel, less disparity in salaries, better linkages with subject-matter sources including universities, and greater public accountability. Most of the familiar extension issues are involved and the fate of the legislative draft will be watched carefully by all development specialists.

Despite its positive virtues, Taiwan's system is not a ready model for another country to follow — perhaps pieces, ideas, implicit suggestions and extrapolations for local use, but not the overall system. Perhaps that is a truism for any national system, but the many unique features of Taiwan make its institutions hard and hazardous to copy. A few examples will suffice. Taiwan has a unique government: a "central" government on the mainland China pre-1949 model and a "provincial" government covering the same area (minus a few islands needing defense). Hence there are two top-level organizations with agricultural responsibilities.

The agricultural system does what it does partly because of the inheritances of the Japanese colonial period (e.g., in infrastructure, education and farmers' associations); the great postwar infusion of U.S. money and technical assistance as part of an anti-communist foreign policy (with vigorous participation of U.S. personnel in the Joint Commission on Rural Reconstruction and even the adoption of many U.S. extension practices); and the ready, economical access to international markets. Few governmental or economic systems are so held in orbit by international forces, past and present.

Another historical-cultural heritage is the psychology of overachievement among an emigré or besieged people. The degree of discipline, both individual and social, is foreign to most Western and Western-oriented countries. Government controls information sources, and the private sector, while increasingly encouraged, is not yet a major factor in Taiwan's system of technology development and transfer, except for the farmers' associations which are officially regarded as private. Another unusual feature is tl• compactness and manageability of operations — a populous island of educated citizens and skilled professionals with communications and transport networks of saturation density that build consensus, facilitate the sharing of knowledge and innovations, and foster cooperative relations among like-minded professionals.

The farmers' associations, with their novelty and past successes, are adaptations from the Japanese colonial period and farmers' cooperatives in other countries. Tax-exempt for their public services (e.g. extension), they are multi-purpose to the extent that critics say the banking and commercial functions now outweigh the historical agricultural orientation. Finally, the organizational structure of the system here under study would not appeal to the conventional precepts of a professional organization analyst. But all observers would have to agree that "it works".

Those tempted by this system's exportability should recognize that the label "Made in Taiwan" in this case means "Made *for* Taiwan". With this realization and with full consideration of the non-replicatable features of Taiwan, both development scholars and extension practitioners can indeed learn from Taiwan's experience, as further detailed in the final chapter. Many principles and techniques are worthy of consideration as seen in practice, like the use of university resources, the forms of bottom-up participation, and the research-extension linkages. In-service training courses for relevant personnel, when offered in other countries, would be greatly enriched if they could incorporate a concluding observation component in Taiwan. Likewise, trainees from many developing countries would find more relevant instruction and stimulation in Taiwan than in more exposure to the U.S. agricultural system of much larger farms.

More generally, the most significant exportable part of the Taiwan system may be its agile adaptability — its willingness, past and present, to learn and adapt from any source but also its great pride in working out indigenous solutions for local circumstances. Goverment leaders in Taiwan agriculture recognize that a unique past is not a sufficient guide for a different future, a future in which product quality, marketing and changed land use are paramount concerns. If "adjustment" is the need for

agriculture in all countries and especially in those regarded as "developed" through knowledge and technology, Taiwan has both the awareness and the capability of further instructing the world by its enviable adaptability. *(End of verbatim section from the INTERPAKS draft report.)*

The concluding chapter summarizes the entire report and returns to the theme that other countries can gain insights and suggestions if they seek "to understand the dynamics as well as the outcomes, to learn from the constraints as well as the weaknesses, and to adapt rather than adopt." Brief comment is then made on several factors worthy of attention: the central planning role with bottom-up participation; the farmers' associations as a multi-purpose mechanism for conducting extension, generating loan capital, and getting farmer involvement and feedback; the role of the district improvement stations in technical backstopping and closing the research-extension gap; the use of university resources and personnel; the heavy reliance on education and human resource development; the experience with parastatals conducting research/extension functions on a commodity basis; and, again, the agile adaptability and continuous adjustment to new agricultural challenges.

*All except the last paragraph is taken verbatim from the opening chapter of the draft report of the case study of the agricultural technology system in Taiwan, done in January and February, 1987, by the INTERPAKS team of Mel C. Chu, Frederick C. Fliegel, John L. Woods, and Eldon L. Johnson, team leader. It is the last of four country studies done under a cooperative agreement between the U.S. Agency for International Development and the University of Illinois at Urbana-Champaign, directed by Burton E. Swanson.

Out with "Average Farmer" and "Technological Package"

The "average farmer" does not exist and "packages of technology" are irrelevant for most poor farmers. That generalization should be an attention-getter. So starts James Beebe, a Manila-stationed agricultural officer in the U.S. Agency for International Development, in an address to research and extension experts assembled at Los Banos, Philippines.*

He begins with three propositions. First, these concepts as quoted above should be eliminated. Second, researchers and extension agents should not try to tell farmers what to do. Third, the needed new focus should be on identifying problems, finding solutions, and disseminating options thereon. This is a variant of FSR, here called a "Farming Systems Approach."

The notion of the "average farmer" goes out the window in Southeast Asia because the usual commodity focus with its one-package approach ignores tremendous variability — so much so that the "average farmer" is "an artifact of statistics." The "package" approach, with its "predefined mix of seeds, inputs and farming practices," is inadequate where variability cannot be controlled, as in rainfed rather than irrigated areas and where poor farmers have been forced to rely on a variety of crops and enterprises. Proof lies in the fact that farmers who have adopted only selected parts of the package "usually have better returns."

The recommended new approach relies heavily on farmer participation because of his/her intimate knowledge of relevant factors, ability to manage and evaluate trials, and receptivity to acquiring the skills needed to link research results and their dissemination. The ultimate impact can be dramatic: either improvement of "traditional systems based on extension agents" or "a radically different extension model based on a combination of mass media and farmer training without a large government-sponsored extension service."

*"A Farming Systems Approach as a Tool in Linking Research and Extension," April 14-17, 1986.

Maximizing Extension Success

A cook does less well if he/she cannot have all the necessary ingredients at his/her disposal, but he/she still must first know what the ingredients are. Out of its 35 years of experience, the World Bank gives us a well-tried recipe: the factors that determine the effectiveness of extension systems, which it describes as "complex and problem-prone":

1. Level of education and literacy of farm population
2. Degree of mutual trust between government and farmers
3. Nature and scope of extension service responsibilities
4. Extent and effectiveness of grassroots organizations
5. Links with research and availability of technical information
6. Operation of private input suppliers
7. Efficacy of mass media and informal communication channels
8. Performance of extension workers (affected by pay, incentives, training, and job satisfaction). *(Source: the Baum-Tolbert book cited in the "Helpful Ideas" section.)*

New Extension Mission: Helping Farmers Adjust

If rural America has to adjust, so must the extension service. And so it is. Doing more of the same to produce more of the same is no longer sufficient, either as the farm motto or the extension message. That has become clear in the continuing slump in the agricultural economy, the problem of surpluses, declining land values, and the resulting financial wringer through which many farmers have been put.

The people who hand out the messages *to* farmers have got the message *from* the farmers — "We need your help but a different kind." Many state extension services in the U.S. are responding. They know how, because they have always provided instruction in better decision-making on the farm. The new part has to do with decisions of a new kind. What the Cooperative Extension Service of the University of Illinois is doing will illustrate.*

That Service has established a special program to serve the special needs of "financially stressed farm families." In the first 16 months, extension advisers, serving as counselors, held more than 3,000 meetings with 2,700 families. Needs were soon evident: help in setting farm and family goals, making and analyzing financial statements, exploring alternatives (restructuring debt, cost containment, and off-farm employment), making and carrying out management plans, and dealing with stresses and emotional needs.

The program is called RURAL ROUTE, but its logo brings up to date the reference to mail delivery in the country: a telephone number is added below the familiar mail box with an invitation to call those who are "Helping Farm Families Make Difficult Decisions." The connotation is that something new has been added, but the familiar and dependable *rural delivery* is still there.

Farmers in financial trouble need to understand their true financial condition. Many do not. Therefore, the new program offers workshops on "Your Financial Condition", taught by county extension staff aided by both volunteers and lenders, using materials produced by a University of Illinois professor of agricultural finance. More than 5,000 farm families participated last winter. The same combination of University expertise and local extension instructors has produced "Farm and Family Business Management Workshops."

Counseling calls for ongoing support afterward. That has been obtained by the county staff and their volunteer councils as they have worked with churches, mental health agencies, farm organizations, lawyers, and lenders to increase awareness and sensitivity to emotional needs of stressed families. This has led to the organization of peer counseling, listening sessions, and specific support groups.

To facilitate educational relations all over the state, regional centers for RURAL ROUTE now exist in four widely scattered locations. A "solid funding base" is now reported, with some special state assistance through a $500,000 recurring allocation plus almost a half million in one-time allocations, significantly including $200,000 to expand needed legal education.

Not all benefits have gone outside to farmers. Some admittedly have gone inside to the extension workers themselves. They have learned a new subject-matter, oriented in quite a new direction. They have been brought together with a problem-focus and new appreciation of their collective skills and knowledge. Finally, they have seen new networks created to meet new farm family needs — for social services, legal aid, job retraining, and community-based support services. It is all seen as a reconfirmation that the extension service still has the characteristics long claimed: it is an educational organization, it is research-based, and it is responsive to rural needs, however they change.

*From an article in *Ag Alumni News*, Agricultural Alumni Association, University of Illinois at Urbana-Champaign, Winter 1986-87; and Dean John R. Campbell's memorandum to faculty and staff of the UIUC College of Agriculture, December 22, 1986.

Rural Route

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Country Brief on Jordan

In addition to its four country case studies, INTERPAKS occasionally makes a shorter, more-applied country analysis. The former is more thorough and research-oriented; the latter is more generalized, as a quick analysis, and has a potential action orientation if some user so desires. A 20-page brief of this latter type, **Jordan's Agricultural Technology System**, is now available under the authorship of John L. Woods, INTERPAKS Director, as a spin-off from his participation in a USAID-funded mission to Jordan, April 8-20. That three-person team was study-

ing the feasibility of establishing a pilot project in agricultural communications as part of Jordan's Highlands Agricultural Development Project.

The Woods report describes the agricultural sector and the research/extension organization. Under "Capability Analysis," it examines indicators of research capacity; transfer abilities, both formal and informal; the main sources of information and technology for farmer use; and the theory and practice of government policy applied to agriculture. Linkage mechanisms are discussed in relation to farmers, research organizations, extension personnel, and public policy-making bodies.

The closing section asks, "What Can Be Learned from Jordan's Experience?" and is followed by six areas worthy of attention. The chief one is Jordan's current effort to give research and extension more independence and greater leadership through a special new agency, the National Center for Agricultural Research and Technology Transfer.

More on Korean Success

Attention is called to another study providing light on agricultural progress in Korea, which was featured in the last issue of *INTERPAKS INTERCHANGE*. Done by Vernon W. Ruttan and Anne O. Krueger last year, that later study concentrates on the impact of U.S. economic assistance.*

The conclusion is that Korea attained higher rates of growth and did so sooner than it would have in the absence of aid. Of greater interest are the specific subsidiary "lessons" learned from the experience, as seen by the authors.

First, assessing the impact of technical assistance should not be hasty. As a prospect for progress, Korea was long viewed with skepticism and was not a promising case for many years. A second conclusion is that, despite frequent Korean rejection of external advice, policy dialogue between Korean and U.S. aid officers served to develop "a Korean professional elite" of competence and confidence.

Another demonstration is the efficiency of economic incentives in fostering economic development, but no support is given the idea that development depends on free markets as a correction for the distortions of public intervention. As another negative finding, support was not found for the common notion "that agricultural development is a precondition for industrial development." Agriculture appears to have been beneficiary rather than a cause for economic growth.

Another lesson is that incentives to farmers via commodity pricing policy can be critical in hastening adoption of technology and increasing rural incomes. However, higher incomes alone are not sufficient for lifting the quality of rural life. Korea had the added advantage of "an aggressive program of rural development" through the indigenous New Community Movement. One of the most important lessons, write the authors, "is that a small-scale, labor-intensive owner-operator system of agriculture can achieve both a high rate of growth in productivity and output and an equitable distribution of the gains from growth when supported by public investment in physical and institutional infrastructure."

The logical final question is: Why have other countries receiving comparable external aid not achieved comparable economic growth? No complete answer is offered. East Asian cultural factors are suspected as contributory in unique ways. But the most revealing fact is found in Korea itself: the comparison of performance under pre-growth and post-growth policies of the government shows that "development depends very much on the internal policies followed by the country that is receiving assistance."

*"The Impact of External Economic Assistance to Korea," *Journal of Rural Development*, December, 1986.

Is Something Missing in FSR?

A cautionary note is introduced for those who have too much faith in farming systems research as a development strategy.* As a research method, yes; but as a research strategy, FSR can succeed only if two neglected factors are also present. They are mass participation and market structures that retain "the surplus value created by the introduction of new alternative technologies."

Both the Green Revolution and U.S. experience indicate that the market advantages gained through new technology will be short term — and most favorable to the early adopters and the "top" rather than "bottom" interests. When *all* producers get into action, the movers and shakers in the total economy soon expropriate the value created by the new technology. The development of market structures to obviate this trend "will require the political legitimacy that comes from solid grassroots support." Otherwise the Green Revolution criticisms will all be heard again.

*Edmund K. Oasa and Louis E. Swanson, "The Limits of Farming Systems Research and Development: Should Development Administrators Be Interested?" *Agricultural Administration*, Vol. 23, 1986.

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China on the Move

The stage of predominant transportation tells much about a country's development. Is it walking barefoot, walking in shoes, using animal power, pedaling bicycles, riding motorbikes, or wheeling automobiles? How quickly the country has moved from one state to another is also a good indicator, as is the country's investment in all kinds of related infrastructure (roads, bridges, ports, railroads).

In *The Christian Science Monitor* of April 15, Julian Baum tells what he found in China, where an official boasted about the most "appropriate technology" which makes "China . . . a kingdom of bicycles." These are more used in cities than in the country, but one bicycle exists for every five people, or 200,000,000 overall. The effort to mechanize agriculture has produced millions of tractors, which have turned out to be more useful as farm-to-market transport than as plows; hence they "spend most of their time chugging down country roads," often with two-wheeled trailers behind. An upscale contraption is the mini-truck, often three-wheeled, for which there is more demand than supply.

State planners are thus giving top priority to transportation in the current five-year plan, with emphasis on port development for foreign trade and highway development for linking food producers and consumers. "With the highest load rate in the world, China's railroads are strained to the limits," carrying cargo and one billion passengers yearly.

Moving is development, and China is clearly on the move.

Paradox or Public Interest?

Whether the publicized paradoxes of the agricultural research-extension system are quite as paradoxical as they seem is examined by Donald A. Holt, Director of the University of Illinois Agricultural Experiment Station. The following paragraphs are taken verbatim from his March presentation to the faculty of the University's College of Agriculture:

We see some of the paradoxes . . . in the University of Illinois College of Agriculture. At the same time that we are pushing hard to strengthen our efforts of biotechnology and other areas that will . . . lead to more productive capacity in Illinois agriculture, we are mounting a major effort, RURAL ROUTE, to alleviate the problems that are exacerbated by increased productive capacity. In this and other ways, we help those who wish to farm remain in farming, even though the strength of a nation's production agriculture is measured by how few people are needed to provide an abundant and high-quality food supply, not how many.

To the extent that our agricultural research and extension activities provide farmers with good production, marketing, and management technology, the earliest and most effective adopters of that technology benefit. Later adopters may be hurt by the increased production capacity and lowered prices that result from technological development. We think of ourselves as doing constructive things, but our work inevitably causes some dislocations that are at best inconvenient and at worst traumatic for the people affected. Most of the people inconvenienced or traumatized are . . . deserving, productive, family-oriented people, who . . . are not in a position to take advantage of the efficiencies gained by good technology.

In general, the better the research and extension system works, the fewer people will be employed in production agriculture around the world. More, on the other hand, will be employed in providing inputs to agriculture and in the processing, distribution, and marketing phases of agriculture, as the total consumption of agricultural products increases. Of course, the nation that is most successful in developing its agriculture and competing with other nations for international agricultural markets will maintain a high level of employment in production agriculture. This situation is a good example of the conflict of interest between early and late adopters of agricultural technology and between efficient and inefficient farmers.

If we keep in mind that we are a public institution, created and sustained by the public, these apparent conflicts do not seem so paradoxical. It is in the best interest of the public for the efficiency of the food and agriculture system to be improved and for the prices of agricultural products to be relatively low. These goals are served by a strong agricultural research and extension system. It is in the best interests of the public for relatively few people to be engaged in basic industries, including agriculture, mining and manufacturing, as long as those industries are producing an abundance of products. Highly productive basic industries sustain a strong service-oriented economy.

It is also in the best interest of the public to help people adjust to change, so that change, which is inevitable in a capitalistic system, causes as little trauma as possible. Our challenge is to enable people to adapt to change, which will be even more rapid and dramatic in the future.

Getting Smart, Not Cheap

"My sense is that the comparative advantage of this country (U.S.) is not going to be that we're the lowest cost place to do routine work . . . . We will compete not by getting poor, but by getting smart, by applying the new technologies, by increasing the quality of education." — *Robert Friedman, President, Corporation for Enterprise Development.*

Either/Or Education Sparks Sharp Debate

The hottest of development debates is shaping up. For more than a decade some economists have been saying that less money should be spent on higher education and more on elementary and secondary in the developing nations. They have at last won out, and the World Bank appears to be turning a point of debate into a plan of operation. That makes a great difference, and the university community is predictably raising its voice in opposition.

The problem is one totally unfamiliar in the developed countries, where choices do not have to be made — or even thought about — between educating all children at the lowest level and educating some youth at the highest level. It is not always an either/or choice but it can be if the standard for the chosen level is reasonably high. Resources are simply that scarce. The choice will be at *somebody's* expense despite the facile attempted accommodation that says the World Bank is right to universalize primary education but not at the expense of higher education. Much of that, and more, was being said by the administrative board of the International Association of Universities when it met in Harare, Zimbabwe, in April.

Despite the Bank's expressed willingness to consult, the Association issued a statement criticizing the emphasis on economic indicators that neglect "the non-quantifiable but important benefits derived from higher education," such as research, new ideas, and national identity.* It also called attention to national dependence on the specialized manpower resources of the universities. Even if there are admittedly greater "social returns" on investment in education at the lower rather than higher levels, the university representatives countered, "The productive capacity of primary education is inconceivable without the contribution of higher education and related extension services."

*From *The Chronicle of Higher Education*, April 22, 1987.

Agricultural Production: Is It Really Different?

The "center of the universe" seems to have many locations. Like the rainbow, it all depends on the viewer. If the involved person is in the field of agriculture and agricultural development, he or she is inclined to think agriculture is No. 1, and maybe even literally unique. That may be an exaggeration, but it *is* different in many ways — ways that must be understood and considered if agricultural development is to be made successful.

In presenting their "lessons" from the World Bank's 35 years of investing in development, Bank officers Warren C. Baum and Stokes M. Tolbert indicate six characteristics of agricultural production that set it aside from other productive sectors:*

1. It depends on complex biological processes not fully understood and constantly changing.
2. It runs by "an inescapable natural rhythm" with great variability and risk, as with climate and biological phenomena beyond man's control.
3. It can be done in many different ways, with different technologies needed for plantations and village plots, nomadic herdsmen and feedlot operations, individual plots and collective farms, tenants and landowners.
4. It can undergo technological change only through decisions by millions of farm family units.
5. It is so intertwined with rural life that any innovation in its practice "has a greater effect on the fabric of society than innovation in a sector in which work and home, employment and leisure, are separate."
6. It depends on a host of complementary activities, combining or including land-use changes, irrigation development, input supply (seeds, fertilizers, pesticides), credit, processing and marketing, rural infrastructure, strengthened supportive institutions with their management, and "research to develop a technological package and extension services to disseminate it."

**Investing in Development*, as noted in the "Helpful Ideas" section.

Using At-Hand Talent

Retrospective reports on the success of the "new" colleges and universities in Africa, often now 20 or 30 years old, are beginning to look alike in one respect—the common lament that the pools of talent built up in the faculties (expertise, and analytical and research capacity) are too often untapped and unused in the national agricultural systems.

Action about the lament is now being recommended. An example comes from the five-year accountability review of the International Livestock Centre for Africa, done by the Technical Advisory Committee of the Consultative Group on International Agricultural Research. After the many commendations on other grounds, the review recommended, in the words of the *ILCA Newsletter*, "Nonetheless, better links are still needed with African universities."

Links have two ends, and there must be a willing party at each.

Machine-to-Farm Misfits

In the application of machines to agricultural production, the transfer of technology from developed to developing countries has left many disappointments. The reasons are worth examination, along with some remedies. That is done by I.B. Warboys, Head of the Agricultural Engineering Department of Wye College, University of London.*

Warboys first gives some examples of technology unsuited where introduced, as with tractors in East Africa and some mechanization in rice production in Asia. He then cites some encouraging examples of indigenous technology. The mere existence of national extension organizations or international agricultural research centers does not guarantee the generation of suitable innovations or their dissemination and adoption. Indeed, institutions are sometimes themselves barriers, as when they overlook cultural and other user-related factors, such as the lack of management expertise, the need for relevant training, and obstacles to "technology filtering through."

Obviously, improvement calls for remedy at these points of weakness or failure. That includes new approaches to the training of engineers and technologists in the user countries, with courses that put less emphasis on Western technology and more on small-scale manufacture locally. If related postgraduate training is done in the developed countries, the *skills* learned there might best be combined with *investigative study* in the developing country.

Official policies should offer financial encouragement to enterpreneurs and small-scale manufacturers to offset the advantages of the few multi-national competitors. The magnitude of the possible market is shown by "an estimate that 84 percent of Kenya's arable land is still cultivated with hand-tools, compared with 12 percent by oxen and 3.5 percent with tractors."

Most imported technologies have been disappointing to small farmers in cost-effectiveness. They have also produced problems in their impact on employment of the unskilled and on income distribution. As compared to such imported technologies, the author therefore concludes, "The successful adaptation of existing technology, and the development of more appropriate indigenous technology, is more likely to be successful if there is more investment in locally-based research and development, and in training and education."

*"Some Aspects of Technology Transfer on Farming Systems," *International Journal for Development Technology*, March, 1983.

Sainted or Tainted?

"When I give food to the poor, they call me a saint. When I ask why the poor have no food, they call me a communist." — *Archbishop Helder Camara of Brazil.*

Why Cotton Was King

The many pieces of an agricultural system have to fit together with time and place to produce success. History gives us plenty of examples. Change the time, change the place, change one or several of the pieces and the outcome may be drastically different — complete failure or complex readjustment. All this is well documented in the history of the production of cotton in the U.S. state of Mississippi before the Civil War, or before 1860.*

What made cotton king then? Cotton moved into the young tobacco plantations in the Old Natchez District, the delta area of the Mississippi River, because of British demand in its textile mills, abundant land, slave labor, superior soil, and convenient transportation on the Mississippi River.

What role did technology and new knowledge play? The cotton gin had a revolutionizing effect, as did mechanical cultivators later. Innovation brought disease resistant plants and a rotating three-year cycle of one acre of corn for every two acres of cotton.

How much depended on infrastructure? The advent of railroads and construction of levees to turn back the floodwaters gave the answer. Early plantations were confined to within 10 to 20 miles of river transportation until the railroads brought cotton production to the interior of the state during the 1850s. By 1860, eight rail lines operated 872 miles of track, taking cotton wherever the track went. To protect the nutrient-rich delta soil, 310 miles of levee were built along the Mississippi River after 1850 by a tax of 10 cents per acre.

Was there a role for human capital development? Even with slave labor? Perhaps surprisingly, yes, at least in the minimal sense of showing that training pays and incentives work. The "gang" system used in 1840, rewarding all equally whatever the task, was replaced in the 1850s by the "task" system of incentives for extra effort and improved skills. Soon almost all operations were done by cultivators or mechanical tools, with harvesting alone done by hand.

With this system driven by a manpower/mule-power ratio of 100 to one for every 10 acres, the Mississippi plantation produced a quarter of the young nation's total cotton supply.

*Gaynell Terrell, "Cotton Soon Became Mississippi's Wealth," *The Clarion-Ledger*, Jackson, Mississippi, May 3, 1987.

Creative Statistics

When an old farmer applied for a life insurance policy and was turned down because of his age, he protested, "You're making a big mistake, because figures show that few people die after the age of 94."

Helpful Ideas: Old and New

Burton E. Swanson, **Analyzing Agricultural Technology Systems: A Research Report.** INTERPAKS, Office of International Agriculture: University of Illinois at Urbana-Champaign, Urbana, Il., 1987 (13 pages).

This outline-type report tells what the USAID-funded INTERPAKS research project has achieved in developing an analytical framework for examining and evaluating agricultural technology systems. The project has moved through the conceptualization stage to readiness for widespread application — or, as the report says, "from analysis to diagnosis." The many analytical indicators used in the four-country case studies are discussed with a view to their application in new situations on behalf of national policy makers and donors. A linkage or flow analysis is also shown as a useful diagnostic device. *(Copies are available upon request.)*

S. Chamala and R. C. Maurer, **Community Involvement Crucial for Conservation in Australia — Summary and Recommendations from the National Study of District Soil Conservation Advisory Committees.** Department of Agriculture: University of Queensland, 1986 (24 pages).

The incommensurate title of this short pamphlet gives the major finding: with the use of extension officers as advisers, members, and secretaries, broadly representative advisory committees "are valuable to soil conservation programs and should continue and expand their involvement." Community participation may be a way of reducing conservation costs, also. With many insights into how user organizations can aid extension, this is a summery of the results of the National Study of District Soil Conservation Advisory Committees, completed in 1985. Results were drawn from experience in four Australian states which now use such committees. Readers will be interested in the analysis of the role of extension officers and how their perceptions compare with those of the committee members served. *(Professor John Van Es, Professor of Rural Sociology and Agricultural Economics, University of Illinois at Urbana-Champaign, helped in the early stages of the study design.)*

Gladys Baker, **The County Agent.** The University of Chicago: Chicago, Il., 1939 (226 pages).

In the U.S. vernacular, this is an "oldie but goodie." It was the best extension piece of almost 50 years ago. Understandably dated in many ways — the Roosevelt years, the figures, and even the terminology ("agent" instead of "adviser" and other synonyms) — the book is valuable historically and philosophically. The peculiar U.S. three-tiered federal-state-local agricultural system is explained back to its origins, as is the county agent part of it. Insight is also given on the perennial problem of farmers' organizations and their beneficial and hazardous uses. Relying on the private sector for help in technology transfer is nothing new. It is a wheel in no need of reinvention.

Robert Cassen & Associates, **Does Aid Work?: Report to an Intergovernmental Task Force.** Clarendon Press: Oxford, 1986 (381 pages).

This unconventional authorship comes from the group of independent consultants who did the study under joint auspices of the World Bank and the International Monetary Fund. It is an important first of its kind — a multi-country survey of aid activities with common terms of reference. As to the title's question: "The answer given here is broadly positive. But aid, like most human endeavors, is far from perfect." The remaining 380 pages are elaborations on that theme, in scholarly professional language. Successes and failures are recited, the former more common in Asia and the latter in "most intractable" Sub-Saharan Africa.

The correlation between aid and growth is not conclusive: aid can be and has been a significant factor in many countries — not invariably — but other production factors must be there, too. Among them are know-how, management, and infrastructure. So the record is mixed. Individual country studies are most revealing but then "only partially conclusive." Nevertheless, the "basic finding is that *the majority of aid is successful in terms of its own objectives.*" On poverty, aid has brought no absolute reduction but it has had a positive impact. The study also shatters several myths about the causes of failure in coping with poverty.

Far from having aid stop, the report would have it done better. Among the proposed new approaches is a plea, after harsh words, for better aid coordination among donors and recipients. This deduction seems to rest on the uncommonness of common sense and the determination of donors to keep repeating their mistakes.

Alexander F. Laidlaw, **Training and Extension in the Cooperative Movement: A Guide for Fieldmen and Extension Workers.** Food and Agriculture Organization: Rome, 1962 (78 pages).

While this compact monograph gives helpful background on the nature and uses of cooperatives, its purpose is to aid in their development through the informed efforts of extension workers. Usefulness is attested to by the several printings since original publication, in FAO's conviction that "cooperatives would for many countries greatly facilitate the solution of their food problems." It is a practical, simply-written, how-to-do-it manual.

David M. Smith, **Where The Grass is Greener.** The Johns Hopkins University Press: Baltimore, Maryland, 1982 (386 pages).

This agronomic title masks a geographer's study of social and conomic inequality among nations and within nations. It is useful as background material for any approach to development, agricultural or otherwise. It gives the necessary context. Impressive data are presented to describe the inequalities. Then the analysis explores both causes and possible remedies, without any final prescription. The way is indeed left open for belief that it may not be an entirely bad thing that wiping out inequality is a never-ending and perhaps never-possible task.

While based on case studies, the book examines and extrapolates from developed countries chiefly, both capitalist and socialist (U.S., Britain, South Africa, and the Soviet Union), and gives little direct attention to developing countries except Peru.

N. E. Delaney and S. Chamala, **Electronic Information Technology Relevant to Agricultural Extension in Australia — A Review and Discussion Paper.** Department of Agriculture: University of Queensland, 1985 (61 pages).

Is the new information technology going to replace the extension agent and the extension office? Not quite, but it will make a needed impact, with inevitable changes. While this study relates to Australia as a developed country with a strong agri-business sector, the discussion is relevant to extension efforts everywhere. An opening chapter on Australia's "extension situation" is followed by treatment of all the major technologies, including telephone networks, radio, television, videotape, and particularly computers.

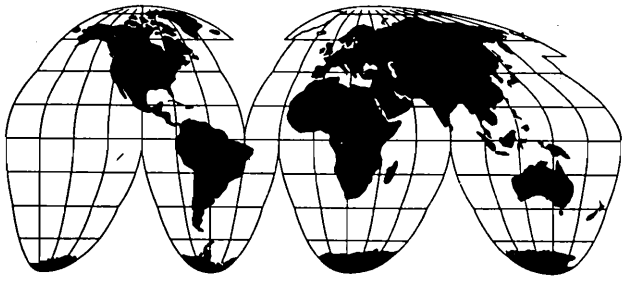
David C. Wilcox and George R. McDowell, **Building Colleges of Agriculture in Africa: U.S. University Experiences and Implications for Future Projects.** Occasional Paper No. 7, Board for International Food and Agricultural Development, USAID: Washington, D.C., 1986 (48 pages).

This is a valuable addition to the growing literature about how university faculties of agriculture can be better used (especially by government) in the development processes needed in so many countries. It is a research report on interviews with 60 agriculturalists in nine U.S. universities formerly engaged in institution building in 14 African countries under USAID funding. A major finding: "The greatest interviewee dissatisfaction was with the achievement of research and extension objectives" — both what the U.S. university participants felt about their own shortcomings and what they thought the African universities ought to be doing. There should be more African college involvement in "critical applied research necessary to develop and disseminate improved agricultural technologies. . ."

The last quarter of the report gives a valuable consensual "voice of experience" on the implications for future projects. On extension, the point is made that such service nationwide does not have to be taken over by the college, U.S. land-grant-college style, and probably should not. "However. . . there much be explicit mechanisms whereby the agricultural college both contributes in an identifiable way to the extension function and through which it can collect grassroots credit for doing so."

Warren C. Baum and Stokes M. Tolbert, **Investing in Development: Lessons of World Bank Experience.** Oxford University Press: London and New York, 1985 (610 pages).

Out of this heavy volume, agricultural development people can skip much of the project-oriented part and find useful instruction in the 200-plus pages on sector analyses. The agricultural sector is covered succinctly in 36 pages, including the characteristics which differentiate it from other productive sectors; the five common development objectives (growth, sustainability, stability, equity, and efficiency); issues of policy, finance, institutions, and socio-economic background; and the chief factors that made agricultural projects successful. Extremely brief treatment is given "technological change" and the "technology package" but, more broadly, a final chapter presents "many of the ingredients of success as well as many of the pitfalls" out of the Bank's 35 years of development experience.



Around the World

More Aid, More Yen in Asia

With its bilateral aid, Japan is increasingly replacing USAID, the World Bank, and the Asian Development Bank as a source of development funds in East and Southeast Asia. Much of the success lies in concessionary loans with lower interest rates, longer repayment terms, and the absence of tough conditions like a minimum rate of return on investment. In recent years, Japan's government-run aid fund has provided annually almost half as much loan money in the region as the World Bank.

Japan commits 77 percent of its total worldwide distribution to ASEAN members — Indonesia, Thailand, Malaysia, and the Philippines. Of this world total, Indonesia receives 21 percent and Thailand almost 10 percent. As with much bilateral aid, Japan's type is characterized by some critics as "aid for trade." It is directed to a special-interest economic and political region from which Japan gets raw materials and in which it has markets. In any case, Japan promises to double its funds in the seven-year period ending in 1992 and independent sources predict greater ASEAN dependence on Japanese loans in the future. — *from the Bangkok Post, February 12, 1987.*

Jordan Farmers' Association

Farmers in the Jordan Valley, with its rich soil and varied crops, have been organized since 1974 into a single membership association by law. The Jordan Valley Farmers Association, now exceeding 4500 members, is entrusted with responsibility to provide credit; to supply input materials in kind; to assist in such common agricultural operations as pest control, harvesting, transportation to markets, and processing; to purchase and market farm produce; and "to take an active interests in the agricultural extension activities with a view to educating the farmer members in the use of modern techniques of crop production."

Because of its size, the Valley has been divided into 33 "development areas," each with elected representatives for local affairs and a voice in the General Assembly of the Association. A Board of Directors and Director General head a staff of 86 employees, who work through eight branches "to achieve the integrated and planned programmes which are set out yearly, budgeted for, and approved" by the Board and the Assembly. — *from Mohammed Taweel, Acting Directing General.*

Pacific Extension Session

An extension theme, "Development of the Rural Human Resource," is the topic of a specialized workshop to be offered at the XVI Pacific Science Congress, Seoul, Korea, August 20-30, 1987. A call for papers has been issued by the organizers, Hae Kyun Sung of Seoul National University and D.B. Gibbs, Ministry of Agriculture and Fisheries, Private Bag, Wellington, New Zealand.

Israel Workshop

An international workshop on applied research in agricultural development projects will be held in Israel August 26 to September 15, 1987, sponsored by CINADCO, the Centre for International Agricultural Development Cooperation. It will include interaction among research, extension, farmers' organizations, and parastatals, with the proceedings to be published later. — *from T. Kaddar, CINADCO.*

And Another Journal

The premiere issue of *Development International* appeared last November. The subscription journal is published bimonthly by Development International, Inc., a non-profit corporation in Washington, D.C. It "focuses on topics relevant to the needs of the poor majority in developing countries." Its 64 pages are devoted to major articles on development from the point of view of women, microcomputers, conservation, and grassroots participation, plus shorter pieces, including a sector on agriculture.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Work in Egypt

John L. Woods, Director of INTERPAKS, and Robert P. Bentz, Associate Director of the Illinois Cooperative Extension Service, joined a representative of the U.S. Department of Agriculture for a month's service in Egypt in June and July. The objective was to work with the U.S. Agency for International Development in preparing a strategy paper for a major forthcoming agricultural extension project.

Helping Pakistan Trainees

With emphasis on the technology development-transfer-use system, INTERPAKS staff devoted three days to the training course for eight directors of agricultural experiment stations from the Northwest Frontier Province of Pakistan. The special course was offered on campus in May and June as part of the TIPAN project, by which the University of Illinois at Urbana-Champaign is giving technical assistance to the NWFP Agricultural University with funding from the U.S. Agency for International Development.

The Kenyan Connection

Joseph Kibe, Chairman, Board of Trustees, Egerton University College in Kenya, visited the University of Illinois at Urbana-Champaign in mid-June on behalf of the Egerton-Illinois partnership. Also in furtherance of that collaboration, Project Coordinator Burton E. Swanson returned briefly to Nairobi in late June.

Mission to Morocco

Cooperative relations are being cemented with the National School of Agriculture, Meknes, Morocco. Jerry W. Robinson, Jr., Professor of Sociology and Rural Sociology, represented the College of Agriculture and INTERPAKS at the international extension conference held at the School in June and presented a paper on "Organizational Management, Problems, and Skills for Extension Education."

John L. Woods, Director of INTERPAKS, has been named Campus Coordinator for faculty/student exchanges, joint research, and mutual assistance between the University and the Meknes School under a formal Memorandum of Agreement.

Unintended Farm Hilarity

"Will we ever get to the point where people don't enjoy growing their plants? The chances are way less than 999 out of a hundred." "Axually, cotton seeds give us cotton but bird seeds don't give us birds." "A perennial is a plant that keeps living after it is dead."

These are samples of what an elementary school teacher learned from his 29-year exposure to children's examination papers.* Some others follow.

"One thing I don't know about farming is plenty."

"Many people believe that plants of antiquity lived long ago."

"Another name for corn is maize, but I think I will just stick with the first name and learn it good." Also, "Corn plants can give either white or yellow corn. If you are a corn plant, you have to make up your mind."

"Chlorophyll is something plants have to make them smell really nice to other plants."

"Soybeans are delicious unless you cannot stand their taste."

"While most cows can only give milk, cows in Wisconsin have learned how to give dairy products."

"I am not sure how I get calcium from milk. But my insides know and that is the important thing."

How about seeds and weeds? "Seeds should be buried whether they are dead or not." "Many of our weeds need some form of birth control."

And perhaps a childish word to the wise everywhere: "A good gardener gets better with practice and does not keep making the same mistake over and over, ect., ect."

*Roger Turner, "Out of My Class," *Farm Journal*, mid-February, 1987.

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On the Up-Escalator With the Small Farmer

What are the major small farmer perspectives on agricultural development? From the answers, what can improve the design of development projects? Kenneth Kusterer, The American University, Washington, D.C., has found some answers in a computer search of the relevant literature, which yielded 268 empirical works for close examination.*

"Small farmers themselves. . .want first and foremost to escape being small farmers." That is the place to begin. To that end, contrary to a more cautious theory, "they voluntarily endure tremendous sacrifices and disruptive transitions." Going up the ladder of economic development, the small farmer faces different goals — six in a cumulative hierarchy:

1. Escape from total economic subjugation (via slavery, landlord, etc.)
2. Establishment of a household with independent production for domestic consumption *(then two income-security goals follow, moving into "home-based production of goods or services. . .for market sales" or into earning some non-agricultural income)*
3. "Protection of income from capricious forces of nature"
4. Protection of same from such actions of humans *(then follow goals to break the unending rise-and-decline life cycles of the peasant)*
5. Accumulation of enough domestic capital to continue the household beyond loss of its dependent labor and to establish the next generation of households
6. Access to economic activity with wage or profit income promising an increased standard of living (with eventual entry into the middle class).

Ingredients and challenges of development.

The small farmers who ride the up-escalator to increased income-earning activities cease to be small farmers. They become either large farmers or, far more likely, part-time farmers with primary activity off-farm.

What use can be made of this better understanding of the small farmer perspective? Development specialists and project designers should take into account at least three findings. First, small farmers at the lowest levels cannot benefit from credit. They are not yet ready to concentrate on cash crops for loan repayment. Instead, they need capital (grants, not loans) that will increase the productivity of domestic labor to the point of survival on the labor in the household (e.g., community infrastructure projects

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

like irrigation or potable water systems). Second, in spite of the patriarchal structure or the sexism inherent in most planned development efforts, small farmer development benefits women, because "the trickle-down from male household heads to female household members has about as high a flow rate as any development trickle-down ever does." Finally, small farmers beyond the lowest level will benefit from expanded and diversified income opportunities brought to rural areas.

This causes the author to conclude by putting it all together: "An ideal small farmer development project would be an agribusiness project that links a farming zone to new markets by introducing new crops, buys raw material from small farmers while. . . offering necessary production credit, needs and pays for household or village level. . .processing of the product, employs small farmers for further processing in plant, and requires ancillary microenterprises to service its operations."

*"Small Farmer Perspectives on Development," a contract report to the U.S. Agency for International Development, February, 1987.

The Invidious in FSR?

Harsh words are said about the inferior status of extension workers vis-a-vis researchers. The criticism comes out in a paper about the "farmer-researcher-extension relationship" presented to the 17th meeting of the Asian Farming Systems Working Group in the Philippines.*

Even where expected to carry out trial implementation and analysis, extension workers are rarely involved in farm-level trial design. "More serious and widespread is the fact that extension workers may *never* have received from research *any* innovative technology which offered the farmers in his or her district a real improvement over local practices or varieties." Therefore, "it is largely up to researchers" to admit that they have been unable to make the anticipated technological breakthroughs and hereafter include extension people as partners in planning and trial design and in testing and verification of new technology with farmers. "Everyone stands to gain from such a change in approach."

The basic trouble seems to be that extension in developing countries is rarely professionally rewarding and stands below research in both funding and manpower. Comparatively, extension suffers from lower levels of education, salary, per diem allowances, and motivation. It has less in mobility, in opportunities for formal and non-formal training, and in professional or civil service advancement. Also, it has greater levels of frustration.

*D.L. Galt and S. B. Mathema, "Farmer Participation in Farming Systems Research," at the International Rice Research Institute, October 6-11, 1986.

"Technology Transfer": Buzz Word or Good Guide?

Buzz words afflict the international community, as elsewhere. The dictionary says "buzz" is "a continuous humming sound, a confused murmur. . . as of many people." How appropriate! A buzz word connotes mindless repetition of what everybody else is saying — repetition perhaps *about* and *around* some concept but conveniently elusive as to exactly what. The result is likely to be several meanings and interminable argument. A current example is that pair of words, "technology transfer." It is a handle for more than one kind of freight, and it supports advocates of different concepts and practitioners of different programs.

Some of the consequences are explored by John B. Claar, Senior Adviser to INTERPAKS and formerly long-time Director of the Illinois Cooperative Extension Service, in unpublished notes made after several overseas consulting missions in 1986-87. His reflections are paraphrased below.

When old terminology loses its zest, a new term may be necessary to inspire a new initiative. Perhaps that is the origin of "technology transfer," used as a synonym for timeworn "extension." The trouble is that meanings, not precise anyway, become more confused; and tangential excursions are encouraged, with do-or-die advocates of every tangent. The major lines of difference now have shaken down to what might be called the technology-centered approach and the people-centered approach.

The true-blue technologists literally want hardware or something physical to move onto the farm — invent it and shove it, or invent it and ready-takers will be at hand. Knowledge about it — that is, about its existence — is enough. It is, some would say, mere drivel and a diversion to talk about decision-making, attitudes, human capital factors, and anything connoting knowledge rather than tangibles. The focus thus tends to be top-down, handing out new kinds of machines, seeds, fertilizer, pesticides, and loans.

The other part of the dichotomy, the people-centered approach, does not avoid these things, but deals with them in the context of considerations of know-how, farmer attitudes and motivation, economic factors, and the total farm-family-community complex — not just a decoupled what-is-being-done but full awareness of to, through, and for whom it is being done. The intent is to develop human beings and, in so doing, adopt technology with human accommodation.

In real life, the poles may not be that far apart and neatly separated. They may be different centers of gravity but with overlapping edges and awkward tolerances. Nevertheless, the exaggeration may bring home the point that users of "technology transfer" need to be more careful about what they mean. Attempts in that direction would not only aid understanding in donor agencies and host countries

but also force the consultants or extension agents to reexamine the adequacy of their approach.

In fact, neither one can stand starkly alone. Technology is the likely starting point for agricultural improvement, but what else needs to be added? In a particular transfer project, should technology be pushed *per se*, leaving the farmer unaided in rationalizing it and making associated adjustments? Or should it be broad enough to deal with management, risk, equity, and environmental considerations, too? A timely example of the fragmented approach is the growing popularity of heavy reliance on mass media and the private sector, both of which are promising but at the same time do better in telling about the technology than in helping farmers integrate it into the total farm or than teaching the skills of decision-making and management required for adoption and pay-off.

Literature on agricultural research and extension abounds in insights on this question of proper balance. Farming systems research is a major innovation in relating the development of technology to the farmers' situations and concerns. It tends to widen the understanding and harmonize the views of both those who develop technology and those who dispense or use it. Its potential offers still more promise if it can accommodate the external factors while addressing farm-specific priorities. Also the development history of the two Punjabs, East and West, is instructive as reported in *INTERPAKS INTERCHANGE* in November, 1986 and later in *The Economist*, March, 1987. That history showed the importance of education and human capital development as the basis for technological progress. As reported in the *INTERCHANGE*, "The mere availability of research, without interpreters, agents, and human linkages, may not reach the intended farmer and if it does reach the farmer who is without management and decision-making skill, it will surely, in apt metaphor, fall on barren ground."

Out of his total experience, Claar concludes that as a nebulous term for extension, "technology transfer" may generate needed new initiatives if not too narrowly defined and if "technology" is not taken too literally. His plea is for balance with perhaps some marginal move of the pendulum back toward the human factors — to greater involvement of the clientele and greater attention to the development of human potential for analyzing problems, devising solutions, and managing the processes of change. Users of "technology transfer" should be clear about the scope and objectives of the activities proposed and then focus on people and their institutions as well as on technology. Both are needed for satisfactory development.

Trickle Down in Satire

"I owe much. I have nothing. I give the rest to the poor." — *Rabelais*

Including Extension In Sondeos

Reconnaissance surveys, rapid rural appraisals, or sondeos are various names for quick, informal surveys increasingly used at the beginning of farming systems research to familiarize researchers with the major constraints facing targeted farmers. Several ways of conducting such surveys, based on experience in Liberia, are presented by Timothy R. Frankenberger, University of Kentucky and John L. Lichte in *Farming Systems Newsletter*, April-June, 1986, CIMMYT Eastern Africa Economic Programme (P.O. Box 25171, Nairobi, Kenya).

The use of "an extension person on the team" is recommended, as follows: "Collaboration between research organizations and extension can be greatly facilitated by including extension personnel early-on in the project. The knowledge which extension personnel have for an area may provide insights into the constraints which farmers are facing, and such information can be extremely useful to the other scientists. However, care must be taken to insure that biased views on the part of some extensionists don't over-influence the team's perceptions of the situation."

Non-Economic Rebuttal

Michael M. Cernea and Scott E. Guggenheim make a vigorous rebuttal of the notion that the "non-economic social sciences" are superfluous in farming systems research. Such issues and variables as the non-economic factors in the behavior of farmers, including their patterns of decision-making, need to be covered. They are "at the core of sociological and anthropological investigation," which is now in fact moving into a research agenda comprising a "sociology of agriculture." That expanding agenda "should be regarded as a substantial and irreplaceable contribution needed by farming systems research."

These views are supported in a 13-page paper, "Is Anthropology Superfluous in Farming Systems Research?" in the *World Bank Reprint Series: Number 367*.

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Asian Assimilation Model

The ability to assimilate imported technology depends, somewhat paradoxically, on the level of the importing country's own technology. This is the conclusion of two Asian engineers as they look at the potential for assimilation by Asia's less developed countries.* There is need for building up a receptivity or readiness for the adoption of imported technology, which means building up the country's scientific and technological infrastructure. Shaping national policy for such a buildup "can certainly be facilitated by the judicious transposition of relevant experience gained in other countries." Japan's evolution is a most useful model for Asian nations, provided suitable adaptation is made to local conditions. In looking at that evolution, the authors put great emphasis on education, R&D activities, and government policy, with a reminder that the Japanese government took an oath in 1868 to modernize by "seeking knowledge throughout the world."

As Taiwan, Singapore, and Korea have already done, other Asian countries can prepare for efficient adaptation and use of technology by long-term strategic planning, selectively using the Japanese model. This means lifting the level of schooling for the public, increasing the population percentage with higher education, and turning out a relatively large proportion of scientists and engineers. It also means more emphasis on R&D activities and on development research, with an environment conducive to the same in the private sector, all strengthened by collaboration among government, universities, and industry.

*Nazrul Islam and Yoichi Kaya, "Technology Assimilation in the Less Developed Countries of Asia: Lessons from Japan," *International Journal for Development Technology*, Vol. 3, 1985.

Assessing Africa's Parastatal Performance

"The reform of public enterprise sectors is now everywhere in Africa a matter of the highest priority," writes a World Bank management specialist, John R. Nellis.* He estimates that there are about 3,000 public enterprises in Africa (that is, entities government-owned or controlled, earning most of their revenue from sales, having a legal identity, and self-accounting).

These enterprises are unmistakably important — often dominating the economies, controlling the local capital markets with borrowing, accounting for a high percentage of the GDPs, and sometimes generating much of the employment. They have arisen from a host of good and bad reasons, ranging from the absence of a private sector to the presence of politicians wanting pockets for patronage. Whatever the reason, many of them perform essential services, and they will remain in every African country in a substantial way even after all feasible reform is made.

The bottom line is that these public enterprises in general have performed poorly. They "present a depressing picture of inefficiency, losses, budgetary burdens, poor products and services, and minimal accomplishment of the non-commercial objectives so frequently used to excuse their poor economic performance." While every country has one or more doing well even by stringent standards, most are not meeting the goals of planners and leaders. The two major reasons are poor initial investment decisions (e.g., on whether to start at all in many areas) and inappropriate pricing policies (e.g., controlled and inflexible despite changing costs). Other impediments are managerial: overstaffing, unclear goals, political interference in daily decisions, weak educational base, poor incentives, and civil service procedures ill-suited to commercial operations.

So what is to be done? There is no quick fix, but instead a long-term task of reform both in external macro-economic policies and internal micro-managerial details. Among the ingredients of the mix for reform are, first, divestiture (by privatization or closure) and then rehabilitation of what is left. A suitable vehicle is a "contract plan" setting forth "a clear and binding statement" of goals of the enterprise, performance evaluation criteria, and the role and commitment of both government and enterprise.

Again, it should be emphasized that the study relates as much to what to keep and fix as to what to sell or close: "even if every contemplated or conceivable Africa PE divestiture candidate were sold or liquidated in the near future, there would still remain in every sub-Saharan country" a substantial, understandable, and justified public enterprise sector. Most of it is, admittedly, in manufacturing, but there is also an important dimension in agriculture — not so much in output as in domination of agricultural markets and processing.

***Public Enterprises in Sub-Saharan Africa,** World Bank Discussion Papers: 1, 1986.

Apostrophe to the Critic

The Nugget, a weekly newspaper in eastern Oregon, recovered creatively from its error in omitting the apostrophe in what should have been the "School's future." It replied to its many correcting readers (August 20, 1986): "We suffered a sudden contraction when we learned of the missing punctuation, although we know we are not singular in the mistake. Still, if the missing apostrophe is found by anyone in the community, please treat it with caution: it can become very possessive."

The Tale of Two Nations: Singapore and Jamaica

In his professional reminiscences, Theodore W. Schultz, winner of the Nobel Prize for Economics in 1979, tells why nations differ in economic growth even if similar in other ways.*

He begins by looking at the superior performance of East Asia's Singapore, Hong Kong, Korea, and Taiwan, where productivity, employment, and education have risen sharply and birth rates have declined sharply.

A Tale of Two Small Nations: Singapore and Jamaica

Item	*Singapore*	*Jamaica*	*Unit*
In common:			
Population mid-1982	2.5	2.2	Millions
Life expectancy of females, 1982	75	75	Years
External debt, 1982	1.4	1.5	Billions of dollars
Differences:			
Area	224	4,232	Square miles
Population density	11,160	520	Per square mile
Economic (GDP) growth rate, 1970-82	8.5	-1.1	Percent
Exports, 1982	20,800	730	Millions of dollars
Imports, 1982	28,200	1,370	Millions of dollars
Per capita GNP	5,910	1,330	1982 dollars

Source: World Bank, World Development Report 1984 (New York: Oxford University Press, 1984).

He points to the accompanying table showing many likenesses but also great differences, particularly in trade and economic growth, and comments: "Why the large differences in economic performances? Are they the consequences of having or not having coal, oil, iron ore, and other minerals? Are they the result of differences in the acreage and productivity of cropland? My interpretation of the evidence is that the answers are No. Where trade extends the market there are incentives for specialization based on the increasing returns to human capital as economic modernization is achieved."

"The tale of Singapore and Jamaica . . . contains the secret of the connections between specialization and development. The key . . . is in the division of labor, which depends on the extent of the market . . . large for Singapore, small for Jamaica . . . . In the long run, the critical component in economic modernization and development consists of human capital — that is, the abilities and knowledge embodied in people rather than in the properties of land, other resources, or other forms of physical capital. First and foremost over the decades are investments in population quality."

*In **Pioneers in Development,** Second Series: World Bank, 1987, pages 35-37.

Management Training: What is Often Missing

Everyone knows that management, or the lack of skill in it, is a crucial element in economic development, particularly in the early phases. Deficiencies can be and have been documented for management training in Sub-Saharan Africa, using a host of independent evaluative studies by international agencies. These, with proposed remedies, are given as personal conclusions by Robert Youker, a management training specialist for the World Bank, which committed $240 million to all kinds of training worldwide in 1985, with a tenth of it going to management training in Africa.*

The problem is succinctly stated: the studies referred to above "have all indicated that technology transfer via training in Africa has not been as effective and efficient as necessary or possible. . . . The problems can be summarized by saying that too often the wrong person gets the wrong training at the wrong time and in the wrong place." Much effective training exists, but still not enough meets acceptable standards.

The remedy is "a learner-centered approach, not a teacher-centered approach," with enough time and resources to:

1. Work closely with the management of the client organization.
2. Find out detailed local training needs and prepare courses and materials to match same.
3. Work with trainees until confident in applying new approaches back on the job, with follow-up consulting services.
4. Watch for external factors affecting performance and make training helpful to managers in recognizing and dealing with same.
5. Continually evaluate trainers' efforts to be sure that organizational performance is in fact improved through changed on-the-job behavior.

*"Training of African Managers — Some Lessons from Evaluation," presented at a conference of the Center for the Study of Management Learning, University of Lancaster, U.K., September 16-19, 1986.

Educational Pay-off

"But when we think of education as an investment, it becomes something not to be economized but emphasized . . . . Nowhere . . . is there an illiterate peasantry that is progressive. Nowhere is there a literate peasantry that is not." — *John Kenneth Galbraith.*

Scandinavian Extension

Two articles in *Acta Agriculturae Scandinavica* for 1987, by Harri Westermarck, address extension in Denmark, Finland, Norway, and Sweden. With elaborate tables and statistics, one shows that in reacting to new research results, extensionists embraced "non-profitable" conservation-oriented technologies more readily than farmers, who were inclined to stick with the "profitable." However, the gap between extensionists and farmers was partially explained by extension behavior. Practice did not follow acceptance. Extensionists "had not actively promoted . . . diffusion and acceptance among farmers." For innovations generally, the professionals followed their own, not farmers', perceptions on what should be diffused.

The second article reports on motives, attitudes, and roles, as seen by 800 Scandinavian extensionists found to have "a very high standard of obligation." They were skeptical about computers and electronic technology in their work and not satisfied with the content and accessibility of the new research results. They saw themselves as most often dispensers of solutions but would prefer to be farmer helpers — recognizing needs, diagnosing problems, and figuring out resources and solutions. They thought farmers needing attention ought to get it, whether requested or not, but that lack of time was the enemy.

Now, Forty Years Later, What Have We Learned?

Combining his personal experience in developing countries and the insights of ten country case studies, E.S. Simpson, Professor of Geography at the University of Newcastle upon Tyne, tells us what we have learned, or should have, from almost four decades of converting development theories into development policies, and policies into implementation.*

We have been learning from "grand schemes and elegant models" that were concerned with production rather than distribution, national output rather than per capita income, machine-like engineering of the economy, an assumption of trickle-down benefits to all, and success in a short time-frame. "With but few exceptions, this has not been so." Disillusionment has set in after the overconfidence. But there is good news, too: "Areas of failure have been identified," new definitions have been developed, and a new focus shapes development now.

The grand-plan idea, the good-for-everybody-everywhere model has been abandoned. The general has given way to the particular, the world-wide to the location-specific. Attention has come to focus on reality, on the practical, and on people themselves. Also development goals are being redefined: "It is not a question solely of repairing holes in the bucket of development, but of asking what the bucket is for." The bad side-effects of economic growth are getting attention and, better yet, development proposals increasingly "have as their premise the well-being of people rather than the size of the national economy." Growth and equity are being linked, operating in tandem.

The ten country studies show a common pattern of uneven sectoral growth with unevenly distributed benefits — usually thrusts in manufacturing and gross neglect of agriculture. But the studies also show the contrasting successes of communist China and capitalist Taiwan, where each concentrated on complementary sectoral development. Therefore, a new path to new goals emerges: "a stages of development approach," recognizing that "differing stages exist not only between countries but *within* countries."

So what are the new components? The strategy must be flexible, varying with circumstance and level of development. It must integrate the components often left disconnected, including decentralized development through active participation of those being helped, and through an integrated space economy of both the urban and the rural. It must strive for greater production, yes, but with social and economic equity and with inter-sectoral balance, not neglecting the all-important foundation of the *rural* (not just agricultural) sector. It must incorporate the use of appropriate technologies, appropriate to each development stage and changing as the stages change.

Looking at it in reverse, this decentralized approach by sequenced stages of development deviates markedly from the "established and superficially attractive" programs "which concentrate upon the implant of large-scale, high-technology industries in the large and ever-growing cities with the assistance in many cases of multinational companies."

***The Developing World: An Introduction.** See note in "Helpful Ideas" section of this issue.

Country Impact Studies

An "around the world" view of agricultural research systems is given by the serendipity of a series called "CGIAR Study Papers," published by the World Bank for the Consultative Group on International Agricultural Research. The purpose is to evaluate the impact of the activities of the CGIAR-sponsored research centers on selected countries.

The assigned authors speak for themselves, not for the Bank or any other institutions, but they convey useful information about the national agricultural research systems and sometimes give insight on the downstream technology transfer systems also. Studies now cover Costa Rica, Guatemala, Zimbabwe, Nepal, Bangladesh, Brazil, Indonesia, Ecuador, Peru, Syria, Cuba, Philippines, Thailand, India, and Burma.

Far-Back U.S. Roots

What ails nations rarely breaks out like a summer sunrise; rather, it creeps up over decades. So it was with the depletion of the North American seaboard soils, the consequent migration to the West, and the rise of a whole series of institutions substituting science and knowledge for more exploitation of more land.

In 1818, the South Carolina Agricultural Society heard its distinguished president decry the "murderous system" (especially in cotton farming impervious even to demonstrations of better practices) that would force westward migration "as decisively as a mandate of a despot to banish us from our country." The speaker was William R. Davie, member of the Constitutional Convention in Philadelphia in 1787 and founder of the University of North Carolina before he returned to his plantation farther south. Also, he said, "the period has now arrived when art and industry must supply the failure of native fertility."

Davie's farsighted advocacy of experimentation and communication of the results to farmers had to await the efforts of Edmund Ruffin, Thomas Clemson, Jonathan B. Turner, and, finally, Justin Morrill and the Land Grant College Act of 1862, with research stations and extension services to come still later.

Mockery of Non-Delivery

Having technology available is quite different from having it put to use. All kinds of obstacles can intervene, including some not immediately apparent. Reminders of some of these obstacles show up in getting available vaccines to children in the developing world, where five million die each year and an equal number are crippled, blinded, or disabled by six diseases preventable by immunization. Discussing "potential impediments" to the Expanded Program of Immunization of the World Health Organization, William F. Foege, Director of the Center for Disease Control, Atlanta, Georgia, has touched upon factors affecting development and technology transfer of all kinds.*

What gets it started? There has to be "a major change in attitude so that access to health care is considered an investment rather than a consumption of resources." Where does this priority or expression of will have to exist? It must be a political commitment at the top and also a community commitment to support at the bottom. We know more about vaccines than about how to ensure "the evolution of community felt needs for immunization."

What kind of distractions or alternatives can get in the way? Choice *among* technologies is a hazard, as in "the tension between a necessary concentration of limited new resources on public health measures and a temptation to engage in fashionable gadgetry." Keeping up with "the expensive technology of modern medicine" may leave a developing country little for doing what the developed countries did decades ago.

Is more and more money the answer? Unfortunately, the countries most in need often have the most limited absorptive capacity. Money alone will not suffice. Something must also be done about the low educational level, unprepared manpower, managerial inefficiency, poor motivation, material shortages, and political instability.

Finally, how important are the delivery or transfer systems? The vaccines are there; the children are there. The need is urgent, in what certainly is a "continuing tragedy." So in conclusion, "the hundreds of millions of dollars that are being invested in the search for new and better vaccines are a mockery if such vaccines can only be delivered to a fraction of those who need them."

***Protecting the World's Children: Vaccines and Immunization within Primary Health Care,** proceedings of a Bellagio Conference, Rockefeller Foundation, 1984.

Non-Extension Extensionists

A second, meditative reading is recommended for a simple prosaic-looking sentence in the **Annual Report 1985** of the International Potato Center: "Increasing food availability in the developing world not only depends on research institutions . . . to produce technologies . . . but also on the abilities of national policy-makers, researchers, extensionists, educators and agribusinessmen to receive, adapt, and transfer technologies from all sources to their farmers."

Extension in the broadest sense goes beyond extensionists in the narrowest sense. The agricultural technology/knowledge system is just that—a system. That means dynamic interaction among many actors and the institutions they represent: "policy makers" from government, "researchers" from the research centers, "educators" from the schools and universities, and "agribusinessmen" from the private sector, *as well as* officially-designed "extensionists."

Justified Inequality

Regarding the reform of the State Planning Committee and the State Committee on Science and Technology in the U.S.S.R., "We are trying to move toward a system of justified inequality" (based on the quantity and quality of work produced). — *Tatyana Zaslavskaya on Radio Moscow.*

Down the Corridors of Time

Few ideas have no antecedents. Try to think of one. History never begins with us. A few examples can be gleaned from agricultural history in the U.S.*

Is "diffusion" of knowledge to farmers something new? In his farewell message to Congress in 1796, almost two centuries ago, President George Washington recommended a Federal Board for "collecting and diffusing information" relating to farming. *From* what *to* what? Washington said "to encourage and assist a spirit of discovery and improvement" for agriculture. Therefore, even the idea of "linkage" was emerging, too: discovery linked to farm improvement through diffusion.

Is technology transfer something new, with the new realization that developing nations can import innovations from abroad as well as discover them at home? The U.S. Congress heard the idea in 1838, a century and a half ago, but refused $1,600 a year for a clerk to collect seeds and plants from foreign consuls and U.S. naval officers. (Wise and wealthy farmers like Thomas Jefferson were doing it on their own.)

Is the use of government policy for agricultural promotion something new? Hardly. In a period of less than two months in 1862, in the midst of civil war 125 years ago, President Abraham Lincoln signed three monumental nation-shaping policies into law: creation of "a People's Department" (of Agriculture); the Homestead Act, which caused 1.6 million people to file for free public land for farming; and the funding and founding procedures for the land-grant colleges, which welded federal and state initiatives into a cooperative system for the promotion of both education and agriculture.

Is this business about developing "human capital" a smart new thought? Perhaps in its refinement and sophistication, but schooling and agriculture were closely linked in a host of early policies — schools in the new territories prior to statehood, public land explicitly set aside for schools in every new state as it entered the union, and the creation of at least one post-secondary institution in every state (via federal land-grants) to educate the heretofore-neglected youth from farm and factory and to foster the development of the state itself.

All this is a reminder that someone has said U.S. history could be largely written according to how public lands were used. The consequences of such use persist today.

*Some facts, but not interpretations, are drawn from "Wakefield to Springfield: The Path to Modern Agriculture," May, 1987 *(material prepared by the U.S. Department of Agriculture for its 125th anniversary celebration).*

Gutless Figures

Rural development and statistics do go together. In fact, it has been alleged that external aid and donor agencies are so insistent on statistics that some developing countries have felt pressured into presenting contrived figures — guesstimates, at best, conveniently bent toward whatever needs to be proved.

Then there is the other statistical problem of omission — omitting the most important factor. In development matters, that would seem to be the human element, the people who make and use all the things we have figures on. Uninhabited statistics do seem irrelevant to the human condition. That is what has frustrated U.S. Senator Daniel Patrick Moynihan of New York State, who is unhappy about the misinformation and lack of information that exists regarding the family. "No one cares about such matters," he recently said. "There are people in a room somewhere in the Department of Agriculture that can tell you how many cows there are in this country and how much milk they are giving. But somehow family matters have not found a place in our governmental agenda. It's nobody's business."

ISNAR's Sharpened Focus

Building on its first five years of experience, the International Service for National Agricultural Research (ISNAR) last year began a new phase in its work as an *international* body for strengthening *national* agricultural research systems.* Concentration is on three global challenges through a sharper-focused strategic plan. The global context is seen as the *technological challenge* inherent in science-based agriculture; the *policy challenge* presented by political and governmental decisions which complement technological progress; and the *institutional challenge* of building effective structures and organizations able to deal with these issues.

As evolved now, the strategic plan has three major objectives or thrusts — representing interdependent functions rather than departments or other common organizational units — which work through "a flat, collegial, organizational structure" to facilitate easy cross-fertilization. These thrusts are (1) advisory services to national systems; (2) a research program, including policy, organization, and management; and (3) a training program, helping national leaders and scientists develop analytical and managerial capacities.

The largest contributors to the core program of ISNAR are the U.S. Agency for International Development, the World Bank, and the governments of Canada, Switzerland, and Netherlands.

***Annual Report, 1986,** May, 1987. The Hague, Netherlands.

Helpful Ideas: Old and New

Joseph P. Lewis and Valeriana Kallab, editors, **Development Strategies Reconsidered.** Transaction Books: New Brunswick, N.J., and Oxford, 1986 (190 pages).

This is an effort by the Overseas Development Council to help the non-specialists understand what the specialists regard as the best strategy for the future. The need is there because this is a down time and a "period of disarray" in the development strategy game. The "mainstreamers" want to play the game more effectively, while the disillusioned critics think the game is unplayable.

The format of an ODC conference around expert papers on central themes leaves some slack and discursiveness, but policy perspectives are presented, the revelation of a single development strategy is avoided, and light is thrown on what has been learned in 40 years of development experience "in terms of economic growth, societal equity, and political participation." The approach is comparative and analytical, more descriptive than prescriptive. The practitioner wanting guidance will have to work at it.

Erskine Caldwell, **Tobacco Road,** C. Scribner's Sons: New York, 1932 (241 pages).

The point here is not the book, but the genre. The recent death of author Erskine Caldwell is a reminder that there is a largely unappreciated worldwide literature based on rural life. *Tobacco Road* is not the greatest, and has been variously seen as a disgusting satire and a subtle burlesque, but it illustrates that both understanding and social commentary come in many modes and disguises. Art and literature may be as real as the "real thing" in grasping essences. Other examples are Ole E. Rolvaag's *Giants in the Earth* set in the U.S., Pearl S. Buck's *The Good Earth* set in China, and Ciro Alegria's *Broad and Alien is the World* set in Peru. There are many more, including Nobel laureate John Steinbeck's *The Grapes of Wrath.* In fact, Roy W. Meyer's *The Middle Western Farm Novel in the Twentieth Century* (1965) devotes 42 pages to an annotated bibliography of that region's farm fiction between 1891 and 1962. What would help is a bibliography broader both in time and in countries covered.

Warren C. Baum, **Partners Against Hunger.** World Bank: Washington, D.C., 1986 (337 pages).

This is an extremely valuable contribution to the literature of international agricultural development. It is not only an essential history of a set of institutions (the Consultative Group on International Agricultural Research, CGIAR, and its 13 international research centers), but also a storehouse of fact and insight on the world context in which all this has taken place.

From 10 years' experience as chairman of CGIAR, the author writes with first-hand knowledge, access to essential documents, and devotion to what he admits has been "a labor of love." The test of objectivity comes in the chapter on "impact," which shares credit for the great achievements with other international factors and actors, and faces up to criticism and possible shortfalls made clearer in retrospect.

On the distribution of modern varieties among farmers, these points are made: there is no bias in favor of the large-scale farmers (although the small-scale farmers may adopt later when prices have gone down); and there is no correlation between adoption and ownership of land (tenants do as well as owners, although much depends on government policy facilitating non-discriminatory access to inputs, credit, and extension services). However, since rates of adoption relate more to "regional differences in natural resource endowment," the centers are already coming "to recognize that the environments in which new varieties are tested and selected will have to be more representative of resource-poor areas and input conditions . . . ."

While the concluding critique sets out to include "technology transfer and . . . the linkages among research, education, and extension institutions," the intent trails off with little said except about training.

E.S. Simpson, **The Developing World: An Introduction.** Longman Scientific & Technical, U.K., co-published in the U.S. with John Wiley & Sons, Inc.: New York, 1987 (360 pages).

As professed, this book deals with the basics of development, with instructive charts, graphs, statistics, photographs, and bibliography. Coupled with this scholarship is use of the author's personal multi-country experience. Concreteness is given by 10 country case studies — a practical supplement to the "dimensions and issues" first covered. *(What is learned from this comparative analysis is treated in a separate article on page 6.)*

Financing Education in Developing Countries. World Bank: Washington, D.C., 1986 (67 pages).

This research study within the World Bank deserves the attention its subject is getting. This is one of the foundation pieces for the current controversy about the "misallocation of public spending" on education in the developing world. That debate can be beneficially advanced by consideration of the impressively voluminous data presented, all relevant to policy decisions ultimately to be derived. But for the authors, it all means that many governments in the poor countries now "heavily subsidize higher education at the expense of primary education." That conclusion, with the public short-changing implied by "subsidize," brings the universities roaring into the fray.

Critics will suspect that the interpretations of the hard data carry some overtones of economic predilections always favoring the marketplace analogy — school competition as the guarantor of quality, the imperative of educational cost recovery versus the deleterious effect of what is "free," the confidence that "greater private financing would improve the quality of student selection," and the resort to educational privatization whenever in doubt.

The critic looking at agriculture may also ask whether the high returns at the lower educational levels will hold in the absence of relevant science and technology and whether this does not imply dependence on university-trained personnel. Perhaps everyone would be assuaged if readers and policymakers would return to taking seriously the study's subtitle: "An exploration of Policy Options."

Simon Commander, **Government Monitoring and Evaluation Systems in Africa.** Central Evaluation Office, United Nations Development Programme: New York, 1987 (49 pages).

This small typescript booklet responds to its own subtitle: "What are the Questions?" These are questions and answers on "what works, how and why in development." Successful evaluation depends on two preconditions: (1) explicitly formulated and stated plans; and (2) the linkage of the monitoring system into the development planning apparatus with clearly defined roles and adequate funding. Among the critical needs are greater coordination of the monitoring/evaluation function in the government, improved data collection, and parallel acceptance of policy reform by the African governments "as a broadly desirable requirement rather than as an imposed condition."

R. G. Lowe, **Agricultural Revolution in Africa?** Macmillan: London, 1986 (295 pages).

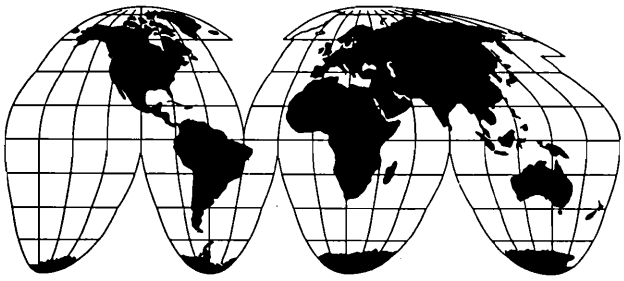
The question mark is an important part of the title, as is the subtitle: "Impediments to Change and Implications for Farming, for Education and for Society." The author draws heavily on his experience in West African countries, particularly Nigeria as perhaps the first "to experience the trauma of agrarian revolution," switching from peasant to commercial farming. Insights, laced with history and scholarship, are sometimes acerbic, as in the analysis of universities and their uses and abuses.

David Vance Youmans, **Extension Education Impacts of Farming Systems Research in Lesotho.** Research Institute for Education Planning, University of the Orange Free State: Bloomfontein, South Africa, 1986 (293 pages).

The work (in typescript form) by a U.S. extensionist working in Lesotho concludes that extension education has an appropriate and essential place in all stages of FSR "if desired change is to take place and endure." This conclusion is bolstered by many data and analyses. On FSR itself in Africa, the conclusion is that it assumes "too much with regard to the homogeneity of small farmers, their access to resources, their likemindedness, and their propensity toward adoption of 'packages' or integrated farming schemes." Instead, farmers are heterogenous, quite unlike in behavior, and adopt innovations, not in packages, but in pieces on the basis of values, risks, costs, and personal inclinations. *(Part of these research results were presented in the November, 1986 issue of INTERPAKS INTERCHANGE.)*

Patricia Garrett, Jorge Uquillas and Carolyn Campbell, **Interview Guide for the Regional Analysis of Farming Systems.** Program in International Agriculture, Cornell University: Ithaca, New York, 1987 (90 pages).

This publication concerns the "diagnostic phase of farming systems research . . . intended to identify targets of opportunity for research and extension." It is an "interview guide . . . prepared to help multidisciplinary teams analyze a region and identify needs for the development and dissemination of appropriate technologies."



Around the World

Maryland's Extension Center

Through its Center for International Extension Development, the University of Maryland, U.S., has institutionalized the study and advancement of international and comparative agricultural extension and rural development. The Center provides technical assistance through consultancies in developing countries, in-country and on-campus training, and research and information dissemination, including a publication series. William M. Rivera is the Director.

UNDP Short Courses

A regional service unit of the United Nations Development Programme, the Asia and Pacific Programme for Development Training and Communication Planning (DTCP), has announced eight short courses (three and four weeks) to be offered from May to November, 1988. Inquiries should go to the UNDP representative in the inquirer's country or to P.O. Box 2-147, 19 Phra Atit Road, Bangkok 10200, Thailand. — *from Romeo H. Gecolea, Director, DTCP.*

Research, Aid in India

Scholars and practitioners working on Indian social science materials should know about the National Social Science Documentation Centre, Indian Council of Social Science Research, 35 Ferozeshah Road, New Delhi. Many services are provided for research: library collections (24,000 documents plus current and back files of relevant periodicals); physical facilities for study by grantees and non-local scholars; interlibrary loans; bibliographic services; and access to a growing collection of unpublished research reports and Ph.D. theses in social sciences accepted by all Indian universities and foreign theses on Indian subjects.

At present, 1,500 national and international institutions are on the publications exchange list. Automation is planned. The Centre invites further scholarly use of its expanding research, information, and documentation network. — *from S.P. Agrawal, Centre Director.*

What Countries Rank Where, How?

Two good sources will answer that question. How 138 developing countries compare according to 30 key indicators is given in graphic form in a 12-page pocket-size leaflet released by Winrock International, Morrilton, Arkansas 72110. It is the fourth or 1987 edition of "Agricultural Development Indicators."

Another informative brochure, with 30 colorful pages of maps, graphs, and tables, is the **World Bank Atlas 1987.** Faithful users will welcome this twentieth edition, now in three languages in one volume — English, French, and Spanish. With graphic clarity, social and economic indicators show trends and differences among 184 countries and territories, both developed and developing.

Training in Italy

For many years, the Centro Studi Agricoli has been offering international training courses in agricultural extension for rural development, with more than 1,700 participants since 1962. In addition to Italian, other languages used are French, Spanish, and English with simultaneous translation. The CSA address is Via Colonia Agricola, 55060 Mutigliano, Lucca, Italy. — *from Giancarlo Bianazzi, CSA.*

A Teaching Gimmick

A correspondent teaching in Indonesia offers a practical suggestion for making comparative analysis of different extension/education approaches: "I found that in trying to explain three different nonformal education approaches to my grad students, the best way was to draw up a comparative chart which identified the major points for comparison (role of teacher, students, assumptions about adult learners, etc.), then cut out the points like the pieces of a puzzle, put students in small groups and give them the task of matching the comparative points with the approach the team had been assigned" (and follow with team summaries and group discussion). — *from Vickie Sigman, Nonformal Education Specialist, State University of New York Project in Indonesia.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

More Egerton Visits

Under the Egerton-Illinois partnership, exchange visits are continuing. A Kenyan delegation which came in late September, 1987, included Leonard Sawe, Deputy Secretary, Directorate of Personnel Management, Office of the President; S. Imbamba, member, University Board of Governors; and Richard Musangi, Principal of Egerton University College.

Formerly an agricultural college and then Egerton University College, affiliated with the University of Nairobi, the institution was given autonomous university status by a recent act of Parliament. Exercises officially marking the change of status will be held in December, 1987 at Njoro, Kenya. Illinois representation will be headed by Morton W. Weir, UIUC Interim Chancellor; John R. Campbell, Dean, College of Agriculture; John J. Nicholaides, Director, Office of International Agriculture; and Burton E. Swanson, UIUC liaison officer for the partnership.

Work in Bangladesh

In September and October, INTERPAKS Director John L. Woods provided the leadership for a study of the role and functions of the Bangladesh Agricultural Development Corporation through a World Bank contract.

JCARD Vice Chairman

John J. Nicholaides, Director of the Office of International Agriculture, of which INTERPAKS is a part, has been appointed Vice Chairman of the Joint Committee for Agricultural Research and Development (JCARD), the operational-level body of the U.S. presidentially-appointed Board for International Food and Agricultural Development, U.S. Agency for International Development.

Director Honored

INTERPAKS Director John L. Woods has been given the "Award of Excellence for International Affairs" by the U.S. professional organization, Agricultural Communicators in Education. The award is made annually to outstanding supporters and practitioners of agricultural communication in international development.

Case Study Available

The Agricultural Technology System of Taiwan, the INTERPAKS case study, is now available free upon request. Similar published studies of Malawi, Mexico, and Jamaica will follow.

IN MEMORIAM

FREDERICK C. FLIEGEL
distinguished sociologist
INTERPAKS Associate
member of case study teams
in Jamaica and Taiwan
who died in continuing international service
at the
North-West Frontier Province Agricultural University
of Pakistan, September 11, 1987

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign March, 1988/Vol. 5, No. 1

Also 'New Thinking' In USSR Agriculture

The world now knows of "perestroika" in the Soviet economy, but it too little knows how restructuring applies to USSR agriculture or that it applies there *in particular* and even with prior claim. In fact, the first major institutional reform made in the Gorbachev era was in the management of what is now recognized as the "agro-industrial complex."

That aggregation is a deliberate effort to pull together the three pieces of an enlarged conception of agriculture, adding two other major components to the conventional perception—the industries making material inputs (from tractors to pesticides); and the agencies and industries engaged in post-harvest activities (from transporting, through processing, to marketing). These "three technologically interdependent spheres" make up what is thoroughly explored in a new book by Valentin Litvin, **The Soviet Agro-Industrial Complex: Structure and Performance** (Westview Press, 1987).

The book soon conveys the message that "complex," even as used here, also has the dictionary's adjectival meaning of "complicated, intricate, involved." The question in agriculture, as in the general economy, is whether restructuring will mean more than a mere reshuffling of the organizational pieces and aim also at reduced bureaucracy, better financial support, and the introduction of incentives for individuals as well as institutions.

The new agro-industrial scheme runs from top to bottom, with similarly-named agencies at the republic level and on down. Whether this intended unification becomes real remains to be seen. That depends on common goals yet to be accepted (e.g., how the demoted ministries will now act) and on "redistributing rights and responsibilities" (the Party's own language) among the agencies and levels.

Whatever happens, the author believes that "the growth of Soviet food productivity will depend on economic levers and material incentives." While the latest official resolution does emphasize material incentives, it relates to institutions (e.g., collective and state farms) and "does not reinforce the self-interest of individuals." The relevance here is shown by the fact that while the private sector (with 35,000,000 private plots on public land allocated to collective and state farm workers) uses only four percent of the arable land, it produces almost 30 percent of the total agricultural output.

Spaceship and Stewardship: Our Sphere of Mutuality

Since "the problem of innovation and the acceleration of technological progress . . . may be . . . the principal challenge to the new Soviet leadership," heavy emphasis is being put on technology transfer, with special attention to the use of foreign know-how. A major section of the book deals with this subject.

Until the 1970s, an agricultural extension service did not exist; then, what is little known, the U. S. system was studied and adopted as a guide. This

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

resulted in a four-tier system: in the Main Administration of Agricultural Science and in the agricultural agencies at the republic, regional, and district levels. At the same time, extension services were added to the agricultural research institutes. The idea was to have relevant information filtered down with progressive adaptation until it became suitable for the local extension service to carry to the collective and state farms.

According to the author's assessment, the plan did not work "from the very outset." The lower-down agencies lacked both expert personnel and sufficient resources to make the needed adaptations, plus the fact that the collective and state farms had to follow independently-made production plans which included whatever needed to be done about improved methods. The farms felt that they could not afford to take the risk in moving from old to new methods; besides, adoption surely meant that the next quota would be raised by whatever amount gained. As a result, as much as 30 to 40 percent of the relevant research developments "remain in the archives."

In a parallel development, the importation of American and Western European technology has now come to mean three-quarters of all the agricultural scientific and technical information processed in the Soviet system. Nevertheless, the book contends that, "Importing foreign know-how cannot solve the problems of modernization in Soviet agriculture, just as importing grain cannot resolve the Soviet Union's food problem." Hence the importance of "perestroika"—not only in the sense of reorganization, but also in the sense of attitudinal changes, with open-mindedness "that will allow those in positions of authority to distinguish true innovators from incompetent bureaucrats."

So in conclusion, Soviet agro-industrial reform may be judged as follows under five perspectives:

- *Ideological:* there is continued basic adherence to "the narrow boundaries of Soviet orthodoxy."
- *Economic:* the new leadership cannot insure attainment of the desired agricultural objectives within the traditional-type centrally planned economy.
- *Social:* the near future does not promise much progress in narrowing the gap between social conditions in the city and the country.
- *Political:* the Soviet leadership "probably will not be able to demonstrate convincingly" the advantages of collective agriculture and a command economy.
- *Psychological:* hope lies in the new ideas of "agro-industrial integration" and "perestroika" based on "the need for a systems approach . . . as well as for a transition from an agricultural policy to a food policy, from the development of agriculture to the development of the food economy."

After this outside analysis, what does an authoritative inside source have to say? That is, Mikhail Gorbachev himself in his new book, **Perestroika: New Thinking for our Country and the World** (Harper & Row, N.Y., 1987). He makes crystal clear that there will be no retreat from socialism, because the whole object is simply to wring out more rather than so little of its great potential. He further cites what has already been done in agriculture and the processing of its produce as the model for change in other sectors.

There is frank admission of "inadequate efficiency" in the past, for which partial remedy has been "heavy cuts in the managerial apparatus." Other changes will be the development of cooperatives, "the promotion of individual labor activity," and the use of collective and household contracts as a way of rewarding workers in proportion to efficiency.

As to importing foreign technology, Gorbachev dwells on "the West's technological arrogance" in restricting the flow of technology, indeed to the point that the USSR has now decided to put a firm end to the "import scourge," with future reliance on its own internal research and development.

While the book gives little attention to agriculture, the little said clearly typified the "new thinking," as shown by these Gorbachev words: "I am convinced that the most effective forms of organizing production on the basis of full cost accounting will take root quickest in the agro-industrial complex . . . because rural folk are enterprising and resourceful. All this makes for greater mobility and flexibility when applying cost accounting, self-sufficiency and self-financing . . . . Amazing things happen when people take responsibility for everything themselves."

Indian Focus on Management

The "apex institution in India for training and research in rural development" is the National Institute of Rural Development at Rajendranagar, Hyderabad. It is an autonomous body under the Department of Rural Development, National Ministry of Agriculture. Its publications indicate an extensive program of courses, workshops, and seminars: 60, 15, and 21 respectively for the year March, 1987 to March, 1988.

In 1986, it joined the World Bank and the Government of India in the establishment of the National Centre for Management of Agricultural Extension to train top extension managers and subject-matter specialists in India and other countries, using the Training and Visit System. The objective is to apply research and training to a seriously neglected element, including the training of trainers.

The Netherlands System With Paradox of Success

It can be instructive to see how technology or knowledge transfer is done in a highly developed country with dense population, where there is "a large scale investment in knowledge possession and capital management." Dutch farming presents a good case study, where specialized production concentrates on expensive items (flowers, vegetables, animal products) for highly competitive markets amid agricultural surpluses.

In the *Journal of Extension Systems*, June, 1987, A. W. van den Ban analyzes the systems by which agricultural research reaches the farmers.* In contrast to what is usually seen in developing economies, the Dutch system is complex, with more organizational facets and interested parties to be taken into account from both the public and private sectors.

Technology or knowledge in the Netherlands is generated by universities, government institutes, experiment stations financed jointly by government and farmers, and private research institutes of firms and farmer cooperatives. Transfer or communication, eventually to the farmer, is done through no less than six channels: the public agricultural extension service, private firms and farmer cooperatives, paid private extension agents, vocational agricultural education, all kinds of media, and farmers' organizations.

The public extension service is characterized by subject-matter specialization with a hierarchy for national specialists to train other specialists at the district and local levels. Communication between researchers and extensionists is fostered informally and is also built into the organization of the extension function and the experiment stations under the same directorates of the Minstry of Agriculture.

Because Dutch agriculture is highly commercialized with strong private companies and farmer cooperatives engaged in information dissemination, the private services are sometimes "more efficient than the government extension service." In this setting, with "the decreasing willingness of the government to invest in agricultural extension," private extension agencies also exist on fees farmers are willing to pay for custom-made services.

Two other means of reaching the farmer with the latest relevant information are the vocational agricultural schools and the media, including 300 farm magazines for all kinds of farm clients. The schools, under the Ministry of Agriculture rather than the Ministry of Education, offer two- and four-year courses for youth entering farming, plus other informal means of reaching about 80 percent of the farmers. It comes as a surprise that this sophisticated system seems deficient in the use of audio-visual aids and television and radio, until it is realized that only five percent of the labor force is engaged in farming, where specialization further reduces the audience size.

Farmer organizations put pressure on the system to meet farmer needs. This is expressed through the power of large farmers, study groups which analyze production problems and new technologies with extension agents, and even the financing of additional agents when thought to be needed in the government service. The feedback and influence on the delivery system are obvious.

The good news is that this system has remarkably increased agricultural productivity. However, the bad news is that, even before the added benefits of computers and biotechnology can be assimilated, the paradox of agricultural surpluses poses a serious problem.

*"Communications Systems Between Agricultural Research and the Farmers: The Netherlands Way."

Search for the Golden Mean

"Balance" seems to be the key in the new research agenda to the year 2000 for the International Institute of Tropical Agriculture, Ibadan, Nigeria. With the study and advice of outside study teams, IITA will hereafter seek the following balances:

1. between the food production urgency of today and long-term research for sustainable systems;
2. between "downstream adaptive research in collaboration with national systems" and strategic upstream research on technical constraints;
3. between concentration on a few key staples and on the larger number of critical regional crops; and
4. between "research and outreach activities that strengthen the capacity of national systems . . . "

As the Director General, Laurence D. Stifel, emphasized in his address to the International Centers Week in Washington, D.C.: "IITA's mandate reflects both the essential difference and the critical link between the goals of feeding hungry people and developing sustainable systems . . . . IITA is a link in a chain that stretches from the basic research laboratories of the first world through national agricultural research and extension agencies to our ultimate target, the African farmer."* One of the challenges is implicit in the fact that 15 of the 24 countries of West and Central Africa spend less than $3,000,000 each per year on agricultural research.

*"IITA: The Course Ahead," October 30, 1987.

New Ideas and Approach For African Extension

A thorough-going new look, leading to a new approach, has been suggested for Sub-Saharan Africa, where the extension failures are seen as calling for drastic action soon. A crisis looms in the degeneration of the soil, caused by the steady decline of fallow fields without replacement by new fertility-maintaining techniques.

Hope lies in throwing out many old assumptions, introducing systems of production (not mere simplistic pieces), and harnessing the entire village community, including women and youth, into self-help relationships through specialist-farmer dialogue on terms of equality. This is the plan proposed by G. Belloncle, University of Tours, who gives much insight into French experience in Africa.*

A critique of the present "implicit philosophy" of extension reveals five erroneous assumptions: that there is a need for close supervision through a high ratio of specialists to farmers; that use must be made of "pilot farmers" or "farmer-leaders"; that technical recommendations must be broken down and made simple; that a reliable "model" farm can be projected; and that the targeted group can be the adult male population.

Close supervision often sends out exactly the wrong signals, especially when done by poorly trained specialists, thus showing lack of confidence, suspicion of incompetence, and the imposition of constraint in "the absence of a true dialogue." Also, working through selected farmer leaders is "the aspect in which the values of traditional African society are most profoundly contradicted." Tradition and preference are for group consensus and collective progress. Simplistic step-by-step solutions are sometimes rejected precisely because no simple part is effective alone and the complex but effective strategy has not been discussed.

Therefore, Professor Belloncle proposes a new model of extension services. It is based on the conviction that farmers will learn and adopt new techniques if they "understand where they are being taken." "The approach must be changed and a *true dialogue* be held, not with individuals selected from outside but with *existing communities* (that is, villages and districts), to propose a type of rural development that will ensure the survival of the group and leave no one behind."

Group instruction should take place in three stages: *self-analysis, self-programming,* and *self-evaluation*. Planning must be done *from inside,* and farmers must be permitted to analyze their own problems, advance their ideas, and be heard by sympathetic listeners. The idea is to form a "consistent overall strategy," not "a few transitory measures." Then, the whole village can publicly designate "agents of innovation . . . admired because they agree, *by delegation of the group,* to run a risk that the group as a whole cannot take."

With the help of technicians, the overall strategy as discussed with the farmers is broken down into meaningful components for testing by the chosen agents. Self-evaluation follows at the point where the agents of innovation report on the mission given them, although results on the demonstration plots will have been under observation all along because the villagers are full partners to the "who" and "what" of the mission. Since farmers are by nature "experimenters," they will adopt the modernization strategy when its validity is verified by experimentation.

This new model also gives particular attention to youth and women. For the latter, it means more female specialists and "a new sharing of tasks and incomes." For the youth, they need to be harnessed with scientific agricultural training — training at home, not abroad, and for the home village, not for some generality. How? By agreement of family heads to set aside in each village an experimental tract of land on which the youth group will test the new production system. Experience on such prototype farms will also serve an educational purpose, a "school" for understanding the "why" of the new practices.

Two other needs must be met. Literacy in the native language and numeracy skills are essential in youth training; and extension specialists must be prepared to meet the demands of this new model, which its author calls "both participatory and strictly experimental."

Under these conditions "African villages can move decisively toward the agricultural revolution which alone can safeguard their future . . . provided they are approached by *specialists who acknowledge them as partners in a continuing dialogue between equals.*"

*"Proposals for a New Approach to Extension Services in Black Africa," Conference sponsored by the World Bank and the Caisse Centrale de Cooperation Economique, Yamoussoukro, Ivory Coast, February, 1985.

People vs. Cattle Approach

Criticizing the "aid relationship" in dealing with subsistence farmers, Peter Gil, in **A Year in the Death of Africa: Politics, Bureaucracy and the Famine,** wrote: "They are the real experts in scratching a living from Africa's soil, and it may be time they were involved in plans for their own future. The veterinary approach to development, which takes no formal account of the wishes of its supposed beneficiaries, should be no part of the new consensus on aid."

Why Some Develop And Others Don't

Critical in economic history is the question: Why isn't the whole world developed? Certainly there has been time enough: more than 200 years since the modern factory system began in Britain.

A vast literature bears on the question. Several hypotheses have their devotees. Yet there is no clear answer. And even the perhaps most widely held explanation is now being refuted. After knocking the props from under this line of research, the refutation focuses attention on a new area that ought to be further researched. So at best, after eliminating much, we have a new answer, but it is chiefly an invitation to learning more rather than a readiness for adoption and application where development is wanted.

With meticulous and heavily documented research, a Harvard-trained, Stanford University assistant professor of economics, Gregory Clark, presents his case in the March, 1987 issue of *The Journal of Economic History*. He appends to the question the subtitle, "Lessons from the Cotton Mills," and bases his case on detailed study of one industry, cotton textiles, in the early 1900s. In most countries, that kind of factory production was the first step toward industrialization.

He starts with the conventional wisdom and its rationale. That holds that poor countries remain poor because they cannot absorb the technologies that have succeeded elsewhere because of

- lack of education;
- lack of skills and tradition in management and enterprise;
- lack of suitable institutions; or
- the inability of small-scale or isolated development to attain the economies of scale inherent in the technologies.

Furthermore, it would seem that these defects would have been offset when the technology was carried to the poor countries with extremely low labor costs, exactly as happened when Britain lost its battle to prevent the export of its industrial technology (of artisans in 1825 and of machinery in 1842) to the Continent and elsewhere. Then why the failure of such countries of low labor cost to dominate textile production? The failure "proceeds overwhelmingly from inefficient labor rather than from failure to import technology of management skills, or failure of local capital or input markets, or from scale economies . . . . " These problems were minor.

So the search moves to a new area: "the inefficiency of low-wage labor." Why is it that one cotton textile operative in New England in the U. S. in 1910 did as much work as 1.5 British, 2.3 German, and roughly 6 Greek, Japanese, Indian, or Chinese workers? (Other invidious intercountry comparisons are given.) The author's final conclusion is that local environment or local culture made the difference, not the workers themselves (or their training, experience, nutrition, etc.).

A clinching phenomenon is the way workers have moved to industrial centers since 1780, quite contrary to the logic of more easily moving capital and management to areas of cheap labor. "Only if worker efficiency was determined by the local environment can we understand why such migration of labor exists, for only in this way could workers escape the constraints on their productive capacity in their original location."

The "lesson of the cotton mills" seems to be that the key to economic growth does not so much lie in the adoption or non-adoption of technology as in "the effects of the local environment or culture on the labor force." That answer is satisfying only in that it tells where to look further. It identifies "one factor as supremely important" for future research and understanding. The new question seems to be: How does "local culture", or what of its many components, make the difference between development and underdevelopment?

Korea's Mixed Success

Rural development in Korea has had a well-known social and even attitudinal dimension called "Saemaul Undong," or New Community Development. It has evolved far from its authoritarian beginning of top-down enforcement and its name has been attached to so many developmental objectives (even to those focused on city, factory, and office) that the agricultural part has been dimmed. It is helpful, therefore, to find a current evaluation of Saemaul Undong in its rural dimension.

In Keun Wang of Seoul National University concludes that there has been success but that it has been limited—real success in human resource development but far less progress in increased production and income.* Modernization has occurred, but some critics would say it has been more non-agricultural than agricultural and that progress has been blunted since the end of the 1970s.

What is now needed? The answer is two-fold: redefine the nature of human resources development for Korea and recognize, as not done heretofore, that this is only one among many important necessary conditions for rural development.

*"SAEMAUL UNDONG as a Korea-version Rural Development Approach and Programme," presented to the XVI Pacific Science Congress, Seoul, August 20-30, 1987.

What is Humane in Ethiopia?

The world press reports that given the political situation in Ethiopia, where 5,000,000 are again threatened by famine, there is outside debate about whether it is more humane to give aid for the famine emergency or for the longer-run removal of the causes of the famine.

Donor agencies like the European Community, the World Bank, and the national donors are stepping up assistance—some countries one kind and other countries another—because Ethiopia has adopted major policy changes in agriculture. Chief among them are (1) paying farmers more for crops they must sell to the government; (2) getting the food crops of the surplus area more widely sold elsewhere through more licensed traders and better transport; and (3) improving extension services with more supplied inputs—seeds, tools, fertilizer.

Destructive Backfiring: External Aid in Africa

It does not take much developmental experience in Sub-Saharan Africa to raise the question as to whether sufficient sense can be made of all the external donors and all the sponsored projects working there. It often looks like an invitation to chaos. Three years ago, Elliott R. Morss, writing in *World Development*, gave a sharp indictment of donor aid's "institutional destruction" as a major factor in that area's poor development performance.*

Proliferation is the root cause: proliferation in both number of donors and in number of projects. And the projects, replacing the older program emphasis, have guidelines and controls suiting the needs and purposes of the donors, quite understandably. This otherwise commendable development has imposed heavy burdens on the recipient nations. In fact, contradictions sometimes occur between support of donors and support of the International Monetary Fund (one expansive and one restrictive), illustrative of how laudable purposes can get crossed up. One consequence may be a larger donor share of the costs with reliance on expatriates, thus negating the potential for "capacity building." The author calls this a "charade" produced by "donor dictates" with a "hypocritical cycle" of repetition.

Admitting that "institutional destruction" may be too strong a general term, he sticks with it as descriptive of the impact in the three countries examined. In 1980, there were more than 80 multilateral and bilateral donors giving development assistance to African nations. Sixty-nine separate donors operated 614 projects in Zambia; 61 operated 321 projects in Lesotho; and 50 operated 188 in Malawi. In such cases, the result can only be "institutional disarray" and probably a diversion of the nations' authorities from determining "their own policies to simply trying to please their donors."

What can be done? It will not be easy or quick. But first, the donors should get together to talk about the problem in the hope that, with recipient country cooperation, existing project portfolios can be consolidated. That is the long-run solution. The immediate attack could be the design of a project for making the most of what is in place—pulling it all together, eliminating the bottlenecks, and managing the total country portfolio toward the purposes set by mutual agreement. Putting it another way, an implied need throughout is to build up what has been missing or impaired: an "institutional base available to cope with the outpouring of project initiatives."

*"Institutional Destruction Resulting from Donor and Project Proliferation in Sub-Saharan African Countries," Vol. 12, No. 4, 1984.

Better Words, Better Practice

The old lingo, "farming systems research," should give way to new language: "research with a farming systems perspective." The point is to have *all* agricultural researchers, not just the researchers on explicitly designated FSR projects, charged with responsibility for understanding farmers in their total context. That was the consensus of the participants in the FRS workshop sponsored last year by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and related international centers.

The kind of total understanding sought includes:

1. the complete physical and social environment of production;
2. the behavior and motivation of the farmers;
3. the relation of farmers to existing practices;
4. improved "identification of problems and processes."

—from an interview with Donald L. Plucknett, Scientific Advisor, CGIAR Secretariat, News from CGIAR, September, 1987.

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Adaptation of Extension For South African Needs

Technology and knowledge imported from abroad require adaptation to local circumstances. That principle applies also to the importation of extension methodology. Hence, it is relevant to see what a South African extension specialist thinks his country might most usefully copy from a foreign system. It is also instructive because it relates to surmounting the constraints to technology transfer in relations between conflicting cultures—between the races in South Africa or between races or economic classes in many other countries.

Writing in the 1987 report of the South African Society for Agricultural Extension, F. C. T. Coetzee, Director of Socio-Economics in the Chief Directorate Agriculture, Department of Development Aid, gives a detailed history of extension service for the black farmers in his country.* He concludes that "a multitude of problems" besets service in each of the black "national states," that the top-down approach has a bad historical record, and that the future calls for more attention to the potential of people rather than of new technology. So he would "take a leaf from the book of the American cooperative extension service," as recommended by another critic, J. N. Raudabaugh.

And what would the two choose?

1. Most of all, equipping extension workers with not only production technology but also competency in the "educational development of people."
2. A focus on the disadvantaged from which the middle class may come, rather than on the middle class itself as the norm.
3. Emphasis on working directly in the field through a "bottom heavy" organization, with salary and other rewards geared to that end.
4. Going beyond production agriculture to improving home and family life and developing the potential of youth.
5. Backstopping extension agents with specialists for instruction and supervisors for leadership.
6. Capitalizing on what can be gained from volunteers both in time and skills.
7. Continously adapting old technology and developing that which is new and more relevant.
8. Developing a partnership of "the different levels of government (with) . . . careful balance . . . amongst national and regional goals, and local needs and priorities."

Recognizing the need for adaptation rather than literal adoption, South Africa could benefit by "abstracting" what it needs from the American experience. That would include some scheme of intergovernmental cooperation, perhaps like the federal-state-local pattern in the United States. The developing sector clearly needs outside help from the developed sector, and the extension service in the black "national states" simply cannot "be completely divorced from the extension service in the rest of the country in the long term."

*"The Development of Agricultural Extension Service for the Black Farmers in South Africa," Department of Agrarian Extension, University of Pretoria.

Technology Versus Poverty

With the inhospitality of nature and the inaccessibility of relevant technology, "the world's best farmers" sometimes live in "absolute poverty." They do in Northeast Thailand—actually *half* of them in that region.

To increase production and increase income for these people, the University of Kentucky, under contract with the U. S. Agency for International Development, has successfully used a farming system approach "to have top-down technical support and bottom-up decision making with project priorities being set at the village level." A color-illustrated report, "Rainfed Agriculture Development in Northeast Thailand," is available from International Programs for Agriculture, University of Kentucky, Lexington, Kentucky 40546.

Continental Standings

Of the Gross Domestic Product for all developing countries, Asia provides a third, with 28.5 percent for Latin America, 18 percent for the Middle East, and about 10 percent for Africa. When it comes to exports of goods and services from the developing world, Asia's share is even larger (37 percent), while Latin America's has declined to 18 percent, replaced in second place by the Middle East with more than 22 percent. On external debt, Latin America moves to the top with more than 36 percent of the total. European countries classified as "developing"—Cyprus, Greece, Hungary, Malta, Poland, Portugal, Romania, Turkey and Yugoslavia—contributed less than nine percent to the overall GDP.

These figures from the International Monetary Fund are for 1984-86, cited in *The Economist*, November 7, 1987.

Most Frequent Sources Of Extension Failure

by John B. Claar, former INTERPAKS Director

1. Failure to develop a clear-cut mission for the organization, stating what the scope is to be, whom it is to serve, what the expected outcomes are to be, and how it will be evaluated

2. Failure to take account of constraints in the external environment
   - policy
   - markets
   - input supply
   - credit
   - roads
   - cultural factors

3. Failure to access available information
   - poor research-extension linkage
   - low level of farmer interaction and feedback
   - poor informal and formal lateral linkages with industry, input supplies, etc.

4. Failure to develop internal technical capacity within extension
   - inadequate formal education levels
   - inadequate in-service education
   - lack of or poorly developed or deployed technical support staff (SMS) that cannot adapt to general recommendations

5. Failure to develop balanced methodology that is reinforcing (e.g., relying heavily on a single method)
   - mass media
   - personal contacts
   - wholesaling through other organizations or firms
   - farming systems research, field testing and demonstrations
   - farm visits

6. Failure to develop and implement an internal management system that provides for:
   - personnel motivation
   - supervision
   - reporting
   - delegation of authority
   - plan of work

7. Failure to deal with the human factor: top-down, targeted, or technology-centered approaches
   - little involvement of farmers in problem identification
   - little interaction in setting programs and securing feedback

8. Failure to budget enough funds for program operations
   - budget mostly salaries
   - lack of mobility and teaching tools

9. Failure to organize and structure the organization so that there are clear lines of authority and that the scope of work includes relevant areas (e.g., crops and livestock in mixed farming areas)

10. Failure to divest the organization of roles or functions that conflict with the primary mission, such as
    - regulatory obligations
    - credit or input supply functions
    - administrative assignments; selling hunting licenses, settling local agricultural disputes.

Education and Relevance: Who Learned, Who Learner?

Knowledge transfer and technical assistance are ancient in some form, however underdeveloped, everywhere in every time and in every country, even between nations. Benjamin Franklin noted it in early America in a pamphlet published in the 1780s, as follows:

> At the treaty of Lancaster, in Pennsylvania, anno 1744, between the Government of Virginia and the Six Nations, the commissioners from Virginia acquainted the Indians by a speech, that there was at Williamsburg a college with a fund for educating Indian youth; and that if the chiefs of the Six Nations would send down half a dozen of their sons to that college, the government would take care that they be well provided for, and instructed in all the learning of the white people.
>
> The Indians' spokesman replied:
>
> "We know that you highly esteem the kind of learning taught in those colleges, and that the maintenance of our young men, while with you, would be very expensive to you. We are convinced, therefore, that you mean to do us good by your proposal and we thank you heartily.
>
> "But you, who are wise, must know that different nations have different conceptions of things; and you will not therefore take it amiss, if our ideas of this kind of education happen not to be the same with yours. We have had some experience of it; several of our young people were formerly brought up at the colleges of the northern provinces; they were instructed in all your sciences; but, when they came back to us, they were bad runners, ignorant of every means of living in the woods, unable to bear either cold or hunger, knew neither how to build a cabin, take a deer, nor kill an enemy, spoke our language imperfectly, were therefore neither fit for hunters, warriors, nor counsellors; they were totally good for nothing.
>
> "We are however not the less obligated by your kind offer, though we decline accepting it; and, to show our grateful sense of it, if the gentlemen of Virginia will send us a dozen of their sons, we will take care of their education, instruct them in all we know, and make men of them."

Helpful Ideas: Old and New

Veronica Mole and Dave Elliott, **Enterprising Innovation: An Alternative Approach.** Frances Pinter Limited: London, 1987 (180 pages).

While this little volume makes no direct application to agricultural development, it gives insight by dealing with innovation and technology transfer in the broadest terms. These include the worldwide expectations of new technologies and the dangers of relying on technological determinism without thought to social policy.

The central idea is to "map out the theoretical justifications for—and problems of—a process of socially-directed innovation," wherein it is realized that "commercial viability is not always the same as social viability." Hence political power and public choices enter to provide an alternate technology; that is, to direct resources into innovation with responsiveness to social needs. The illustrative experiments in alternatives are drawn chiefly from Britain, with obvious political overtones.

International Liaison Department, Research Centre for Rural Development of the State Council, **The Rural Economic and Social Statistics of China.** People's Republic of China: Beijing, n. d. (163 pages).

This seems to be one of the few current sources of extremely hard-to-find data about rural development in China. The data, which are compiled to 1985, come from the Department of Agricultural Statistics, State Statistics Bureau. The publication includes information on total agricultural output in general and by products, income and its distribution, living expenditures of peasants, degree of mechanization, educational and cultural indicators, government investment in agriculture, and much more. For example, the agricultural population is still 81 percent of the total (or 837,000,000 people are still in agriculture); gross agricultural output is 35 percent of the economy's total (half what it was in 1949); and 21 percent of the rural labor force is illiterate and equal to half the number who are in primary schools. While the number of agricultural institutions of higher learning has doubled in the last 30 years (now 56), the enrollment has shown some decline since 1980-81, with extremely erratic production of graduates.

William M. Rivera and Susan G. Schram, editors, **Agricultural Extension Worldwide: Issues, Practices and Emerging Priorities.** Croom Helm: London, New York, and Sydney, 1987 (294 pages).

The subtitle describes the three-part presentation of 16 papers by "big name" authors in a colloquium at the Center for International Extension Development, University of Maryland. Attention is immediately invited by the views of distinguished representatives of the major international donor agencies, American and foreign universities, and consultancy organizations. The book is a well-organized storehouse of wide-ranging information, experience, and expert opinion which should appeal to policy makers, development professionals, extensionists, and university scholars. The editors' introduction and epilogue add order, cohesion, and a summary with conclusions.

Douglas Daniels, editor, **Evaluation in National Agricultural Research.** International Development Research Centre: Ottawa, Canada, 1987 (162 pages).

This report of workshop proceedings in Singapore in July, 1986 tells what attending national research managers heard and thought about strengthening evaluation as a factor in agricultural research management. After all, such research is the largest technology-development effort in most developing nations.

Thirteen papers critically present the state of evaluation in various countries and regions. For example, the Latin American literature review shows that much evaluative attention is given economic impact but virtually no attention is given the distribution impact, or "the effects of research results on producers' welfare, especially those within the peasant economy." Two introductory sections present a useful contesxt and the conclusions reached.

1986 Supplement: Publications of the International Agricultural Research and Development Centers. The International Rice Research Institute: Los Banos, Laguna, Philippines, 1986 (167 pages).

This is a valuable, conveniently-arranged compilation of *new* titles not included in the larger 1985 catalog.

Kym Anderson and Yujiro Hayami, **The Political Economy of Agricultural Protection: East Asia in International Perspective.** Allen & Unwin: Sydney and London, 1986 (185 pages).

Modern agriculture cannot be understood apart from the impact of international trade. Why has the route to development commonly moved from taxing agriculture (compared to manufacturing) to protecting and assisting agriculture? Why continue policies that reduce the efficiency of the world food economy, wherein consumers and taxpayers are now charged more than $100 billion a year for "protection?" Such questions are addressed, with East Asian analysis as a starting point. But given the current mix of economics and politics, the "clearest lesson . . . is that agricultural protection is unlikely to disappear."

Mahmood Ali Ayub and Sven Olaf Hegstad, **Public Industrial Enterprises: Determinants of Performance.** World Bank: Washington, D.C., 1986 (77 pages).

The heavy use of parastatals or public enterprises in agricultural development prompts investigation of public industrial enterprises for analogies. This report (in processed form) presents conclusions from case studies in 13 countries, both developed and developing. The search for what distinguished the successful from the inadequate concludes with three criteria: the degree of competition exposed to, whether domestic or international; the amount of financial autonomy and accountability, including adequate return on capital; and the extent and manner of managerial autonomy and accountability, including the absence of two excesses — external control of management decisions and political interference.

Peter Oram with George M. Beal and K. Robert Kern, **Information and Knowledge Exchange Among Agricultural Research, Dissemination, and Producer Systems in Selected South Pacific Island Nations.** East-West Center: Honolulu, Hawaii, 1987 (32 pages).

This study report represents collaboration between the East-West Center and the International Service for National Agricultural Research (ISNAR). It succinctly describes the relevant systems — for production and for technology generation and transfer — identifies key issues and constraints, analyzes options for increasing extension capabilities, and explores alternatives to public research and extension.

Norwood Allen Kerr, **The Legacy: A Centennial History of the State Agricultural Experiment Stations, 1887-1987.** Missouri Agricultural Experiment Station: University of Missouri-Columbia, 1987 (318 pages).

This is the official history prepared for the centennial observance of the passage of the Hatch Act of 1887, leading to a national network of agricultural research based on the state land-grant colleges. It is two-thirds chronological history (with photographs of many of the major actors) and one-third reproduction of the basic relevant legislation.

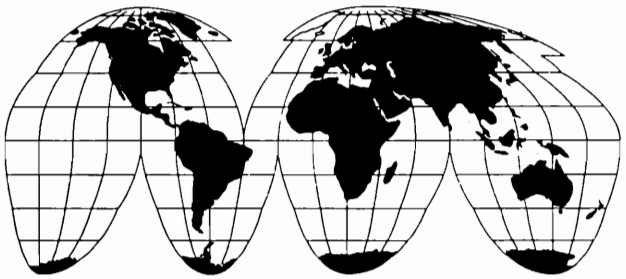
The story unfolds from the original mission of increased farm production efficiency through the "Golden Age" after World War II, the arrival of "unprecedented abundance at the cost of depopulating the farms," the ensuing demand for a "New Agenda" less preoccupied with more production, the introduction of an added category of grant-making by competitive awards, and again "strong reaffirmations of the value of the state-federal agricultural research partnership."

The revolutionary research results include "hybrid crops and specially adapted animals, labor saving equipment, improved cultural practices, vaccines against diseases which threaten human and animal life, and chemicals which enhance growth and protect plants from pests"—all a mere prelude to the up-coming wonders of biotechnology.

Harold R. Baker, **Future Options and Prospects in Rural Extension and Technology Transfer.** Occasional Papers in Rural Extension, No. 1. Department of Rural Extension Studies, University of Guelph: Guelph, Ontario, Canada, 1987 (20 pages).

This little paper addresses a big subject: the future of rural extension in all of Canada. Also, the University of Saskatchewan author inaugurates a new publication series at the University of Guelph.

Four concerns regarded as "major" among practitioners are addressed: problems and options in clarification of roles of public extension agencies (with the shifting mix of public-private, federal-provincial, economic-social, general-specialized, individual-organizational); linkages between extension and research (with suggestions for closing the gap); research on extension itself, as well as technical agriculture and improved staff competence (with some pessimism about what is ahead); and choice of targeted clients and effective programming for them (with choice among diffusion models, regionalization schemes, and advisory feedback mechanisms). Complacency generated by past successes is the greatest danger.



Around the World

China's Changed Land Use

China plans to separate land management from land ownership so that farmers who have contracted to use state land (and who often invest in its improvement) may transfer their right with or without payment. Such transfers are necessary and advantageous because farmers are increasingly attracted to leaving their contracted land for the parallel and simultaneous development of rural industries. The transfer must be reported to the villagers' committee, the owner of the land. —from *Beijing Review, November 16-22, 1987.*

Africa's Input Needs

Unless donor countries increase their supply of fertilizer, machinery, pesticides, and high-yield seeds, the sub-Saharan nations by 1995 will fall $700,000,000 short in needed agricultural inputs, reports a new FAO study (that is, short of the total two billion dollars needed). Aid-in-kind is contemplated, rather than in cash, because it saves foreign exchange for the recipient, gives budgetary support by sale of inputs for local currency, and is sure to reach the farm sector. —*from FAO at Work, November/December, 1987.*

Workshop on Role of Women

A 10-day international workshop on "Women, Households and Development: Building a Database" will be held at the University of Illinois at Urbana-Champaign on July 11-22, 1988. Open to professional workers and academics, it is a pre-meeting event of the XVI Congress of the International Federation for Home Economics and is sponsored by six collaborating University units with a grant from the U. S. Information Agency. Details are available from the University's Office of Continuing Education and Public Service, Division of Conferences and Institutes, 302 E. John Street, Champaign, IL 61820.

From Perfume to Soil Erosion

A grass which holds attention when its roots are used in perfume offers great hope for holding the soil where erosion threatens. A native of India, vetiver grass has two-foot-long roots that can make a sponge to hold water in place and, furthermore, collect silt until natural terraces are formed. Its other merits: it stays where put, it has no seeds, it is drought resistant, and it is regarded by animals as inedible. Ironically, the grass has been used outside India (West Indies, Africa, Fiji) but not in India. That is to change, now that the World Bank is putting $100,000,000 into projects in five Indian states, where yields in the rainfed areas may be increased by 50 percent. — *from The Economist, September 20, 1986.*

Journal from India

The *Journal of Extension Systems* is published biannually in India under the editorship of O. S. Verma (OGS Colony Sector-II: 47/507, Antop-Hill, Koliwada, Bombay 400 037). It has an international editorial board of well-known practitioners and scholars, including Burton E. Swanson of the University of Illinois. The June, 1987 issue contains twelve articles in 80-plus pages, with the customary feature of a distinguished biography under "Know Your Stalwarts."

Newsletter from Holland

The Information Centre for Low External Input Agriculture publishes a subscription quarterly *ILEIA Newsletter* (P. O. Box 64, 3830 AB Leusden, The Netherlands). With some financial assistance from the Ministry of Development Cooperation, each issue emphasizes a particular theme, like pest management or agricultural diversity. Current issues run to 24 pages of editorial comment, authored articles, book notes and reviews, and reader correspondence, with emphasis on technical subject matter.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Swanson in Portugal, Egypt, Ecuador

In January, Burton E. Swanson, Associate Director for Program Development, Office of International Agriculture, did consulting with the university in Vila Real, Portugal. He then went on to Cairo to begin preliminary activities under a University of Illinois memorandum of agreement with the University of Menoufia. In Quito on February 9, he presented a case study of Ecuador, done in collaboration with the Agricultural Development Foundation and the International Potato Center in Lima, Peru.

Courses Repeated

INTERPAKS will again offer in 1988 the short courses that have become traditional —"Training of Trainers for Agricultural and Rural Development" and "Organization and Management of Agricultural Extension Systems: A New Look at Knowledge Transfer." The first, which will begin its four-week session on June 6, has an April 1 deadline for enrollment and is limited to 20 participants. The organizer will again be Violet M. Malone, Illinois State Leader for Extension Education and Professor of Agricultural Communications and Extension. The second course is scheduled for September 5-30, with John B. Claar again as course organizer. He was previously Director of INTERPAKS and for many years Director of the Illinois Cooperative Extension Service. Both courses involve field trips. No scholarships are available. In the past, sponsors have included employers, governments, and international agencies.

More details are available from John W. Santas, INTERPAKS Training Officer, University of Illinois at Urbana-Champaign, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, IL 61801 USA.

The Kenyan Connection

Under the UIUC partnership with Egerton University in Kenya, Dean John R. Campbell, College of Agriculture, and Burton E. Swanson, UIUC liaison officer for the partnership, attended commencement exercises at Njoro on December 18, 1987 and conducted discussions with Egerton staff.

Office Reorganization

Among several changes of responsibilities and titles within the Office of International Agriculture, John L. Woods has become Assistant to the Director for Special Projects (most recently in Egypt) and the Director, John J. Nicholaides III, has become Acting Director of INTERPAKS. The mission and operation of INTERPAKS remain unchanged.

Expert Expurgation

This is a true story, but names are discreetly omitted. A few years ago, ministers from several developing nations met and solemnly resolved to empower one of their collaborative agencies "To coordinate the exchange of educational experience among the participating states in such a way as to prevent competition between them in attracting experienced people and to exchange information and qualified experts, avoiding those whom it is better to avoid."

Human Beyond Measure

Speaking of beliefs, facts and economic models, Robert M. Solow, Professor of Economics at the Massachusetts Institute of Technology, said: "All narrow economic activity is embedded in a web of social institutions, customs, beliefs, and attitudes that change slowly, gradually, and erratically . . . . (A) little cleverness and persistence can get you almost any result you want. That's why so few econometricians have ever been forced by the facts to abandon a firmly held belief."

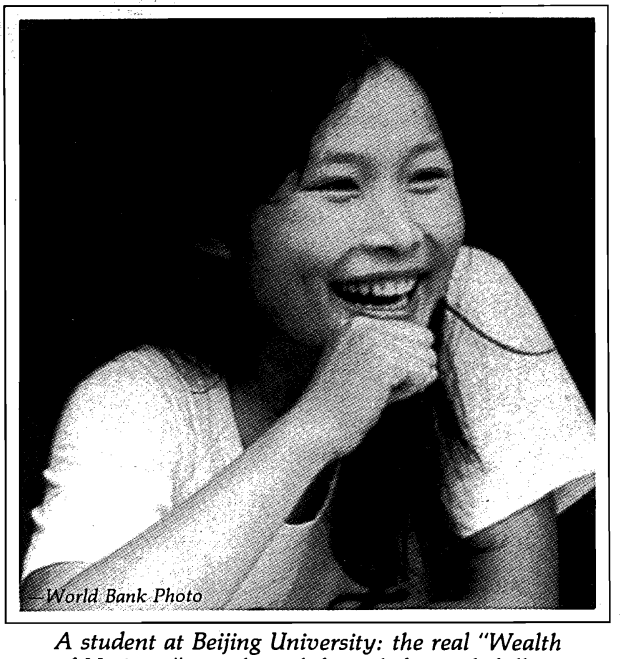
INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign July, 1988/Vol. 5, No. 2

Potato Technology System in Ecuador*

This analysis of the agricultural technology development and transfer system of Ecuador, with special emphasis on potato technology, was conducted by INTERPAKS (University of Illinois) with the collaboration of the International Potato Center (CIP) headquartered at Lima, Peru and the Agricultural Development Foundation (FUNDAGRO) in Quito, Ecuador.

Four subsystems were examined, including policy, technology development, technology transfer and technology utilization. The study describes and evaluates the performance of the agricultural technology system in Ecuador from a macro-perspective and from the perspective of a specific commodity (potato technology) to determine how well the system functions and to identify constraints to agricultural research, extension and utilization.



A student at Beijing University: the real "Wealth of Nations," people with knowledge and skills.

Policy

National policies have favored the urban industrial sector over the agricultural sector in recent years. Some of the policies which have had an impact on the technology development and transfer system in Ecuador are listed below.

1. Government investment in the agricultural technology system has shown a steady decline in real terms since 1979. The negative effects of this decline have not yet been fully manifested.

2. There are no formal channels for small farmer input at the policy level. In practice, large holder private interest groups (Cameras de Agricultura) have more influence in policy both at the National Agricultural Research Institute (INIAP) and the Ministry of Agriculture (MAG) than the small producer interests, which are seldom represented in policy bodies.

3. Government price and import policies, as well as changing food preferences in urban areas, have decreased the demand for traditional consumption crops, including potatoes. If improved technology is used, profit incentives to potato producers still exist, but real prices for the crop have not increased in recent years and price instability has increased risk.

4. There is low utilization of inputs such as fertilizer. For example, fertilizer use per hectare in comparison with many Latin American countries is low. Lack of carryover and an inadequate supply in some years suggests that government investment of foreign exchange in fertilizer has been inadequate. Larger potato growers, however, use large amounts of agrochemicals, including fertilizer, because potatoes are a high input crop.

5. The percentage of credit for crops as opposed to livestock has decreased during the last six years, as has the percentage of credit for potatoes in relation to total crop credit. Banco National de Fomento credit is largely directed to larger producers.

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

Research

Agricultural research in Ecuador is the responsibility of the National Agricultural Research Institute. It is organized around commodity improvement programs supported by disciplinary departments. INIAP has concentrated on the development of new varieties, disease and pest control, and cultural practice recommendations. Some important results of the current study are given below.

1. The agricultural research budget has dropped from .75% of Agricultural Gross Domestic Product (AGDP) in 1980 to .31% in 1986. The budget amounts are too low to maintain a high-quality research system.

2. The human resources of INIAP include too few personnel with advanced degrees, particularly Ph.D. degrees. Salaries are insufficient to attract and keep persons with doctoral level training.

3. A low percentage of the research budget (an average of 24% for the 1979–1986 period) is devoted to research programs and operations as opposed to salaries. This amount is inadequate to maintain a quality, stable research program and effectively to utilize the talents of the research personnel who remain in the system.

4. There are some imbalances in research focus. In 1985, for example, barley and wheat together contributed only 0.7% to AGDP but 15.3% of experimental trials were devoted to these crops. Animal production contributed 36% to AGDP but constituted only 5.2% of experimental trials. Potatoes are slightly under-represented in research emphasis.

5. INIAP has released an average of 4.5 new varieties per year for all crops since 1962 — a respectable output. Five potato varieties have been released during this period. However, human resources in the potato program have been severely reduced since 1980 and future releases will be seriously affected. The recent pattern of budget decreases also adversely affects overall research output.

6. During the past decade, INIAP's output of publications, training courses and field demonstrations has been quite good, especially with regard to potatoes.

7. INIAP contact with and feedback from extensionists and small farmers is weak. Without such feedback, it is difficult to generate appropriate technology.

Technology Transfer

Transfer activities related to agriculture are concentrated within the Ministry of Agriculture under various programs and entities. Operational activities of crop extension are carried out at the provincial and ASA (agricultural service agencies) level. Analysis of the MAG produced some important insights:

1. The MAG budget has dropped from 11.1% of AGDP in 1980 to 3.5% in 1985. During the last two years, only 12% of the budget has gone into programs and operations, inadequate to maintain minimal extension and technology transfer activities. Field extension activities have been severely reduced, and technical support tasks carried out by the Roots and Tubers Directorate have been effectively eliminated.

2. The number of contact agents appears to be adequate (agent-farm household ratio of 1:869), but extensionists have low levels of education and training. Almost no post-graduate training is found among MAG personnel.

3. Special commodity extension staff in export/cash crops are over-represented in contrast to provincial level extension staff who deal with traditional food crops. Fifty-three percent of the field staff are in the special commodity programs. The imbalance reflects government policy emphasis on important cash and export crops.

4. Extension contact is primarily with organized groups of farmers, especially larger farmers in producer associations; many smaller farmers are not members of these organizations.

5. Linkage between extension and research is weak, although there has been some effort to close the gap within the productivity research programs of INIAP.

6. No functional agricultural communications unit exists within the MAG. Publications have been severely reduced and mass media channels designed to communicate with farmers do not currently exist within the MAG.

7. There have been frequent reorganizations of MAG. As a result, no extension program has existed long enough to produce results. A new program is now being implemented, based on a zonal approach, which will adversely affect extension activities for potato growers by removing one-half of the potato specialists; they will now work in special areas as generalists.

8. There is no effective potato seed production and distribution system.

Technology Utilization

1. There is a lack of buying power and credit among smaller farmers to gain access to improved technology. In 1986 only 4.6% of crop credit went to potato growers, and small producers received less than one-fourth of this amount. The lack of capital, plus inflationary trends, will have a negative effect on the use of purchased inputs and on productivity.

2. There is slow adoption of appropriate cultural practices and of new varieties because of a poorly organized and supported extension system. There is widespread misuse of agrochemicals, because of inadequate information.

3. Since 1980, it is estimated that there has been a 600% increase in inflation for agricultural inputs but only a 250% increase in prices for agricultural

products. These trends are seriously affecting farmer ability to utilize improved technology. Producers are caught between rising costs for inputs and widely fluctuating prices for potatoes.

4. There is a lack of appropriate technology to extend to smaller poorer farmers. Research and extension have concentrated on assisting medium and larger farmers or farmers in organized groups who have fewer resource constraints.

The report then ends with this conclusion, in part: "This litany of problems should not overshadow the resources and potentials of the technology system that are available and that could be mobilized to reverse current trends. While the system has lost some of its most competent people to the private sector and elsewhere, due to declining salaries and program resources, some very competent and dedicated researchers and extensionists remain. However, until they have some minimal resources to plan and execute technology development and transfer programs, their hands are essentially tied. . . ."

*Adapted from the executive summary and conclusion of the report of the collaborative case study made by Warren E. Peterson, Alberto Zuloaga, Burton E. Swanson, Jorge Uquillas, and Charles Crissman under INTERPAKS leadership with financing provided by the U.S. Agency for International Development; the International Potato Center (CIP), Lima, Peru; the Fundacion para el Desarrollo Agropecaurio (FUNDAGRO), Quito, Ecuador; and the Rockefeller Foundation.

Change for the Ages

Extension must move "from an organization of the past to an organization of the future," from an industrial-age organization to an information-age organization. And how different would that be? Michael Quinn Patton of the Minnesota Extension Service writes that this would mean focus on strategic issues rather than high specialization, team rather than individual accountability, matrix organizational arrangements rather than clear differentiation and segmentation, a holistic systems perspective rather than simple input-output thinking, and a proactive rather than reactive approach to problems.*

It also would mean global rather than local perspective, "multiple interface information networking" rather than hierarchical information flows, attention to qualitative differences rather than quantitative, staff development rather than mere staff training, excellence emphasizing values rather than effectiveness through methods, and future-oriented rather than present-oriented.

*"The Extension Organization of the Future," *Journal of Extension*, Spring, 1987.

Philippine Reform: Agrarian Priorities

Important as it is, the Aquino government's new Comprehensive Agrarian Reform Program with "land to the landless" will not alone solve the problems of the small farmers in the Philippines. That will also require progress in research and technology development "to enable farmers to increase their income, strengthen their purchasing power for material things, and provide them with a truly dignified existence." So said the Secretary of Agriculture, Carlos Dominguez, as he addressed a symposium on agrarian reform priorities during the National Science and Technology Week, sponsored by the Los Banos Science Community in July 1987.*

Progress must be made on further research investment, cutting down the cost of technology production in the private sector, and on policies and marketing strategies to increase both production and profitability. The highest priority must be given research on those selected commodities, both area-specific and community-based, which will contribute most to the value of agricultural output. However, it must again be recognized that the bold stroke aimed at the problem of inequitable distribution of land is only part of a more comprehensive program required to meet the needs of small farmers, including their participation, self-reliance, and restored spirit.

At the same conference, another cabinet officer emphasized still another component: the role of rational resources management and the need to strike a balance among "the goals of equity, productivity, and environmental quality. . . ."

*Cristina P. Bejosano in *The PCARRD Monitor*, July, 1987.

From Public to Private

In its sweeping recommendations for privatization in the U.S. economy, the President's Commission on Privatization has made an extension into U.S. foreign policy, with the recommendation that the Agency for International Development "should increase its support of privatization in developing countries by channeling its funds and expertise as much as possible toward the private sector or by aiding host governments in converting state-owned enterprises to private entities." The "as much as possible" recognizes that "some analysts still believe state-owned enterprises are necessary in these (less developed) countries" because the private sector sometimes cannot command sufficient expertise and resources; and the poor population would otherwise be ill-served in the more remote regions and by the rising "free market" prices.

Private Sector Extension: Constraints, Potential

by John B. Claar, former INTERPAKS Director

Many countries seek new ways to improve their extension systems, to make them more effective, and to keep recurring costs at a tolerable level. One way with current appeal is greater reliance on the private sector, including its mass media. The merits of this appeal deserve careful study.

Since farmers, especially small farmers, are hard to reach, some help lies in raising the ratio between transfer agents and farmers—the more people working at it, the better. Also since repetitive messages are reinforcing, some redundancy is helpful. The use of mass media, either public or private, is especially useful when done parallel with personal contact. Finally, where private firms are well developed, such as in input supply, the potential obviously exists for targeted supplementation and reinforcement of the overall services provided by public means.

Here a paradox is encountered: remedy is most often being sought in the developing countries, yet that is where the private sector is least prepared to help. To complicate the analysis, that is also where a frequent alternative sought within the country involves resort to some quasi-governmental arrangement (i.e., a parastatal), not fully public and not fully private.

Private or non-governmental organizations are significant transmitters of information in most societies. Included also in this broad category are private volunteer organizations, farmer organizations (farmers' union as in Belgium), farmer associations (for a commodity or breed), agricultural cooperatives, and last, but not least, commercial profit-making firms such as input dealers, mass media, and consulting firms.

The role of these groups varies from full program operation (a type of extension service) to providing information along with their main service or activity (e.g., a dealer of fertilizer tells a customer how to use fertilizer and stresses the importance of weed control for best results). In one sense, such a dealer or salesman is simply servicing the product. In another view, he or she is doing extension-type work, which in some cases may be the only service the farmer gets or, in other cases, may run parallel to public extension with agreement and reinforcement, or divergence and confusion.

Ironically, much of the advocacy of more reliance on the private sector portrays it as a bright new breakthrough, whereas a variety of gradient models already exist in the most developed countries. Analyzing these experiences can help to assess both potentials and constraints.

The U.S. extension system offers a highly integrated knowledge transfer model in which private organizations play a significant interactive role. In the U.S., private firms, corporations, and cooperatives, for example, are not only major cooperators but also a clientele of the U.S. extension system that is based in the universities of the public land-grant system.

Extension in the U.S. sees all components of the private sector as partners or channels through which information can be provided to different parts of the intended audiences. Representatives of these private sector organizations frequently attend field days, along with farmers, participate in seminars and workshops, and receive publications. Likewise, extension offers special programs geared to the needs and interests of commercial groups. Examples in Illinois are: Spray Operators' School, Pesticide Dealers' Clinics, Farm Structure Seminars for Contractors, and Veterinarians' Workshops.

In the U.S. setting, major effort also is put into releasing information to the mass media by public extension. In Illinois, a radio tape service is provided to commercial radio stations by the extension system weekly, a weekly news packet is sent out for newspapers, and state farm magazines are provided with a substantial amount of material for every issue. Television stations receive regular releases. In addition, extension advisors write columns in the local newspapers and most have regular radio or television programs.

The research and extension personnel of the state university also participate in annual meetings of many non-profit organizations and accept invitations to present information there. Providing feedback the other way, representatives of these firms and organizations are also active as counselors and advisors to public research and extension through participation on various research and extension advisory committees. Least to be overlooked in the private sector are the farmers, who with their wives and families are involved with extension at the field level in program development, execution, and evaluation.

Through such consciously planned activities, the public extension system "wholesales" information through many groups and individuals for "retail" distribution to the ultimate clientele. In fact, this interlocking public-private mix is so routine that it is easily taken for granted. Oddly, this extensive interaction with private organizations is rarely talked about as a feature of the U.S. extension system based in the land-grant state universities.

When we turn to making applications in developing countries, where the private sector is not matured, a relevant question is how far a country can or should go in using the private sector in extension work. An alternative in that direction is attractive because of problems usually encountered in the public extension system of developing countries, like inadequate finance, inefficient management, poor research linkage, and political negatives. These defects are widely experienced and thus widely publicized. And in nearly every case, greater use of the private or quasi-private sector could be beneficial.

However, as attention moves to more use of commercial firms and non-profit organizations, the possible negatives must be examined, too. What are some of the constraints? Among them are:

- product or commodity orientation, with best ability to provide information about the specific products handled
- greatest ability to serve larger buyers whose purchases justify sales and service time
- help for only part of the whole job (The farmer's task is to integrate information into a totally effective goal-oriented system, which calls for management and decision-making skills, and access to knowledge about a host of non-technological factors as well as technology *per se*.)
- objectivity is subject to question (If there is no objective point of reference, or source of a second opinion, the natural optimism of salespersons can be a hazard.)
- payment is required from farmer to firm (Instead of "free" service, the cost will somehow show up in the price of the product, whether the farmer uses the service or not. There is no "free lunch.")

Even with these constraints, the work of these organizations can be a great boon to development, with little direct cost to the general public. While the impact of these commercial groups can be substantial, their outreach is inadequate to stand alone as a national system.

Still needed, however differently, both by such groups and by farmers, is some independent source of objective information that deals with the issue of developing an effective total farm unit and agricultural system.

In other words, a national extension system of some type is needed even when a country wishes to utilize a sufficiently developed private sector, and for these reasons:

- to provide a center of leadership for the knowledge transfer function, to manage the system, to evaluate it, and to fill in the gaps
- to provide a link with the private sector both for access to needed technical information and for integration with relevant national policy
- to provide farmers with management and marketing information (supplementing the technology) that is oriented to human development and decision-making in the total farm and family context
- to help provide equality of access in extension services to small farmers who may lack aggressiveness and resources to be well served by the private sector

In summary, there are definite limitations to knowledge transfer through the typical commercial sector organization. Information release will be uneven, fragmentary, and frequently slanted toward a particular product or audience. Where the involvement is with non-profit groups not engaged in product sales, some of these constraints are lessened but others emerge, like problems in membership requirements, sources of finance in lieu of sales, and access to problem-solving research.

If such organizations are commodity-oriented or confined to a single breed, they address only part of the farmer's problem of integration into an effective farm. Hence they may be best viewed as supplementary channels, not as a substitute for a national extension system.

To these generally applicable principles must of course be added the familiar caveat: it depends on the circumstances. In some cases, the public service may be functioning so badly that the private alternative offers more hope of success, whatever the likely defects, or at least a means of introducing new initiatives. The trouble is that where the environment is that bad publicly, the conditions for success through the private sector are likely also to be undermined—as through politicization, one-way communication, underfunding, disincentives, and over-employment. However, in these latter cases, if they have the will, governments do have options.

One option is not to operate a field program directly by the government but to contract it out. One variant of this is the use of parastatals. In many ways, the U.S. government's use of the land-grant university system for agricultural research and extension is a relevant example. Brazil offers another model. Still another option is reliance on some type of foundation or trust endowed with a public mission but operated with structural detachment from the mainline governmental apparatus.

As a practical matter, as inferred above, some mix of public-private will prevail in most countries. The task is to determine the optimum mix for the intended purpose. That determination should take into account the potentials and constraints, both public and private, including the lessons already learned in the developed countries and their maximal uses in the quite different developing nations.

An exclusionary either-or approach is illusory, as it must be in any current temptation to opt for an all-out, pay-as-you-go private sector solution to current public extension ills. A much more promising and powerful developmental mechanism would seem to be some type of partnership where public and private entities can work together in a mutually supportive way. In such a partnership, private and semi-private systems would be encouraged and supported by the public sector, which would emphasize farm management, marketing, and integration, while providing an objective point of technological reference.

INTERPAKS

Sub-Saharan Development Needs Educational Change

Sub-Saharan Africa's monumental problems do not end with population growth and declining agricultural productivity. A third problem, less heard about, is the educational crisis, with its far-reaching capacity to undermine the indispensable human dimension of national development. In addressing this issue in the 39 countries, the World Bank has presented widely-circulated studies and analyses, some of which have caused intense debate, particularly with regard to Bank policies on higher education.

Confusion has arisen between Bank studies and Bank policies—the unofficial word of authors and the official policy of the Bank. Therefore, clarification is being attempted, both by denial of some charges and by the publication of a new 185-page policy study.* The denials are that there is any turning-of-the-back on higher education and that there ever was any recommendation to a recipient country that funds be transferred from the higher education sector to lower educational levels.

The policy study presents comprehensive educational data on all Sub-Saharan nations, with 70 pages of statistical tables and maps. President Barber B. Conable's foreword says, "This study will guide the World Bank's lending and technical assistance to Sub-Saharan African education over the next several years." The first point to note, however, is that the study does not present a single policy for all countries but, rather, a framework for homemade country-specific strategies. Neither does it propose "specific educational investments." Action and change are contemplated, with policy options clearly presented. Also, international aid is regarded as critical in the future—not simply more of it, but "aid in support of policy reform."

The challenge lies in having reached a plateau of post-independence progress (sometimes decline) with an erosion in quality and stagnation of enrollment, in sharp contrast to the previous "particularly impressive" quantitative expansion, which "substantially improved the human capital stock." Therefore, "profound changes in educational policy" are in order: "every country-specific package needs to contain, in varying proportions, three distinct dimensions: adjustment, revitalization, and selective expansion." That also calls for better management practices.

Adjustment means cost containment and multiple sources of finance, including "increase user fees . . . especially at the tertiary level," where a third of public outlay ordinarily goes to student welfare costs rather than instructional costs. *Revitalization* means enhanced learning materials, especially textbooks, recommitment to academic standards via examinations, and better use of existing and increased physical facilities. *Expansion* (note the qualifying "selective") of educational services means renewed progress toward universal primary education, alternative post-primary delivery systems of instruction (e.g., distance education), job-related training for drop-outs and left-outs, and expansion toward Africa's self-sufficiency in producing professional talent via research and graduate education.

What is to be done? The study is quite explicit. Each country will map its course, but these suggestions are made: use of a national commission to formulate the policies (with wide representation from the finance, planning, and educational branches of government and from the universities); public debate for "building a national consensus" on the recommendations; and use of experience in educational development throughout Africa. Then the international donors should offer funding for such policy design and, after the design, for necessary implementation of "sound programs."

Discussion then turns to the ongoing debate about priorities and allocation of funds among educational levels. The facts are that outside aid to African education has put only 7 percent on primary education, 16 percent on general secondary education, 33 percent on vocational and technical (with teacher training), and 34 percent on higher education. (This is *aid*, not total in-country expenditures). Clearly, the World Bank expects to have priorities and allocations determined by these new, deliberate national policy plans, with corresponding changes both in aid and in allocations.

Critics are likely still to be concerned about the expectation of "increasing the participation of beneficiaries and their families" at the university level, without embracing economic elitism. It may then be asked how far this can go and still fit the study's summary conclusion: "Above all, education is a basic right, an end in itself, an intrinsic part of life and development."

Nevertheless, the ultimate intention in a knowledged-based world is made clear in the same conclusion: "the stock of human capital in Africa will determine whether Africans can harness the universal explosion of scientific and technical knowledge for the region's benefit—or . . . fall farther and farther behind. . . ."

***Education in Sub-Saharan Africa: Policies for Adjustment, Revitalization, and Expansion,** 1988.

Where We Come From —

The University of Illinois at Urbana-Champaign has a potent base for the advancement of technology, as shown by its top standing in the new seven-volume **Who's Who in Technology**. Of all the universities included, Illinois had the highest number of biographies, 324, included because of their "outstanding contributions to the advancement of technology."

Another Kind of Bank Balance

Development has many faces and depends on many forces. Not everything can be undertaken with equal intensity; so it is important what donor agencies, like the World Bank, choose as their priorities. That decision tells not only where millions of dollars are to be spent but also where, in the opinion of many skilled professionals, the leverage points are—the most likely pay-off, the greatest intervention opportunities, the needs most requiring attention.

For its part, the World Bank spells out it priorities in its **Annual Report 1987**. With a new president, Barber B. Conable, the Bank has presumably reexamined its stewardship as a guide to the future. Agricultural development "beyond the subsistence level" is still singled out for special attention, which fits into the heavy emphasis, indeed *reemphasis*, on "the struggle against poverty." In this struggle, agricultural research and technology take their place, along with prices and markets, for heavier weight than in the past.

Because of poor economic conditions globally, the Bank in the 1980s had shifted back from "the poverty orientation" of the 1970s to restoring or maintaining economic growth. Since this adjustment strategy is proving more long-term than hoped, "the Bank is now giving more direct attention to addressing the social cost of adjustment." A better balance between public and private efforts seems to be implied in the parallel emphasis on social impact factors and the market and price factors. This is implied also in an aside in the annual report which recognizes *poverty of people* as well as poverty of countries.

This striving for the right mix gives the Bank another major priority thrust: becoming "a sensitive advocate of the importance of population, environmental, and women's concern in the developing world and in the development process." Specific attention to the importance of gender adds a new dimension to an old theme: the need for "trained manpower" in both public and private sectors. Without the gender emphasis, that was the cry in Sub-Saharan Africa among the so-called "manpower economists" 20 and even 30 years ago—human resource development through education for a labor force geared to development needs.

Overall, with these balanced priorities, the World Bank intends, as in the past, to function "as a central force for development."

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And Another Kind of Account

While the World Bank is shifting its priorities, as shown in the article above, some critics are saying, "Not enough." The Bank's last report (see accompanying chart) shows that lending for agricultural and rural development declined from 26.1 percent in 1985 to 16.6 percent in 1987 (averaging 24 percent for the three-year period, 1985–1987), while funds to education declined from 6.5 to 2.5 percent in the three-year period. Only 1.4 percent of the total lending has gone to population, health, and nutrition in the three-year average. While the emphasis has shifted from years past, large-scale infrastructure still fares well, as indicated by the fact that lending for fuel and power installations replaced agriculture and rural development for the Bank's top billing last year.

World Bank Lending: 1985-87

Total in millions of US dollars

(Percentages shown in italics)

	1985	1986	1987
Agriculture & rural development	$3,749.3 *26.1%*	$4,777.4 *29.3%*	$2,930.3 *16.6%*
Development finance companies	565.3 *3.9*	1,449.2 *8.9*	2,297.9 *13.0*
Education	927.8 *6.5*	829.2 *5.1*	439.8 *2.5*
Energy	3,581.7 *24.9*	3,018.0 *18.5*	3,704.3 *21.0*
Industry	644.0 *4.5*	821.1 *5.0*	418.4 *2.4*
Nonproject	629.2 *4.4*	1,321.0 *8.1*	2,437.1 *13.8*
Population, health, and nutrition	191.0 1.3	419.5 2.6	54.1 0.3
Small-scale enterprises	560.6 *3.9*	274.5 *1.7*	421.5 *2.4*
Technical assistance	109.7 *0.8*	137.9 *0.8*	103.9 *0.6*
Telecommunications	121.6 *0.8*	50.4 *0.3*	682.3 *3.9*
Transportation	2,138.7 14.9	1,498.2 9.2	1,745.9 9.9
Urban development	384.6 *2.7*	1,117.5 *6.8*	1,469.1 *8.3*
Water supply and sewerage	780.8 *5.4*	604.8 *3.7*	969.4 *5.5*
Total	**$14,384.3** *100.0%*	**$16,318.7** *100.0%*	**$17,674.0** *100.0%*

Critics are not assuaged by the Bank's defense that humanitarian programs cost less in money but cost more in time and management, as reported by Kristin Helmore in the *Christian Science Monitor*, March 23, 1988. A spokesperson for the Institute for

Food and Development Policy in San Francisco complains that passing resources through the rich and powerful does not help the poor, as shown in irrigation projects where land monopolists peel off the major benefits; or as in India's great "success" story, wherein success lies in industrial development, not in alleviation of poverty.

Lester Brown, Director of Worldwatch in Washington, says, "It's easier to lend money for . . . highways than for social services." The reason, agrees the head of the Population Crisis Committee in Washington, is that such services do not generate the means of repaying loans. Also, the Bank still focuses on the "hardware" investments. For example, it puts population loans into building health clinics and buying vehicles instead of training, contraceptives, and operations.

Another criticism concerns environmental damage, as in the Latin American rainforests and the displacement of the poor by hydro-electric projects. Bruce Rich, speaking for the Environmental Defense Fund, points out that while the Bank is moving in the right direction, it has only two professional ecologists in its entire staff.

Finally, there are critics of the Bank's "structural adjustment" programs. These have often helped agriculture through required policy changes but they can also result in reduced social services, with the borrowing countries "simply cutting their own throat for the future of their own development," as expressed by the program director for international finance at the North-South Institute, Ottawa, Canada.

Extension Needs Changing, But to What Alternatives?

Complacency in the extension community is severely challenged by Peter Oakley, Agricultural Extension and Rural Development Centre, University of Reading, U.K., who castigates the technology transfer model as simply irrelevant and makes the case for a fitting alternative.* He contends that the dominant model does not work, as globally evidenced by "the little impact on the miserable livelihoods of the vast majority" who are not better off despite economic achievements. But, unfortunately, there is no neat solution. Rather than simply the adoption of another fixed model, the remedy seems to lie in alternative approaches—several of them.

First, more about the problem. "Technological change is *not*, in the first instance, a panacea for the problems that confront the vast majority of the rural poor and, as such, an extension service which is predicated on the theories of technological adoption and diffusion is irrelevant to this majority." The fixity of the model leaves it trapped where the cycle of technology generation and diffusion is not germane. Moreover, extension services committed to changing farmers are unwilling to change themselves, despite changed thinking about development. They, "ostrich-like, have their heads in the sand and seem oblivious to different lines of thought."

Some of these lines urge rectifying inequalities and imbalances rather than simply "modernizing"—that is, tackling the causes, rather than the symptoms, of underdevelopment. Another line is the emphasis on more than agricultural extension, enlarging it to *rural* extension, with "emphasis on building up local abilities and organizations." Finally, there is the potent idea that farm families should be the active subjects, rather than passive objects, of extension practice.

To reiterate, the alternative to the predominant model is not another model; rather, the need is for a combination of "dominant themes." These include (1) recognition of the heterogeneity of rural communities (there are no homogeneous global units of "community" or "farmer"); (2) interactive communication instead of the linear model of "source-channel-receiver"; (3) active local participation; (4) some new extension objectives (structural as well as physical); and (5) making the extension agent an "active collaborator, not a passive salesperson" who peddles "knowledge generated outside the rural community."

If this analysis is hard on technology transfer, it is equally hard on formal extension. The latter is not amenable to change. In fact, change is coming "largely from outside the formal extension services and it is the work of a whole range of non-government organizations"—a range "as yet unstructured and uncoordinated." Some new mix within this range has to be the answer to the damning indictment, as restated: "There are few who would stand up and assert that technology transfer via formal extension services has had any substantial impact upon the vast majority of poor rural people in the Third World."

**Reading Rural Development Communications Bulletin 22*, September, 1987.

Thesis on Pakistan Extension

An Analysis of the Agricultural Knowledge System in Pakistan is a new doctoral dissertation by Wagar Hussain Malik at Cornell University. It focuses on the knowledge generation, articulation, and utilization subsystems in the agricultural knowledge system paradigm, with data gleaned from five respondent groups including researchers, extensionists, and farmers in Punjab province.

Linkages among the subsystem actors are found to be fragile, "with little apparent cooperation." There is more interaction and a higher level of trust between extensionists and farmers than between researchers and extensionists, with subject-matter specialists turning in a "profoundly disappointing" performance. Information does move through the system from research to farmer use, but it does so inefficiently.

Helpful Ideas: Old and New

Frederick H. Harbison, **Human Resources as the Wealth of Nations.** Oxford University Press: New York and London, 1973 (173 pages).

This codicil to Adam Smith's testament cogently states a development philosophy widely accepted today, yet also too often forgotten. As a Princeton University economist, now deceased, Fred Harbison was a keen observer and active participant in economic development in many developing countries. He and his graduate students did many manpower studies and sector analyses. This experience shifted his perception of development from emphasis on growth in national income or GNP to a dominant role for human resources—"the effective utilization of human energies, skills, and knowledge for useful purposes." These, "not capital, nor income, nor material resources, constitute the ultimate basis for the wealth of nations."

Elaboration of this thesis covers employment generation, education (not neglecting the non-formal kind), health and nutrition, and the migration of strategic high-level human talent. This is admittedly not the whole story of needed development strategy, but the intent is to put at center stage what we too often forget: that "human beings after all are the only actors on the stage of development."

Arghiri Emmanuel, **Appropriate or Underdeveloped Technology?** John Wiley & Sons: Chichester, U.K., 1982 (186 pages).

"This book will shock," says the preface to this polemic. The University of Paris author holds that production of goods is all-important, not the number of jobs created, and that "appropriate" technology is really impoverished technology, the prescription for underdevelopment. He opts for the capital-intensive variety, not the labor-intensive, as the best guarantee of social welfare. Since multinational companies represent this advanced technology, they are the best means—not a reprehensible means—of developing the Third World. Almost 50 pages are devoted to rejoinders by two critics, with the author's replies. Perhaps significance lies in the fact that this is published by Wiley as one of its series on multinationals.

Adam Smith, **An Inquiry into the Nature and Causes of the Wealth of Nations.** London, 1776. (Too numerous to mention are publishers, volumes or abridgements, and editions, including five in the author's lifetime.)

It may seem like contrived drama to pull Adam Smith off the back shelves for inclusion here, even for the "Old" part of this "Helpful Ideas" section. On the contrary, he is still highly relevant on many fundamentals and is regarded as one of the founders of development economics, "the natural progress of opulence."

What we know by the shorter title, **The Wealth of Nations**, is like Karl Marx's **Das Kapital**: always talked about, rarely read. He did something revolutionary: demonstrating that the then current mania for exploring and fighting for gold and silver as the route to national wealth was all wrong. The sources lay elsewhere. He wrote, "a propensity in human nature . . . to truck, barter, and exchange one thing for another" led to something new, a division of labor (dependent on education) as a way of increasing labor productivity. It also led Smith and his successors to tie this to expanding markets and to move to the international sphere, away from the purely national, in looking for and at development.

Although he deals with the mercantile system primarily, he does address the "agricultural systems of political economy." Note that he writes of "systems" and keeps "economy" linked to the "political" (public and governmental). But since the notion that the produce of the land is the sole source of national revenue and wealth is speculative rather than realistic (and indeed never adopted anywhere, despite its advocacy in France by "a pretty considerable sect"), he forgoes extensive treatment of "the errors of a system which . . . probably never will do any harm in any part of the world." However, agriculture is part of the town-country equation which gives rise to the "greatest and most important branch of the commerce of every nation." From this foundation, every nation can then gain from trade, if largely unimpeded, with other nations.

Smith's writings, like his profession and his temperament, were academic, but they were also seminal and enduring to the present.

Bernhard Glaeser, editor, **The Green Revolution Revisited: Critique and Alternatives.** Allen & Unwin: London, 1987 (206 pages).

These nine papers make the case for a second Green Revolution, giving more consideration to the smallest farmers and to "the ecofarming approach," without stigmatizing "one or the other school of agricultural theory."

Aaron Segal (with five others), **Learning by Doing: Science and Technology in the Developing World.** Westview Press: Boulder and London, 1987 (239 pages).

A provocative first chapter by the primary author is followed by seven chapters on the major regions of the world, making a global survey of how imported science/technology is used to develop indigenous capabilities. This transformation (covered generally without specific regard to agriculture) has been made by only "a handful of countries" and the capacity has been "fully institutionalized" only in India among the developing nations, 130 of whom are listed as actual "nonstarters." This process is lengthy, and the primary author posits these implications: the North-South division of the world economy will continue and may be aggravated; research manpower, not petroleum or any other commodity, will be the greatest resource; the Pacific Basin and Rim countries will replace Western Europe in U.S. economic relations; and informal learning skills will be more important than the commonly used formal indicators of in-country science/technology capabilities.

This study of the process of achieving such indigenous status leads to ten lessons, including two about universities: a need for a way "to innovate research outside universities" in view of their "extensive and persistent politicization" in some countries and the candid acceptance of elitism because "education and training of quality researchers requires a hothouse intellectual atmosphere inimical to mass education."

Cynthia S. Kaplan, **The Party and Agricultural Crisis Management in the USSR.** Cornell University Press: Ithaca and London, 1987 (203 pages).

Here is a challenge to much conventional wisdom about the management of the Soviet economy, including agriculture. The Communist Party is not monolithic but, rather, a monolithic facade behind which "pulses a complex and dynamic political system." It does not deal with agriculture the way it deals with industry. There is increasing recognition that its legitimacy rests on economic performance and technological change rather than ideology. Whatever the unity for central policy making, it quickly disappears in the implementation of policy—exactly the agricultural point at which the author did her research.

The recent drive has been for better educated agricultural leaders, with marked progress, so that implementation will be based on technical expertise and a reinforcing balance between the professional qualifications of the farm leaders and the local party leaders, with less likelihood of political displacement of professional leadership in time of rural crisis. One hope, instead, is that local party leaders will increasingly "form management teams in a system of dual administration."

James R. Simpson, **The Economics of Livestock Systems in Developing Countries,** Westview Press: Boulder, Colorado, 1988 (297 pages).

This book bridges the gap between economics and animal husbandry and places "economic decisions within the context of livestock systems, problem definition and human factors." Strong emphasis is put on the human factors because the technological capabilities for the future so far outrun the knowledge applications (i.e., management).

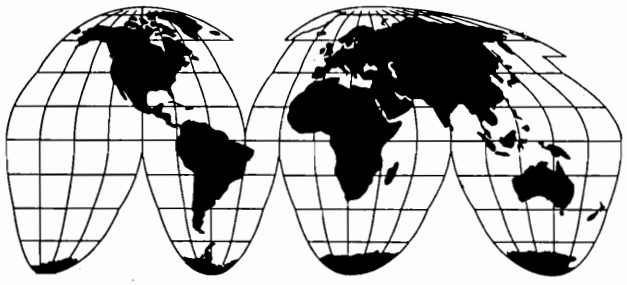
As with crop production, advanced technology will bring "burdensome supplies" in animal production, even in global proportions. So the primary problem will be "lack of purchasing power, management capability, and inappropriate policies at both the individual person and national levels in certain regions." The last two chapters deal with FSR/E (farming systems research and extension) for small farmers with small animals and "Analysis of New Technologies." To the extension scholars and practitioners who find a great literature imbalance between animal agriculture and crop agriculture, this book will be welcome.

Yusef J. Ahmad and Mohamed Kassas, **Desertification: Financial Support for the Biosphere.** Kumarian Press: West Hartford, Connecticut, 1987 (187 pages).

How to finance a worldwide project of utmost urgency is a question no one has yet answered, and few people seem to be interested. This book presents three studies of how to fund the halting of desertification by the year 2000, as the UN conference on the subject resolved in 1977. The emerging scenario is alarming and the need, as fully spelled out, is compelling; but the requisite political will is not there. No sovereign nation or combination thereof is snapping up the bargain of halting the $16 billion annual loss by raising and expending a quarter of that annual amount ($4.5 billion).

Imagined and unimagined options are explored, even to consideration of income from exploiting the "international commons" (e.g., oceans, space, and Antarctica) and "parking fees" for slots used by geostationary communication satellites in the orbit zone. It is hardly nobody's business when 35 percent of the world's land surface is subject to desertification and 20 percent of the world's population is affected.

Editor's Note: As technology transfer buffs, we have met our unexpected match. Our computer insists, repeatedly, that "desertification" in the note above should be spelled with a "c" instead of an "s". Shame on authors, publisher, and editor. Or maybe they, less contrite, should retaliate by composing an editorial on the many implications of why an invented machine cannot imagine an invented word.



Around the World

Growth: Blessing or Curse?

Increased agricultural productivity in the developing countries is a global blessing, not a global curse, in the view of John W. Mellor, Director of the International Food Policy Research Institute. It simultaneously creates markets for grain surpluses. In fact, in the 1970's the 29 developing countries with the most rapid agricultural growth rates stepped up their imports of food staples by almost 400 percent, and such countries alone now offer a rapidly expanding cereal market. This is the result of the great multiplier effect food production has on income and employment growth, with the dual benefit of alleviating poverty and increasing markets for exporters.—*from News from CGIAR, April, 1987.*

Mozambique Workshop

Animal traction and mechanization received attention in a SACCAR (Southern African Centre for Cooperation in Agricultural Research) workshop in Maputo, Mozambique in August, 1987, with 30 recommendations on desirable policy, research, training, and extension to the villages. The recognized importance of animal traction for smallholder farmers provided the basis for many recommended promotional activities by governments, extension specialists, and farmers.—*SACCAR Newsletter, November, 1987.*

Twenty-Five Percent to Agriculture

Instead of the present nine percent of national budgets going to agricultural ministries in Africa, twenty-five percent ought to be the target. So recommended a meeting in Munich sponsored by the World Bank and the German International Development Agency, in September, 1987. The intention is to improve research and extension, with emphasis on professional manpower training to be done within Africa.—*SACCAR Newsletter, November, 1987.*

Decentralized Training

The International Rice Research Institute in the Philippines has a "shuttle training" method of moving training from the center to the national systems. After an agreement on a specific course is made between IRRI and the requesting country, IRRI personnel assess in-country needs for a relevant curriculum; a multidisciplinary in-country team goes to IRRI to participate in the chosen course and its methodology for transfer; and finally the trained team takes the project back for implementation, perhaps again with IRRI help in both evaluation and problem resolution. The objective is to speed the flow of technical information from IRRI to the national systems for improved diffusion.—*The IRRI Alumni, January, 1988 (a new newsletter to keep in touch with the 4,400 graduates).*

Small Cows for Small Planet

Motivated by "the shrinking world" rather than "bigger is better," experimentation in Mexico has produced a minicow (three feet high, 300 pounds) which produces two-thirds as much milk as the ancestral Brazilian zebu. Ten of the "minis" can graze on what the larger cow needs. Through eighteen years and six generations of gene manipulation, these products of weakened large-growth genes may be a boon to developing countries, in the opinion of a spokesman for the National Autonomous University of Mexico.—*Associated Press from Tamuin, Mexico, February 23, 1988.*

Women's Roles in South Pacific

Women as extension agents in the South Pacific get attention in Joan Larcom's 80-page study, just published by the Institute of Culture and Communications, East-West Center, 1777 East-West Road, Honolulu, Hawaii. This follows four earlier reports, including a bibliography, published in 1984 on other aspects of women in South Pacific agriculture.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

More Potato Technology

Manuel Pina, Director of Training and Communications, CIP (International Potato Center), Lima, Peru, visited INTERPAKS on March 21, 1988 to further advance cooperation in the strengthening of the agricultural technology system in Ecuador.

Workshop Participation

Burton E. Swanson, Associate Director for Program Development, Office of International Agriculture, presented a paper at the agricultural technology management workshop July 6-8, 1988 sponsored by Rutgers University and the International Service for National Agricultural Research, at New Brunswick, New Jersey.

Bangladesh Project

As team leader on the third phase of a World Bank contract on the privatization of the Bangladesh Agricultural Development Corporation, John L. Woods, Assistant to the Director, Office of International Agriculture, spent a month in Bangladesh in April-May, 1988. Enroute he visited the UNDP Asia and Pacific Programme for Development Training and Communication Planning in Bangkok and the East-West Center in Hawaii.

Director in Pakistan

John J. Nicholaides, Director, Office of International Agriculture, and Acting Director, INTERPAKS, was in Pakistan during January, 1988 for meetings with USAID and the Northwest Frontier Provincial Agricultural University regarding the project on the reorganization and integration of the research-extension network.

From Dean to President

John R. Campbell, Dean of the University of Illinois College of Agriculture since 1983, has become President of Oklahoma State University. His new appointment was effective July 1, 1988.

As a state land-grant university, the University of Illinois at Urbana-Champaign is heavily engaged in the generation and transfer of technology. That capacity will be greatly augmented by this planned $30 million Plant and Animal Biotechnology Laboratory (architect's rendering), to be completed in 1991.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign

November, 1988/Vol. 5, No. 3

An Incorrect Equation: More Food = Less Hunger

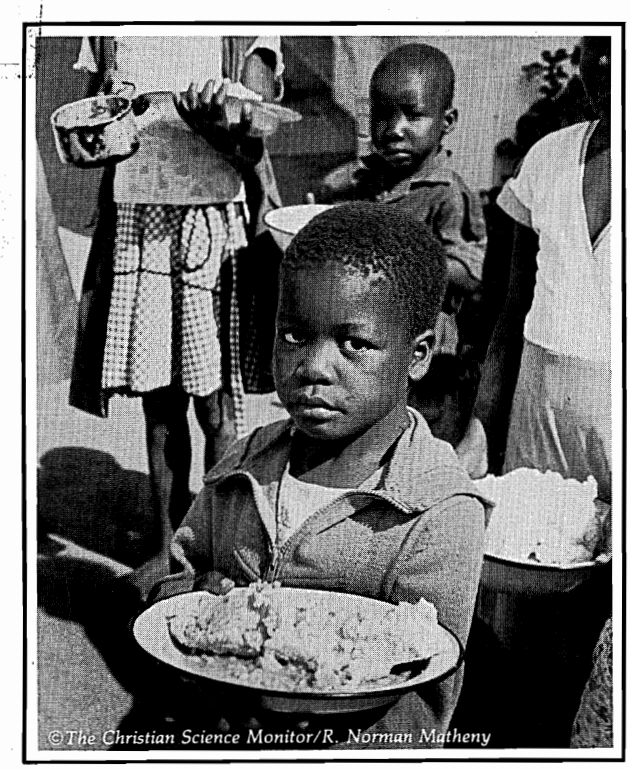
The world has a problem of hunger but not a problem of food. In fact, many countries show that increasing food does not mean decreasing hunger. The real problem is not a shortage of available food but a shortage of available income among disadvantaged groups.

These are the propositions which Keith Griffin, President of Magdalen College, Oxford, and a widely recognized development specialist, states in his recent study, **World Hunger and the World Economy** (Macmillan, 1987).

We have the best of news and the worst of news. The best he says is that "for the world as a whole . . . never in history has the physical supply of food per capita been greater than in the last 10 or 20 years." The worst news is that reduction in hunger is not occurring. This perversity is best shown in India, which meanwhile has become an exporter of food grains. The problem is with people—"the relationship of particular groups of people to food, not food itself." Such people are the landless farm laborers, small tenant farmers, "deficit farmers with . . . part-time off-farm jobs," pastoralists beyond the arable land, and tradition-bound fishermen and artisans. Whether such people can command food depends on the country's laws, institutions, and customs—on the factors that facilitate or inhibit access to productive assets.

The plaguing inequality does not arise from the absence of growth but from the kind of growth—often the kind that produces landlessness, greater dependence on non-permanent employment, and increased un- or under-employment; or the kind that rests on discrimination (e.g., on class stratification, race, religion, tribe, or language).

Among the documented results of greater output in many countries have been labor-displacing machinery, eviction of tenants, traditional small-farmer irrigation ruined by lowered water table from powerful large-landowner pumps, and support prices for food grains raised to the detriment of both "wage earners and deficit farmers who purchase grain in the market." Indeed, a study in West Bengal shows that agricultural laborers are at greatest risk of sinking into poverty and hunger where growth of farm production is fastest.



Moneyless in a money economy.

While author Griffin feels that "the minimum condition of statehood" is a nation's ability to feed its people, he recognizes "the international forces at work that affect the geography of hunger." Among them are three: (1) Western ideas and ideology, (2) the transfer of technology, and (3) the nature of the developing nation. The first means capitalism, with its overweening emphasis on production, and "hostility to government interventions to improve either the distribution of income or the distribution of food alone. . . ." The second force—technology transfer—has unduly elevated the technician, put too much emphasis on big infrastructure, and promoted technology that is inap-

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

propriate for the neediest users. The nature of the typical developing state, the third factor, compounds "the meager success of imported technology" because its actions and policies are biased toward the dominant economic interests—"in short, towards everyone except the poor and the hungry," whose hope for a better life lies, ironically, in reformist regimes the "aiding" Western powers will not support.

The author's recommendations for remedy start with recognition of the great differences between the Western nations and the developing societies:

> This approach . . . naturally directs attention to the distribution of income and wealth and to institutional arrangements concerned with property rights that govern access to productive assets. . . . What is needed is a pragmatic view of all these institutions and practices. Where individualism, self-reliance, and competence can contribute to a reduction of hunger and poverty, let them prevail. Where they cannot, let them be tempered, and if temperance entails government intervention and the fostering of cooperative enterprises, let their possibilities be explored devoid of ideological dogmatism.

Postscript: "The Mopti market was piled high with food, but Diju (a drought-displaced farmer upriver from Timbuktu) had no money. . . . His children had begun to die. . . ."—*from Mort Rosenblum and Doug Williamson, Squandering Eden: Africa at the Edge.*

Billion Dollar Priorities

Although the U.S. government spends more than $60 billion annually on science and technology, budgetary considerations are forcing attention to the priority expenditure targets. Competing candidates for attention are "big science" and "small science", physical resources and human resources, and needed maintenance and hoped-for breakthroughs. Consideration will have to be given the relative merits of the superconducting super collider for insights into the origins of the universe and less dramatic matters like the schools and advanced science training.

While this is not necessarily an either/or choice, Frank Press, former Presidential Science Adviser, now President of the National Academy of Sciences, offers his judgment: "The highest national priority in science must be to preserve our human resource base. With so many attractive proposals competing for attention, it is easy to forget that the first prerequisite to doing science is to have enough scientists with proper training and resources."

Less from More

"The more you say, the less people remember."
—*Fenelon*

Ten Principles of Leadership

*by Jerry W. Robinson, Jr.**

People are interested in leadership. Why? Perhaps because there is such a great need for effective leadership at all levels in Extension. But, what is leadership? What are some basic philosophical and operational leadership principles we can use in our work? These "Ten Basic Principles of Leadership" were developed after over 20 years of work in organization and human resources, or "leadership development." None of these principles stands alone, but each must be understood and practiced in relation to the other nine.

1. **Everyone is a leader.** Not all persons have equal knowledge and skills, but each person can excel in one area. Extension professionals must know their staff and volunteer leaders well enough to discover their major abilities, then enlist and support their efforts. Beware of the tendency for "educated" persons to underestimate the potential leadership contributions of the uneducated.

2. **Leadership behavior is learned.** Leaders aren't born, they are developed or made. Leaders frequently evolve. We learn leadership by copying role models, by trial and error, experience, and by study. Sometimes crisis situations "make" leaders. For example, persons with specific knowledge or skill may come to the forefront when they have solutions to a critical problem. Regardless of who you are, you can become a better leader by studying, practicing and asking for constructive feedback from your work group.

3. **For effective team work, remember—people support actions, programs, and goals which they help create.** Involving others in planning, program development, delivery and evaluation is the key to teamwork in Extension. Usually, morale and production are low in an office or on a project when people are "given a plan and told" to implement it. Successful leaders usually involve, involve and continue to involve their staffs.

4. **An atmosphere and structure is best which permits every team member to be a leader at some time.** One person cannot know all the answers. One person does not have enough energy or time to solve all the problems which Extension workers face. Delivering technical information to farmers and farm families requires many kinds of knowledge and experience. To succeed, Extension administrators must depend on others. When one individual monopolizes power, resources and time, and takes all the credit, failure is likely.

5. **"Everyone is, in some capacity, my superior"** (Samuel Johnson). You may have to look closely to find something which a particular volunteer or employee can contribute to your program, but it's there. Go to an Extension fair, a museum, or an "arts and crafts" festival and observe all the handiworks and exhibits of uneducated people. Some are very

skilled. Some professionals are "underemployed" because they have not searched hard enough in the ranks of Extension to find persons who might enjoy doing some of the routine work, thereby enabling the "top boss" to be free for creative planning.

6. **Democratic leadership is not permissive leadership**, as many tend to think. While democratic leadership is more flexible, it is not completely open or unstructured. The group is in charge. In fact, there is much more organizational structure in democratic or team-shared leadership. The communication systems are much more complex and require more skill to manage. Sometimes, democratic leadership is more difficult because more time, more accommodation to divergent ideas, and more "people skills" are required. Democratic leadership has been called developmental leadership because, through this system, it's easier to develop new ideas.

7. **In spite of many virtues, democratic or team-centered leadership is not always best!** When a crisis arises, such as a fire in a building, there is no time to call a committee meeting. Someone must make decisions and do something! Democratic teams should develop policy through a group teamwork process; then leaders can implement that policy. We cannot do everything by committees or through groups, though some would like it. The next principle helps explain why democratic leadership may not be best.

8. **Autocratic leadership is not always bad!** Some situations require "the leader" to take charge decisively—to exhibit and use power. This is especially effective when working with people who are immature or disloyal. It's unfortunate, but a few people only understand and respond to power. Some individuals have never been exposed to democratic team work, and they don't understand it. It is possible for a leader to use authority to bring a group of people together for a discussion on administrative policies which facilitate the development of a more flexible democratic style. If you are basically authoritative, try it.

9. **Leadership is determined by the leader's knowledge and behavior skill, by a particular situation and by the expectations and experience of others.** We are social and emotional beings. Many of us conform to the expectations of others—to the "power of the group." If a group expects authority in a crisis situation, the leader will frequently respond as a power actor. However, if a group expects to be involved in solving the problem in a crisis, a skilled team leader will quickly respond by involving members of the group in creative teamwork.

10. **Leaders must be flexible!** Leaders must adjust their behavior to meet the levels of experience, knowledge, skill and expectations of others in every situation. A dictator will destroy morale of a loyal and productive staff by trying to control everything they do. Leaders who are abdicators, totally shaped by the demands of others, will also find that morale and productivity are low. In Extension work, leaders must be many things to many people. One style of leadership will not work for everyone in every situation.

Summary: What is leadership? It is the ability to influence, guide, and shape the attitudes, expectations and behavior of others. Leadership is largely a behavior skill, and new behavior can be learned! Superb and sometimes complex leadership skills are required for Extension workers in today's changing agricultural and political world, but we must not be pessimistic. We can all become better leaders. If we will work at it, we can meet the leadership demands. If we will use these "Ten Basic Principles of Leadership" effectively, we will become better leaders.

*Professor of Sociology and Rural Sociology, Department of Agricultural Economics, University of Illinois, who also teaches leadership and team building in INTERPAKS short courses on "Organizational Management Skills for Extension Professionals."

New Study of Old Problem

Customarily, in the past, when asked about their extension activities, the international agricultural research centers replied that they had none because that was left to the cooperating national systems. Nonetheless, heavy emphasis was always placed on training as a means of getting new knowledge/technology out to the host country collaborators.

Now, ISNAR (International Service for National Agricultural Research) has mounted a three-year research project, 1987–90, on improving the linkage between research and technology transfer.* The national agricultural research managers gave impetus to it at their 1986 workshop in The Hague, again showing how universal and elusive is a satisfactory solution to this recognized constraint to agricultural development.

The project will have a threefold focus: on strengthening the research-extension linkage itself; on making research more relevant by feedback on farmer needs; and on improving the transfer process down to user adoption. Seven case studies will be made and four other desk studies will expand the data base from existing reports on China, Taiwan, Kenya, and Fiji.

The intended outcome will be useful management tools, beginning with guidelines managers can use to improve the research-extension linkage.

*ISNAR, **1987 Annual Report.**

Raising Hell

Some people tell us that there ain't no Hell,
But they never farmed, so how can they tell?
—*Anonymous*

Into Development Ark They Also Come by Twos

Development economics may seem like a subject resistant to intellectual fun, but not for Paul P. Streeten, Director of the World Development Institute, Boston University. His essay, entitled "Development Dichotomies,"* requires a second reading and further contemplation, but he deals with some fundamentals in an entertaining way.

Whether a science, art, discipline, profession, or what, development economics harbors scholars and practitioners who often hold different views up and down a spectrum between opposites. With some overlapping, Streeten cites as dichotomies unity vs. diversity, mutual benefits vs. conflict, formal vs. informal sectors, neoclassicists vs. structuralists ("flat earthers versus round earthers"), linear vs. nonlinear development, big vs. small, and utopians vs. pedants (visionaries vs. conservators).

Many of us keep going around saying things that Streeten's analysis challenges. After examining "the claim of mono-economics that there is a single economic discipline, applicable to all countries and at all times," he concludes that the "history of development economics can be regarded as a progress from large generalizations and high abstractions to greater specificity and concreteness."

On the seemingly obvious thesis that developed and developing countries interrelate developmentally with mutual benefit, he says this "is not as straightforward as may appear at first sight." Suppose there *are* benefits, then "the division of them may give rise to conflict." The very meaning of "welfare" may also differ (e.g., as merely a "widened range of choice"), and our unhesitating acceptance of "the principle that the rich have an obligation toward the poor in the national community" still leaves open the question as to whether all humanity is a community in the same sense. His solution? "The challenging task is not to show areas of common or mutual interests or benefits, but to show how conflicts, when they arise, can be resolved."

A most dramatic clash occurs between the linear and nonlinear theories of development—the idea that development must inexorably run through successive stages in all countries, with rich countries advantageously "providing the missing components to the developing countries" vs. the employment of options, including the idea that "the international system of rich-poor relationships produces and maintains the *under*development of the poor countries (italics supplied)."

Faced with all these contradictions, how do policy makers and practitioners make any sense out of it? Streeten has his own answer. "A judicious selection of features of outward- and inward-looking strategies is likely to give the best results. . . . (T)here is a choice among styles of development which admit different blends of indigenous and foreign impulses."

Therefore: "The interesting question then is not, Do the developing countries benefit or lose from their coexistence with developed countries? but How can they pursue selective policies that permit them to derive the benefits of the positive forces, without simultaneously exposing themselves to the harm of the detrimental forces? Countries should scrutinize the details of the whole balance sheet, the entries on the credit and debit side, and not only the net balance. Looked at in this way, the question becomes one of designing selective policies for aid, trade, foreign investment, transnational companies, technology, foreign education, movements of people, and so on. Neither complete insulation nor wide-open integration but a policy of enlightened discrimination may present the correct answer."

*Final chapter in Gerald M. Meier and Dudley Seers, **Pioneers in Development**. World Bank, 1984.

Are Computers Appropriate?

Many an observer of the development scene has wondered whether computer technology is really appropriate, or just another Western contrivance to be unloaded prematurely abroad. Experience in Mali support the computers.* This is what the personal computer in a 6-by-10-foot converted kitchen has done:

- provided better coordination of aid projects, avoiding duplication otherwise not soon enough detected
- in two days collected information on which the Ministry of Health had planned to spend a year and a half
- facilitated use of expanding data banks
- harnessed private organizations into the strengthening of public services.

The New York-based Industry Council for Development, with corporate members who lend overseas management assistance, coordinates the project. The ICD executive director says, "Appropriate technology does not necessarily mean low-tech. It means . . . appropriate for solving the problem at hand."

Illustrating the use of the data base to avoid duplication, a spokesman for Oxfam reported: "In one area there are five different organizations working in agriculture, five different approaches. It means that in one village, the people are paying for seeds while right next door they are getting seeds free . . . there is a lot of this kind of duplication."

As expected, there are some problems: injurious dust in the arid areas, erratic electrical supply, and lack of readiness and understanding among potential users. Nevertheless, plans call for similar systems to begin in Niger, Burkina Faso, and Senegal.

**The Christian Science Monitor*, February 29, 1988.

Some Hard Lessons Learned From/For Rural Development

Once-popular "integrated rural development" is so utopian in actual experience that it should "now largely be sidelined as inappropriate and unattainable in most RD situations." The cornerstone assumption that "technology was available or could be developed" was, in general, based on "a pattern of over-optimism and sometimes even plain error." These are some of the evaluations made by the World Bank's candid self-analysis of its policy shift in the 1970s to small-scale agricultural lending for the alleviation of rural poverty.*

Review of 112 RD projects from 1965 to 1986 reveals what the staff regards as "at best a mixed blessing," with some missed targets, some early expensive failures, and some benefits not likely to be sustained. The positive side is what has been learned, what has been changed, and what must yet be done.

Paradoxically, the report says that while integrated rural development is needed and is good theory (and that production alone is no panacea), it too often fails in practice because of complexity, leadership demands, and the undertaking of too much too soon. Instead, "relieving constraints at the margins through several projects over a longer period is often preferable ultimately."

Again, paradoxically, while capital-intensive infrastructure projects rated high enough to be recommended for greater use in poverty alleviation, strong words are said on behalf of the development of human capital. Long-term human resource development may have a better pay-off than the quick fix of physical implementation. This is noted particularly in the lesson that expatriate technical assistance "is a poor long-run substitute for local capability," as technical packages are also less reliable than "building a long-term national research capability."

The report found that technology transfer is one of the main factors in the making or breaking of RD projects. But there was in the beginning too much optimism about the existence or development of ready technology, partly because of a falsely perceived parallelism with the Green Revolution. Too late it was seen that comparable technology did not exist in many rainfed areas, in contrast to the irrigated, and would be hard to devise in many parts of Africa, for example.

When the option of adapting borrowed technology was used, it was "less easy and took longer" than expected. What was new took more testing time for production impact than anticipated—five to eight years, instead of two to three. The unexpected kept arising to twist adoption decisions: local food preferences, quixotic rainfall, unpredictable notions of risk, conflict with multicropping, and mixed motives like the Yemen preference for traditional wheat varieties because of better straw for brick-making. Among the lessons learned: local institutional research capacity must be developed and its support must be consistent and long-term.

The report also gives a new turn to the bottom-up approach. It has merit in the Bank itself as well as in the field. Internal staff judgments have differed from the beginning on RD strategy. Whatever they are, justified or not, "they are the opinions of a staff who must continue to implement the Bank's stated emphasis on poverty alleviation." Therefore, sustained effort must be made to insure that the Bank staff, as well as governments, understand the objectives of the strategy—"that the lessons of past mistakes are internalized fully."

***Rural Development: World Bank Experience, 1965–86, 1988.**

Cutting Women In, Not Out

That "women are central to alleviating the food crisis" in Africa is the theme of Kathleen Staudt, University of Texas at El Paso.* Her analysis is critical of the "heavy-handed state" with its "institutions, policies, and laws that (have) codified husbands' control." It is equally critical of the World Bank in its "simplistic free-market approach" against statist interference and with concentration on export-oriented farmers in a manner reminiscent of "late colonial agricultural policy."

Insufficient attention is now given "gender-differentiated labor and returns." If prices are used as incentives, attention must focus on the object of the incentives. Usually, that means men, not women; and if there are assumptions "about resource sharing between husbands and wives," or about the "economy of affection," they are "not always borne out in reality." Men not only tend to monopolize legal access to land, get the subsidized farm inputs, receive most of the extension services, and dominate decision-making—they may also with impunity appropriate "the fruits of female labor" where women do respond to price incentives.

A needed policy solution is the use of price incentives through "alternate procedures . . . to get earned resources into women's hands," plus other alternatives implied in the above analysis. These need to include more research on relevant crop strains and alleviation of the common bottlenecks faced by women, such as employment in extension, access to loans, and empowerment in decision-making, both public and private. Underlying all is need for sensitivity to gender differentiation, particularly where women actually constitute the *majority* of farm labor.

"Uncaptured or Unmotivated? Women and the Food Crisis in Africa," *Rural Sociology*, Spring, 1987.

Italian Contributions to Agricultural History

Agriculture has a venerable history. That is clear. Less clear is when it became professionalized, with institutions for its promotion and improvement. We know of such early movements—including societies, fairs, academies, and professorships—in Scotland, Ireland, continental Europe, and early America; but there seemed to be nothing significant before the 1700s.

Now we learn that Italy can push the dates back a century or two. In an address to the International Fair in Paris in 1900, Francesco Coletti reported on Italian agricultural academies and societies, particularly in the eighteenth and nineteenth centuries. The first academy was founded in Rezzata, near Milan, in 1548. The Society of Physiocrats began in Siena in 1691, although information about their activities is lacking.

Momentum was gained in the mid-1700s, with the founding of the still-existing Accademia dei Georgofili ("friends of agriculture") in Florence in 1753. Similar organizations followed in Udine, 1759; Padua, 1769; Vicenza, 1768; Milan, 1772; Turin, 1785 and others, with activities involving experimental plots, conferences, published proceedings, registered meteorological data, and pamphlets.

Extension work came much later, when the landlord members began to be concerned about the peasants and smallholders unaffected by education and progress. Hence, the first "itinerant chair" was founded in Rovigo in 1886 to enable a young agricultural expert to promote rural education through meetings, demonstrations, and visits. That practice subsequently spread into most provinces of North and Central Italy.

Unlike early extension in Ireland, for example, when the government provided support, the Italian positions were created spontaneously through the churches, banks, and philanthropy of the rich. Governmentally supported extension did not arrive until 1904.—*from Dr. Agr. Fabio Maria Santucci, Instituto di Economia e Politica Agraria, Perugia, with a reprint of Coletti's speech in Il Dottore in Scienze Agrarie e Forestali, October, 1985.*

Call for Papers

Papers are being sought on worldwide ethnoveterinary medicine (folk knowledge and practices of animal health) for publication of an anthology. Contact Evelyn Mathias-Mundy, Center for Indigenous Knowledge for Agricultural and Rural Development, 318 Curtiss Hall, Iowa State University, Ames, Iowa 50011.

T&V (Tragic and Vain) Extension?*

by George H. Axinn, Professor,
Department of Resource Development.
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Among all of the various approaches to agricultural extension, a relatively new one, the Training and Visit System, has spread very rapidly during the past fifteen years. Its advocates claim that it is ideal for most situations and, with the help of many of the world's largest international development banks, have been using all of the influence of their money to further the diffusion of this approach in ministries of agriculture in Africa, Asia, and Latin America.

In view of the actual results, the central question of this essay is, "Where have the professional scholars of agricultural extension been while this great diffusion was going on, with excessive expectations based on erroneous assumptions?"

For example, for several decades it has been well-documented that *participation* is a crucial aspect of successful agricultural extension activity—that is, participation by the farmer clientele is essential in deciding what the program goals should be and how programs should be implemented. Agricultural extension professionals, rural sociologists, applied anthropologists, and others have documented the essential need for "bottom up" control of personnel and programs if agricultural extension is to be sensitive to the needs and interests of rural people, particularly the smaller and poorer farming men and women. *Decentralization* is a common characteristic of the world's most successful experience with agricultural extension.

Despite these well-documented perspectives, professional onlookers have allowed finance ministries and international banks to perpetuate a myth that agricultural production can be increased merely by pouring in vast quantities of borrowed money at the top—expanding the size, and then disciplining a vast army of field personnel (in absolutely centralized bureaucracies) to do face-to-face, top-down, information transfer to a handful of larger farmers.

The basic approach which the international development financers have pushed is only part of the problem. The essence of the idea of continuous training and disciplined visiting of farmers by extension staff is neither new nor wrong. However, when pressed into situations *where it does not fit,* with

Goals and Holes

"It is not possible to dig a hole in a different place by digging the same hole deeper."—*E. de Bono*

leverage of large amounts of cash and coercive pressure to use it, and when accompanied by well-funded short-term massive expansions of staff and operating accounts to unsustainable proportions, the approach may be more like a destructive epidemic than appropriate innovation.

The uninitiated reader will find this approach described in detail in several publications of the World Bank, which has been its major promoter (Benor and Harrison, 1977; Benor, *et. al.*, 1984; Benor and Baxter, 1984; von Blanckenburg, 1982; and Cernea, 1981).

The approach is based on many unwarranted assumptions. It assumes that extension field personnel are poorly trained, not up-to-date, and tend not to visit farmers, but stay in their homes or offices instead. It further anticipates that management supervision is not adequate. Therefore, it introduces a *discipline* designed to overcome these problems. It also assumes that a satisfactory two-way flow of communication between research and extension units, and between extension staff and farmers, can be achieved through this discipline.

In fact, the two-way flow is minimal. The great bulk of the information flow tends to be down through the system—from agricultural research institutions to higher extension officers, to lower extension officers, to contact farmers. In most of the world, higher status people tend not to listen to lower status people. This truth defeats the assumptions of the T&V approach. While participatory approaches which provide a voice to farmers have been able to overcome this problem, the top-down, straight-line ministry approach, even with the increased discipline, has not.

The approach also assumes the presence of subject-matter specialists, but in practice they are typically absent, or not actually professionally specialized. There is insufficient flexibility to shift messages from time to time and place to place with changing local conditions. In short, the vigorous, patterned field staff activity, as assumed, is simply not sustainable.

Readers of *INTERPAKS INTERCHANGE* have seen the official reports. Many have also seen the work of scholars and their graduate students, particularly in India, Bangladesh, and the Philippines. In contrast, the official reports tend to explain the *ideal* approach; the scholars tend to describe the *real* situation.

One of the most serious problems is the false premise that effective agricultural extension will itself result in increased farm production and productivity. When extension is evaluated as another "input," similar to fertilizer, seed, and water, amateurs may be misled, but the professionals should know better. When extension is given credit for yield increases, ignoring the contributions of research, marketing systems, and prices, the public is misled and neglected professional agriculturists are antagonized.

The farming systems development approach, the farmer participation approach, and various cost-sharing approaches are much more suitable for world-wide diffusion. These and other approaches to agricultural extension, including the Training and Visit approach, are described and compared in a forthcoming publication of the Food and Agriculture Organization of the United Nations (FAO), **Guide on Alternative Approaches to Agricultural Extension.**

In his assessment of agricultural extension in some African and Asian countries, von Blanckenburg summarizes the spread of T&V as follows: "At the beginning of 1983 the World Bank was co-financing 93 projects which applied T&V fully or in its major aspects. The system has also spread without finance from the World Bank, but largely within other foreign technical assistance projects. Implementation is in full progress in India (majority of states), Indonesia, Malaysia, Sri Lanka, and Thailand (all at national level). Most other Asian countries have started to adopt T&V at regional or project level. In at least 17 African countries introduction has started at provincial or project level since the early eighties."

However, balanced evaluations of this popularity is best given by the scholars who have pointed to weaknesses as well as strengths in the applications in Bangladesh (Singh, 1986); India (Feder & Slade, 1982; Cernea, 1981; and Shinghi, 1985); Philippines (Nagel, *et. al.*, 1983); and Indonesia (Adjid, D.A., 1985). These scholars say the overwhelming disadvantage is the high long-term costs to governments of expanding and sustaining the accustomed size of field extension staffs, plus the lack of actual two-way communication, and dependence on "simple, low-cost" technology which, while most relevant to small farmers, is increasingly in short supply.

Advocates blame these weaknesses on the inability of national ministries of agriculture to administer the system. An alternative explanation is that the approach works only on paper. In the real world it simply does not work, since its assumptions are unwarranted, and many of its ideas have proved unimplementable. With enough external "easy money" behind it, governments have been willing to install the approach. But the long-run consequences may be financially disastrous, and agriculturally disappointing.

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*The author, who collaborated with Sudhakar Thorat in **Modernizing World Agriculture: A Comparative Study of Agricultural Extension Education Systems** and several other works on the subject, takes his title from dictionary meanings: "tragic = disparity between the actual and the ideal" and "vain = marked by futility and ineffectiveness." His original bibliographic detail, here omitted, is available.

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The Puzzle of Development

Economist Robert E. Lucas, Jr., University of Chicago, has been ruminating on the mysteries of economic development, especially as shown in across-country diversity in living standards and in growth of per capita GNP.*

At the beginning of this decade, per capita income in what the World Bank called the "industrial market economies" averaged 40 times what it was in India. For the two decades ending then, the growth rate per capita GNP in the industrial countries averaged 3.6 per cent per year, more than double India's rate of 1.4, which was only a fifth of South Korea's 7.0 (or Japan's or Singapore's). That means: "An Indian will, on average, be twice as well off as his grandfather; a Korean 32 times." In the same period, Indonesia's rate almost doubled, from 3.9 to 7.5.

On this, Professor Lucas commented:

> I do not see how one can look at figures like these without seeing them as representing *possibilities*. Is there some action a government of India could take that would lead the Indian economy to grow like Indonesia's. . . ? If so, what, exactly? If not, what is it about the "nature of India" that makes it so? The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else.

*Lecture, "On the Mechanics of Economic Development," Institute of Economics, Academia Sinica, Taipei, Taiwan, April, 1986.

From Familiar to Bizarre

It is not unusual for a country to have interlocking agrarian problems, like crop substitution to turn farmers in the direction of government policy, the impact of chemicals and cultural practices on the environment and resource base, the bind of extension officials between farmer interest and government interest, the unwanted growth of some technologies with negative social benefits, and the admixture of outside aid with an implicit outside agenda. Yet all these take on bizarre proportions in Peru, where the cocoa crop and the cocaine trade put $1.2 billion into the economy with a 10 percent annual increase; where the aerial spraying of "Spike" as a herbicide promises to be effective but with debated side effects, both human and physical; and where the U.S. government's interest in eradication has brought the suggestion that since the U.S. users are subsidizing the industry, the U.S. might subsidize some other crop as aid for the impacted farmers. The familiar "protecting the small farmer" takes on a new dimension. How will the peasants be protected and who will get the credit, or be kept from getting it for terrorist purposes?
—*Clara Germani, The Christian Science Monitor, September 2, 1987.*

From Animals to Machines: Technology Transfer Story

Farm mechanization deals with technology in a most literal sense. Therefore, investigation of its uneven adoption in developing countries is instructive, as presented by Hans Binswanger, senior economist with the World Bank.* He discusses the reasons for the wide diversity, the options for extending mechanization, and the role of government policy in the choice of technology. All are presented as generalizations, rather than conclusions. The major ones are presented hereafter.

Successful agricultural growth has capitalized on the abundant factors of production: land and mechanization in the U.S.; labor, land improvements, and biological technology in Japan; and biological technology in continental Europe before shifting to the mechanical. Mechanization leads to increased yields only in exceptional circumstances, as when accompanied by high-yielding seeds, pesticides, and fertilizers. It makes the greatest impact where land is abundant and labor both scarce and moving rapidly off the land. It is the chief facilitator of the trend toward large farms, which in turn adopt new machinery faster than small farms.

When a new source of mobile power arrives, primary tillage is one of the first operations to be mechanized, along with transport (by truck rather than tractor for long distances to market). These, plus threshing and seeding, will precede crop husbandry in mechanization. Dependent on labor costs, harvesting is rarely mechanized in low-wage countries. Seeding tends to be mechanized before harvesting in labor-abundant countries, with reversal when labor is scarce.

As to speed of mechanization, individual operations are covered quickly, usually without slowing by supply bottlenecks in the production, distribution, and servicing of machines. The longest lags between invention and adoption occur when inventors are addressing operations for which little demand exists as yet. Subsidies to mechanization tend to affect output little, while damaging employment. Finally, public sector and corporate research have stimulated little machine innovation, which has generally been in the hands of small manufacturers closely associated with farmers, with corporations becoming significant only in the later stages.

These generalizations are supported by 12 statistical tables documenting the history of farm mechanization.

*"Agricultural Mechanization: A Comparative Historical Perspective," *The World Bank Research Observer*, January, 1986.

INTERPAKS

Helpful Ideas: Old and New

World Development Report 1988. World Bank: Washington, D.C., 1988 (307 pages).

This latest in the World Bank's annual review of the global economy has the usual impressive analysis, statistics, and graphics that undergird the popularity of the series. The central theme this year—the impact of government policy through public finance—will be of special interest to policy-makers and the academic experts, with tough going for those down the line closer to the development targets.

The crucial and overriding role of government policy in development, both promoting economic growth and combatting poverty, is made clear. The emphasis on market forces in all reform recommendations (including "a greater role for the private sector" in agriculture) reiterates well-established Bank policy, while conceding that a governmental role is also essential. *How* government does it is the major issue.

Although some debatable matters like increased user charges are cautiously advised—sometimes unclear as a remedy for too many existing benefits to elites—the report consistently focuses on the alleviation of poverty. In summary, the public finance reforms proposed must have that focus, too.

Jeanne Bisilliat and Michele Fieloux, **Women in the Third World: Work and Daily Life.** Associated University Presses: London and Toronto, 1987 (97 pages).

Carmen Diana Deere and Magdalena Leon, editors, **Rural Women and State Policy: Feminist Prespectives on Latin American Agricultural Development.** Westview Press: Boulder and London, 1987 (282 pages).

Both books are severely critical of men, of capitalism, and of national governments. As a baseline for many books on the general subject, the first presents a grim, if not surprising, picture. Whatever the differences in their societies, religions, and cultures, women everywhere in the Third World "are acquainted with the same working conditions" and "they experience the same difficulties and the same rebuffs." The litany of common indignities and deprivations leads to the conclusion that the Third World woman "is without a future and without prospects," although she is beginning to understand that she is being savaged "in this net . . . that the capitalist economy exploits so cold-bloodedly."

The second book, available in English and Spanish, consists of papers from a symposium hosted by the University of Los Andes, Bogota, Colombia, July 1985, with Ford Foundation aid. It is a research synthesis of knowledge gained in the past decade about the position of women in Latin America. Bad news emanates from "agrarian capitalist development," where studied. Less bad news comes from Cuba and Nicaragua, where state policy is positive toward women and ideology is egalitarian, but neither are these "sufficient conditions to ensure women's incorporation into social production on the same terms as men."

Giving women access to needed resources is important, but not enough. Rural women must become "new social actors" and an organized political force. They must be "empowered"—that is the key word—and that must follow gender consciousness among women and a change in gender relations within the family.

The first book concludes that nation states must *do* something, not stopping at mere awareness, but the second book derives little satisfaction from what is being done. Of all development problems, this is one of the most intractable.

Niels Röling, **Extension Science: Information Systems in Agricultural Development.** Cambridge University Press: Cambridge and New York, 1988 (233 pages).

This study is about information systems in relation to the planned change of voluntary decisions in agricultural development. As an advanced textbook, it covers new ground, or old ground with new insight: the role of extension as a means of policy implementation rather than the nitty-gritty of methods, training, programming, and management. That role is seen as capitalizing on the targeting of an information system on agricultural problems, especially those of the resource-poor farmers, to link research, extension, and use together dynamically.

In the final chapter, attention is given the development of normative systems at the Technical University of Berlin, the author's own Agricultural University in the Netherlands, and the University of Illinois through INTERPAKS. The last is seen as "a 'template' which can be overlaid on the real-life system to show up its weaknesses and opportunities." It is also seen as being more descriptive than quantitative, with insufficient measurement of both the control of the farmer over the system and the "externalized cost."

H. J. Duller, **Development Technology.** Routledge & Kegan Paul: London and Boston, 1982 (192 pages).

Excellent on historical background and analysis, this volume belongs alongside the Schumacher books. It is better on description than prescription. While it comes out at the now-familiar place—appropriate or intermediate technology derived from the Third World conditions rather than from the misread analogy with the industrialized nations—it arrives by a more compelling and interesting route. Current population growth in the developing countries is pushing the labor force far beyond the absorptive capacity of the modern, large-scale industrialization model. "The strategy of the 1950s is unworkable."

Cotton Development Programs in Burkina Faso, Cote d'Ivoire, and Togo. World Bank: Washington, D.C., 1988 (126 pages).

The chief attraction here, in this Operations Evaluation Study, is the success story and its reasons, in contrast to the general agricultural record in Africa. The seven loan/credit projects studied represent the Bank's effort to aid smallholder development under rainfed African conditions (unlike the green revolution conditions in Asia) in 12 francophone countries. The eight major lessons learned are presented, including some negative effects to be avoided and a departure from the common privatization recommendation as "necessarily the right answer to financial and marketing difficulties."

E. F. Schumacher, **Small is Beautiful: Economics as if People Mattered.** Harper & Row: New York, 1973 (290 pages). Originally Blond & Briggs: London, 1973.

Anyone interested in development must know something about Schumacher's provocative essays, whether they are regarded as on-target or off-beat. His ideas, or ideas he has chosen to advocate, about the errors of production, education as the greatest resource, and "technology with a human face" have left indelible marks on the literature of economic and agricultural development. The best illustration is his elucidation of "production by the masses" instead of "mass production"—or what he calls "intermediate technology . . . self-help technology . . . or people's technology . . . which is not reserved to those already rich and powerful."

In an essay on development, he also castigates the materialist philosophy of well-intentioned foreign aid for overlooking "the most important preconditions of success," which are both human and generally invisible (like "educational background . . . the precondition of all"). The thrust of several essays is that technological development needs a new direction, as suggested by the title of the book—"back to the real needs of man, and that also means: *to the actual size of man.* Man is small, and, therefore, small is beautiful."

Fifteen years have not diminished the seminal quality of the ideas from this German-born Rhodes Scholar who lived the life of a professional economist but marched to a different drummer.

Bruce H. Jennings, **Foundations of International Agricultural Research: Science and Politics in Mexican Agriculture.** Westview Press: Boulder and London, 1988 (196 pages).

This book is disturbing. It intends to be. It attacks everything conventional about agricultural development. And it names names.

The Rockefeller Foundation turned Mexican agriculture from promising reform to mere research. The imposition of the U.S. land-grant university model was a mistake. The resulting scientific community not only monopolized science knowledge but used it for the "obliteration of other kinds of knowledge", everything else being "non-science".

A desired social outcome was obtained by "the manipulation of ideas" and the reorganization of Mexican agricultural institutions, whose "important product was a particular mentality, as well as crops." This "institutional domination" also set the competency standards for professional training, emphasizing the technical and the production-oriented to the deliberate exclusion of considerations of "agrarian reform, collectivization, and politics." Hence emerged scientists "whose standards legitimize an unequal social order" and whose vision excludes the social consequences of applied science.

All this is the fall-out from the author's analysis of the evolution of science-politics tensions as the Rockefeller Foundation's Mexican Agricultural Program became CIMMYT, the International Maize and Wheat Improvement Center, and then the prototype for the 12 other international research centers to follow. The zeal of presentation about particular actors and courses of action leaves quite uncertain what is misguided and what is mischievous if not malicious.

The reader will have to judge whether this is another attack on systems allegedly working at the wrong end of the agricultural economic spectrum, a case study in neo-colonialism in Mexico, a discourse on political and economic empowerment, a plea for politics as well as "objective" science, or a welcome counterweight to the notion that science is the *only* avenue to agricultural development and that social problems can be solved merely "by extending human control over physical, production processes."

Around the World

China's Policy Bows to Culture

The relation between successful policy and deep-rooted culture is reflected in China's new flexibility on the old "one-couple, one-child" dictum. The New China News Agency reports that, as a trial, two provinces will henceforth permit peasant couples to have a second child if the first is a girl. This is a concession to widespread peasant practice and to the labor needs of peasant farmers; however, the intention is still to keep the nation's population below the 1,200,000,000 ceiling set for the year 2000.

Policy and Progress

Government policy is a critical element in agricultural development as currently illustrated in Sub-Saharan Africa. Last year, agricultural production increased 1.5 percent in countries letting the market determine prices (as two-thirds of them now do), whereas an almost equal decline occurred in countries fixing prices or controlling distribution of food. Peasant contribution to national production increased from 10 to 64 percent in Zimbabwe, where loans to small farmers increased from 4,500 in 1979 to 90,000 in 1985.

Both good and bad news had other origins: the bad news that civil war has caused Angola to import half of its food for its own people in contrast to expectations at independence of producing enough to feed half of Africa, and the good news that lifting of the drought in southern Africa brought a 20 percent increase in spring harvests. More good news is that 24 countries now devote a quarter or more of their budgets to agriculture.—*New York Times, August 21, 1988.*

UNDP Short Courses

Information about the three- and four-week training courses for 1989 on all aspects of rural development projects in the Asia-Pacific countries may be obtained from DTCP/UNDP, 5th Flr., Bonifacio Building, University of Life Campus, Meralco Avenue, Pasign, Metro Manila, Philippines.

Russian Rural Revival

"I think all the delegates will unanimously support the opinion of the comrades who spoke of the need at this stage to concentrate the main energies on a solution to the food problem and to make it a first priority task to render all-round assistance to our peasantry and to revive agriculture. . . .

"We have already found many reserves and directed additional capital investments and resources into this sphere through various channels. It is necessary that all this should be genuinely mastered and put to use. To boost the development of the countryside—this is simply our sacred duty."—*Mikhail S. Gorbachev in closing speech to Communist Party conference in July, 1988, as reported in the New York Times.*

By, With, For Farmers

In 1987, three workshops were held in Kenya, Tunisia, and Nepal on how to promote farmer involvement in rural development, sponsored by the International Fund for Agricultural Development and the International Federation of Agricultural Producers. The preface to the consolidated report, **Greater Farmer Participation in Development Projects and Strengthening Farmers' Organizations**, advises:

> Sound and sustainable rural development is likely to be successful if it is carried out in the spirit: BY farmers, WITH farmers, and FOR farmers. . . . Perhaps everyone involved in projects and development should be reminded:
>
> —build on what people already know
>
> —take account of what farmers say they really need and want
>
> —respect local customs and traditions
>
> —pay attention when farmers are reluctant to follow advice
>
> —do not regard peasants as ignorant or backward, as their lifelong practical experience is often at least as relevant as the knowledge of experts.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

New Research-Extension Study

The International Fund for Agricultural Development (IFAD), a specialized agency of the United Nations located in Rome, has contracted with INTERPAKS to conduct a global analysis of the IFAD agricultural research-extension projects. Burton E. Swanson, INTERPAKS Research Director, will head this comparative study, which will rely heavily on the INTERPAKS analytical framework for assessing national technology systems.

Warren Peterson, an INTERPAKS associate, will be the lead analyst for the study and will also conduct field work in Thailand and the Philippines. John B. Claar, first Director of INTERPAKS and now a senior associate, will conduct case studies of projects in Turkey and Egypt. He will carry out field work in collaboration with Samir El Sabae Ahmed, National Research Coordinator for ICARDA, who is on sabbatical leave with INTERPAKS. Alberto Zuloaga, Agricultural Research Director for the Central Region of Mexico and also on sabbatical leave with INTERPAKS, will conduct case studies in Bolivia and Guatemala.

Case studies of research-extension projects in the Central African Republic, Benin, Zimbabwe, and Zambia will be carried out by two Dutch colleagues. Romy Borooah, Office of Women in International Development, will conduct 12 to 15 desk-top studies of IFAD projects as a part of the overall analysis.

New Jobs for Woods

In August, John L. Woods, former Director of INTERPAKS, assumed new duties, combining leadership for international programs in the College of Veterinary Medicine and an appointment as a Senior Associate with Pac Mar, Inc., a Honolulu-based consulting firm for rural development.

Progress at Egerton

Vice Chancellor Robert M. Berdahl gave the inaugural address at Egerton University, Kenya's newest, at Njoro on October 11. Other UIUC representatives were W. R. Gomes, Acting Dean, College of Agriculture; Burton E. Swanson, Project Coordinator for the Egerton-UIUC partnership; and John W. Santas, Training Coordinator.

Two top officials of Egerton University in Kenya —Juma Lugogo, Deputy Vice Chancellor, and Paul Metto, Administrative Registrar—visited the Urbana-Champaign campus July 9 to 12 in furtherance of the UIUC-Egerton partnership.

Swanson Designs FAO Study

Burton E. Swanson, INTERPAKS Research Director, was in Rome August 22–26 to design a worldwide study of national extension systems for the Food and Agriculture Organization of the United Nations (FAO). It will be conducted during the coming year, with the results to be presented at a Global Consultation on Agricultural Extension to be held in late September, 1989. The focus is on the human and financial resources being invested in agricultural extension throughout the world.

Director Honored

John J. Nicholaides III, Director of the UI Office of International Agriculture, of which INTERPAKS is a part, has been named chairman of the Joint Committee for Agricultural Research and Development, the operational arm of the Board for International Food and Agricultural Development, USAID. He was vice chairman in 1987–88. Also, he spent the period August 27 to September 12 in Pakistan in connection with the University's USAID-funded project for the improvement of instruction, research, and extension in the North-West Frontier Province Agricultural University.

Short Courses Repeated

During the summer, two INTERPAKS courses were offered as in previous years. "Training of Trainers for Agricultural and Rural Development" had 16 participants from Kenya, Zambia, Ghana, Malawi, Tanzania, and Peru, with Violet M. Malone, Professor of Extension Education, as instructor/coordinator.

Twelve participants from Botswana, Grenada, Lesotho, Malawi, Pakistan, Sri Lanka, Tanzania, and Zimbabwe enrolled in "Organization and Management of Agricultural Extension Systems," September 5 to 30. The instructor/coordinator was John B. Claar, former Director of INTERPAKS and retired Director of the Illinois Cooperative Extension Service.

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African Agriculture: What Should Be Done?

Given the serious condition of Sub-Saharan agriculture, it is not surprising that sages, seers, and scholars—doctors and donors; experts and "expats"—are prescribing remedies. And it is not surprising that the recommendations range from evolution to revolution and from minor differences to almost complete opposites. The question is one: What should be done? The answers are myriad.

Africa is itself equally contradictory. It is the poorest part of the world, but it is rich in potential for food production. It was a net exporter of food less than 30 years ago but it is now an importer of 8,000,000 tons each year. It has half a billion people, heading for a billion in 20 years, but it already has 100,000,000 without enough to eat. The Sub-Sahara has more countries (45) than North America and Europe combined, but it has a total GNP less than that of Spain.

Carl K. Eicher, agricultural economist at Michigan State University, carefully picks his way through the contradictions and opposites in an address, "Food Security Battles in Sub-Saharan Africa," given to the VII World Congress for Rural Sociology, June 26–July 2, 1988, in Bologna, Italy. He emerges with a comprehensive view, not discarding proposed "solutions" so much as balancing the extremes, setting priorities, operating with long-term perspectives (both back into history and forward in time), and substituting country-specific consideration for universal causes and solutions.

However, he does begin by criticizing much conventional wisdom: too little attention has been given political failure as a contributor to agricultural failure; too much emphasis has been placed on projects rather than policies, short-term rather than long-term; too little allowance has been made for the hard reality that Africa is far behind Asia and Latin America (perhaps generations) in "scientific and human development and political and institutional maturity"; and donors have too much persistence in the "revolving door operations of foreign advisors and overseas training" with little in-country capacity left for sustainable institutions.

On the never-ending debate between production and equity, food availability and food access, Eicher concludes that while "ending hunger by reducing poverty and increasing access to food" seems to be the current winning idea, it is an immediate fix that diverts attention from the inescapable "need to lay the foundation for doubling food production in Africa." "Both the food availability and food access views have a degree of validity and urgency. Both are mutually

The Plow Then and Now

Let the mighty and great
Roll in splendor and state,
I envy them not, I declare it.
I eat my own lamb,
My own chicken and ham;
I shear my own sheep and I wear it.

I have lawns and green bowers,
Fresh fruits and fine flowers,
The lark is my bright morning charmer.
So God bless the plow
In the future and now—
A healthy and long life to the farmer.

—Old English Rhyme

"I have often thought that if Heaven had given me choice of my position and calling, it should have been on a rich spot of earth, well watered, and near a good market for the production of the garden. No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden."

—Thomas Jefferson

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

complementary and reinforcing. Both are legitimate but partial approaches to ending hunger in Africa."

Three major battles have to be faced in Africa: to double food production, to break the famine circle, and to combat poverty as a barrier to food access.

Doubling the annual rate of growth in food production is needed to keep up with population growth, to reduce food grain imports, and to allow for some new per capita income to be spent on food. This is long-term business as shown by the failure of crash programs; so it is better to "go back to the drawing boards and start over," taking into account Africa's current institutional immaturity, what technology is on the shelf, and the constraining context of macro economic and political variables.

The challenge is "to develop future-oriented agricultural policies that can be implemented by small and middle-sized farms . . . and a growing agricultural labor force that will triple in size over the next 40 years." That means a shifting of political leadership from mimicking the industrial nations to putting more investment into agriculture—from 15 to 25 percent perhaps—and also into the modern inputs which come from the non-agricultural sectors. This is another plea for a balance: "the agricultural and industrial sectors are in need of each other for both inputs and markets."

The prescription for doubling food production is to get donors and African governments to adopt a "policy package" of the "five prime movers of agricultural development"—favorable economic environment, human capability, new technology, rural capital formation, and rural institutions (credit, marketing, etc.). Zimbabwe's smallholder "maize revolution" is an example, although it contains a cautionary lesson not to get locked into an ideological commitment to small farms to the neglect of the middle-sized, which can be innovative, risk-taking, and employment-generating.

In offering recommendations on the second battle —breaking the famine cycle—the author cites success in Botswana and emphasizes the need for more "commodity and agronomic research on the foods . . . that subsistence families produce for themselves."

On the third battle—combating poverty with increased food access—Africa has a long way to go. Shocking numbers (20 to 30 percent) of African children are malnourished, expanding food access has a "woefully inadequate" knowledge base, and raising per capita income is only a long-run, not short-run, prospect. Structural adjustments and needed research may require a time frame of 10 to 15 years. Short-run measures, cash cropping, and small-scale rural industries for income generation should not be neglected.

After three decades of independence and foreign aid, Africa needs less emphasis on short-term projects and more on long-term policy. More attention must be given to such prime movers as developed human capability, institution building, and a stronger knowledge base on a host of issues—including the urgent need that the hunger equation of food availability and food access "should be tackled from both sides simultaneously."

Range Management Extension: Pastoralists' Role Needed

by Abdillahi Aboud,
Egerton University, Kenya

Most Third World countries planned for economic independence after the attainment of political independence. Only limited economic dependence on developed countries was expected. It was necessary then to exploit all the available agricultural resources in order to maximize production, to meet domestic demands, and to have surplus for export. Special emphasis was given to uplifting the rural masses who inhabit the degraded agricultural lands which were neglected by the colonial governments. Development plans were made with the main objective of raising the national economic indices, such as the gross national product (GNP), as measures of economic development, through loans, grants, new technologies, and expertise provided by donor countries.

However, later evaluation and monitoring of these programs indicate that they had not been as effective as was expected. Tremendous amounts of money and effort had been lost, the lands continue to be degraded, and aid still plays a major role.

While numerous other variables might have influenced this poor performance, it is here contended that with emphasis laid upon raising the economic indices, sociological factors tended to be overlooked in the designing and planning of the projects, resulting in disastrous implementation. This contention is supported by findings in my research, looking at the effectiveness of range management extension programs on pastoral societies of Kenya. It was determined that vital sociological factors were overlooked in the designing and planning of the ranching projects as a result of not involving the pastoralists/ranchers.

Inadequate involvement of pastoralists creates three major problems in the project implementation. First, there are subsequent reactions of the pastoralists that emerge with "directed-contact change." The pastoralists are not only suspicious of foreigners and their new ideas but also abhor enforced projects. In some cases the pastoralists do not recognize the need for such programs, or worse still, the programs actually contravene their cultural values and norms.

For instance, as advocated in the range management projects, the control of livestock numbers and destocking for maintenance of proper stocking rates, the settlement of pastoralists in ranching units, and the commercialization of livestock production are some factors that are bound to meet the pastoralists' resistance. On the other hand, adequate involvement of the ranchers in the initial designing and planning of their programs would generate a "feeling of belongingness" to the programs, and resistance would be reduced. This may involve modification and compromise on the program objectives for smooth implementation.

The second problem arising from inadequate involvement of the pastoralists is that traditional tech-

nologies more suited to local conditions are not given attention. Modernized traditional techniques may be adopted more rapidly than complete new ones. For instance, the burdizzo (castration iron) is a modern tool replacing the old traditional method of castration of young steers for fattening. Since castration has been practiced by pastoralists for a long time, adoption of a modern tool came smoothly and rapidly.

Interestingly enough, many range management and animal husbandry "innovations" are practices that are found in traditional forms. For example, among several pastoral societies, there is a norm that certain pastures be grazed only lightly to allow the grass to revegetate and establish. This serves as a strategy against over-use of the grazing resource and is similar to some modern range management techniques.

Also, the concept of rest-rotation grazing system is traditionally based on wet and dry season grazing, while the modern range management techniques utilize both this approach and the calendar rest-rotation system. However, in most range areas, the traditional system tends to be more efficient and suitable.

Furthermore, the pastoralists' knowledge of their rangelands and range and livestock management is so vast that very effective range planning can be done solely from this source. The pastoralists in the North-East Province of Kenya, for instance, know all types of soils in their rangelands and the different vegetation types of each soil. They not only have names for each of these soil types, but also know the salt content desirable for their livestock use for each soil. They are also familiar with most plant species and the feeding preferences of livestock. The pastoralists' livestock movements take all these factors into consideration.

The pastoralists' ability to synthesize all this environmental and biological information into a plan for livestock husbandry is amazing. These ideas could be efficiently utilized by the range management planning teams when developing the ranch plans.

The third problem arising from inadequate involvement of the pastoralists is in the neglect of pastoral social organization, especially the traditional leadership. Range projects must encompass some kind of acceptable leadership among the pastoralists to assume effective implementation and smooth running of projects. Unacceptable leadership has been a source of frustration and sabotage of many projects.

As a concluding remark, it can be stated that while the performance of Kenya's range management programs in pastoral societies is commendable, there is still room for improvement. But it takes more than economic factors to generate and measure development; it needs consideration of sociological issues also.

Dependency Theory

"When you are riding on the cow's back, you must not say bad things about the cow."—*Haitian proverb.*

Lessons from Malaria Control

Given the impact of malaria on underdeveloped countries, to say nothing of its millennia-old history, successful countermeasures should hold lessons for attacking many other intractable development problems. The applications and implications are covered by Uriel Kitron, Doctor of Veterinary Medicine, University of Illinois at Urbana-Champaign, in an article, "Malaria, Agriculture, and Development: Lessons from Past Campaigns," the *International Journal of Health Studies*, Vol. 17, No. 2, 1987.

Kitron derives his lessons from the history of anti-malaria measures in Palestine/Israel, Italy and southern U.S. with the later successes of the Tennessee Valley Authority. What the successes have in common is an integrated approach (somewhat like Integrated Pest Management) combining the biological with the social, political, and even agricultural in ways that are flexible, site- and species-specific, and based on research and education.

On "the complex association between malaria and agriculture," the author discusses the role of water uses in rural areas (reclamation, cultivation, and irrigation); the Green Revolution's relation to "the development of insecticide resistance to *Anopheles* vectors"; and the multilevel malaria-agriculture interaction brought on by labor migration, urbanization, and nutritional level. Successes call for community participation and integration with the local health services, and usually with independence from external finance and know-how.

But "high tech" can surely solve such problems by some such technique as "a vaccine as a magic bullet". Not necessarily, because that "ignores local characteristics and constraints and is dependent on the import of resources" into the least-able malarious countries. It is no panacea but may be useful, particularly "in protecting expatriates or military expeditions." However, "without a strong infrastructure of health services, minimal socio-economic conditions, attention to local characteristics of malaria transmission, and integration into a broader campaign, vaccination can play only a limited role."

Also, the role of government cannot be omitted. It is essential in the needed coordination and financing, and in the maintenance of related and supportive policies in general health, education, and agriculture.

In summary, this article implies from the malaria-agricultural lessons that development often requires an integrated or systems approach; and where it is attempted, special attention should be directed to constraints and opportunities in research, education, relevant institutional access, appropriate technologies, uses and abuses of land and water, community and user participation, and governmental facilitation.

INTERPAKS

Social Marketing for Farmers

Extension for farmers would be improved if more use were made of what is now called "social marketing," writes Howard E. Ray.*

Mass media advertising, as if for soft drinks or soap, is not sufficient. For the more complex and socially-beneficial objectives of agriculture, there is need to "add more sophisticated marketing strategies" for "social ideas that consider product planning, pricing, communications, and marketing research."

Three elements are needed for a successful social marketing package: farmer orientation, targeted change (directed to farmer when needed), and use of all media groups integrated for multiplier effect. To maximize mass communications support for technology transfer, these guidelines are offered:

- verify that necessary conditions for change are present;
- specify behavioral objectives;
- know the characteristics of the target population;
- use media to complement field staff work;
- get feedback from target group;
- localize messages;
- provide staff development/training;
- set priorities;
- use media and face-to-face relations in a mutually reinforcing system; and
- most important of all, know the farmers and continually adjust to their needs and constraints.

*"Communicating with Farmers: Lessons Learned and to be Learned," *Development Communication Report*, No. 58, 1987.

Farmer-Extension Contacts: Evaluation from Pakistan

Empirical research among 300 farmers in the Northwest Frontier Province of Pakistan puts to the test the commonly stated shortcomings of farmer-extension contacts.* It covers levels of contacts, breadth of contacts, and utility of contacts.

Findings showed that "relatively few farmers have contact with extension in the traditional one-on-one mode," despite a high ratio of extension assistants to farmers. In two growing seasons, 88 percent of the farmers were not visited and three-fourths had not contacted the extension office. Conventional wisdom seemed to be confirmed about factors influencing levels of contact: they did tend to be selective, showing a high correlation with "progressiveness" and literacy and an unimportant correlation with amount of land farmed, age, and location.

The research asked many questions about the utility of both extension and other sources of advice, with mixed results. While extension had a "fairly positive image," at least with no need "to turn around a negative perception," it was found to be "neither better nor worse as a specific source of help than any of the other sources" (i.e., other "better" farmers, input dealers, and relatives). Hence, there is a "disquieting interpretation" that extension appears to have no comparative advantage over other sources in which information dissemination is not a major function.

*Andrew J. Sofranko, Asmatullah Khan, and Gary Morgan, "Insights into Farmer-Extension Contacts: Evidence from Pakistan," *Agricultural Administration and Extension*, Vol. 30, No. 4, 1988. (Based on research under contract between USAID and the University of Illinois.)

Universities Organize To Transfer Technology

U.S. universities, especially those with land-grant type colleges of agriculture, have sought for many years to capitalize on the home gains and the overseas services of technical assistance programs abroad, particularly in the developing nations. One vehicle has been the joining together of several universities in consortia committed to strengthening their international dimension through programs of professional graduate training, faculty-student exchanges, technical/development assistance, and advisory services overseas. Some programs have been done through private channels but most have been funded under contract with governmental agencies engaged in technical assistance abroad.

One of the earliest of these groupings is the Midwest Universities Consortium for International Activities (MUCIA), founded in 1964 and now made up of eight state university members from the adjacent states of Minnesota, Wisconsin, Iowa, Illinois, Indiana, Ohio, and Michigan. Its outstanding contracts have run as high as $170,000,000 for worldwide services. Following this regional pattern, eleven public universities from the western U.S. states make up the Consortium for International Development (CID), headquartered in Tucson, Arizona. Still another is the Mid-America International Agricultural Consortium, located in Lincoln, Nebraska, with five members. A much larger grouping of 33 comprises the South-East Consortium for International Development operating out of Chapel Hill, North Carolina.

A small brochure of text and color photographs has recently been issued by MUCIA, entitled **Agricultural Development**, describing the consortium's proffered priority services in planning/policy, research/extension, education/training, and natural resource management. It may be obtained from the headquarters office: MUCIA, Riverwatch Tower/Suite A, 364 West Lane Avenue, Columbus, Ohio 43201.

Extension Changes Proposed in Taiwan

Long-discussed changes affecting Taiwan's agricultural extension system are currently unfolding with regard to the major components—the unique use of farmers' associations, the role of district agricultural improvement stations as research-extension linkages through subject-matter specialization, and the governmentally co-opted services of university professors in selected fields of need.

In reporting on these developments in December, Frederick P.N. Chang, Chief, International Cooperation Division, Council of Agriculture, wrote: "This Council will submit to the Cabinet an agricultural extension bill within three months. In this bill, the agricultural extension system is composed of district agricultural improvement stations, which act as the core set-up, and extension professors in the fields of fishery and agriculture. In the future, the farmers' associations will focus on assistance in farm management and their other functions like marketing and credit operations."

Also, more governmental funds are going into extension (NT$65,000,000 in FY 1989 from central and provincial sources) in response to implementation of a farmers' health insurance program which puts 10 percent of the premium on "about 100 township farmers' associations," with some impairment of their traditional ability to finance agricultural extension. This will have the effect of shifting somewhat the traditional balance between governmental support and farmers' association support for extension.

Needed: Subversive Aid

"To put it baldly, good aid, in many countries, is and should be subversive. Subversive of the basic unfairness which is part of underdevelopment. Aid which just provides symptomatic relief for poverty is a cruel hoax to people in LDC's, and to our own people. Aid must work to deliberately steer more opportunity and more power to the most powerless people: women, the landless and others who are marginalized."—*Bernard Wood, North-South Institute, Canada.*

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Thomas Jefferson As Agriculturalist

Within every great public figure, there is a private figure also. Thomas Jefferson is a fascinating study of both—and an unconventional one. While he was serving as President as public figure, he longed secretly as a private figure to be in his garden and on his farm at Monticello. His land was his first love, while he called the Presidency a "splendid misery." What he recorded and did not record are significant. He did not want his Presidency recorded on his tombstone. It could and would speak for itself. In contrast, he kept in his own hand a meticulous record of his agricultural interests for more than 60 years.

These appear in a new volume edited by Robert C. Baron, both the original records and commentary about their relation to Jefferson.* We are reminded of much and we learn much we did not know. He was an inventor and innovator in agriculture, as in other fields. He said the greatest service to one's country is to add a new plant, which he did many times through searches abroad, importations, and plant breeding. He also invented a moldboard plow which won a gold medal from the Agricultural Society of Paris.

If he was an early innovator, he was also (in current vernacular) an early extensionist. "Diffusion of knowledge" was a favorite theme, not only in the sense of schooling but also in the needful sense of disseminating practical knowledge, old and new, to other farmers. He wrote hundreds of letters about new practices and varieties, including the enthusiastic promotion of contour plowing as a conservation measure. He saw far into the future in suggesting that every college and university should have a professorship of agriculture, honoring "a science of the very first order."

Finally, he knew the ultimate target, where the impact was needed—on the lowliest, the man of the soil. In fact, he said of himself that he combined "a *theory* which may satisfy the learned, with a *practice* intelligible to the most unlettered laborer." That kind of transfer is nowadays most honored in the breach—in professionalese to impress other professionals, largely unintelligible to the farmer unless filtered skillfully through an interpreting "transfer agent."

The **Farm Book** also implicitly carries a tragic historical reminder. It has many entries about overseers and slaves (those inherited, those born, those dead, those receiving blankets). These are reminders that we all live in interlocking systems with varying degrees of tightness, tending to set the outer bounds of our thought and action. So it is with systems of land tenure or of agricultural labor supply. So it was with Jefferson, who lived with slavery while advocating eventual emancipation.

***The Garden and Farm Books of Thomas Jefferson.** Fulcrum: Golden, Colorado, 1987.

The University and Globalization:

Where We Come From —

INTERPAKS INTERCHANGE readers may want to know "where we come from" since, as some wit has said, where you stand depends on where you sit. INTERPAKS and its journal come from:

An American university

- One of the land-grant type of "people's college" known for its service to its state and people
- One that fostered from the beginning a College of Agriculture devoted to educating rural youth, discovering new knowledge and serving farmers who serve the nation
- One that serves both rural and urban needs through campuses at Urbana-Champaign (36,000 students) and Chicago (24,000 students).
- One with educational programs and services which, now, when the dollar sign is put before them, require resources of more than $1,000,000,000 a year

A particular state among the 50 of the U.S.A. — Illinois

- One with approximately 12,000,000 persons
- One in the agricultural heartland of the country
- One with an agricultural/industrial, city/country balance called a microcosm of the nation itself
- One that supplies about 40 percent of the University's budget
- One the University serves directly through a Cooperative Extension Service and its 400 resident agents who blanket the state

A nation that epitomizes "development" on a new continent

- One that gave an original grant of land to stimulate Illinois to found its state university
- One that supplies 11 percent of the University's budget, chiefly through contracts and grants, including the partial undergirding of agricultural research and extension
- One the University serves in return, with trained professionals, objective research, and the application of knowledge both at home and overseas, as in technical agricultural assistance to developing countries.

The President's Message

In his capacity as President of the National Association of State Universities and Land Grant Colleges, speaking on the occasion of that Association's 101st annual meeting, November 15, 1988, University of Illinois President Stanley O. Ikenberry said: "Globalization of the academic enterprise may be our greatest challenge." The requirements of "the changing nature of the world" call for changes also in student instruction, in university research, and in institutional outreach.

International studies should not be specializations for a few students but, rather, a part of general education for all. Research by universities, which now do more than half the nation's basic research, must be better geared to international competitiveness—to staying on "the cutting edge of science and technology"—and that means more R&D expenditures, "modernization of science facilities and equipment," and greater emphasis on "graduate education and life-long training in science and technology."

Alluding to significant contributions of the past, President Ikenberry closed by saying that universities, like nations, are never finished and that "America's land grant and state universities are front and center in this drama."

Students from 105 Countries

A record-breaking total of 2,569 foreign students are enrolled on the Urbana-Champaign campus this year, up five percent over last year, which was up 10 percent over 1986–87. Most of these are engaged in graduate studies leading to advanced degrees in professional fields.

Area Studies Centers

There are five Language and Area Studies Centers located at the University of Illinois at Urbana-Champaign, focusing on major geographic regions throughout the world: African, East Asian and Pacific, Latin American and Caribbean, Russian and East European, and South and West Asian.

Advancing Science and Technology

The Director's Message

In no part of the University is President Ikenberry's message on the globalization of the academic enterprise taken more seriously than in the College of Agriculture. That is not only because agriculture is a science without national boundaries, but also because agriculture offers unusual opportunities for direct involvement overseas, in mutually beneficial partnership with people and agencies in the developing countries. We strongly endorse University of Illinois at Urbana-Champaign Chancellor Morton W. Weir's statement made in a campus address on April 19, 1988 that we must assure that our graduates "have the background necessary to understand and appreciate other cultures and the wonder and beauty of their world." Only by being involved internationally can we better prepare our students to live in a global society and to compete in a global economy.

To ensure that the international dimension is specifically fostered, the College was one of the first in the country over two decades ago to establish and to continue an Associate Dean position for international agriculture, coequal with each of its other priority functions—instruction, research, and extension. I view the international dimension as the common rung in the three-legged stool (instruction, research, and extension) that comprises the land-grant university system, thereby substantially augmenting its strength.

The Associate Dean directs the Office of International Agriculture, which is the administrative, coordinating, and promotional unit for the international focus, although all departments and units have day-to-day operational responsibility for all kinds of international activity. With the advent of Title XII, the Director was also appointed one decade ago an Assistant Vice Chancellor for Research for the campus, again underscoring the strong commitment of both the College and the University to international agriculture.

A major way of contributing to international agriculture is through technology development and transfer. The University of Illinois already has extensive facilities in those fields and is steadily building human and physical capacities to stay on the leading edge of agricultural change. On the physical side are the new Biotechnology Building, pictured in the July, 1988 issue, and the new Beckman Institute, pictured below. These state-of-the-art facilities, soon to be completed at a cost of more than $80,000,000, will greatly enhance our agricultural research capacity—the Biotechnology Building directly and the Beckman Institute through its multidisciplinary approach to the in-between areas often neglected heretofore. In addition, technology development will benefit from the University's recently established national centers for supercomputer research and applications.

It is from these enlarged horizons at home that the University of Illinois envisions wider horizons abroad.—*John J. Nicholaides, Director, Associate Dean, and Assistant Vice Chancellor for Research.*

The Beckman Institute for Advanced Science & Technology

This newly occupied $50 million building, located on the Urbana-Champaign campus, is the latest addition to the research capability at the University of Illinois. It will enable the University to remain in the forefront of scientific research and its technological applications.

Further Discussion Of T&V Extension

*by V. Venkatesan**

The article by Professor Axinn (November, 1988 issue of *INTERPAKS INTERCHANGE*) is perhaps the least balanced of all the critical assessments of the Training and Visit system of extension (T&V) which have appeared so far. It contains more rhetoric and prejudice than logic; and many statements are factually incorrect, revealing a gross ignorance of the system and how it operates in the field.

The article implies that T&V lacks farmer participation and that it is not "bottom up." Nothing can be farther from truth. The very foundation of the system is understanding farmers' needs, identifying the farm-level constraints, and extension actively participating with researchers in the generation of relevant technology. From wide field experience in India and Africa, I can say that there are countless instances in which farmers actively participate in the process of generation and transfer of technology.

Professor Axinn states that the system relies on "massive expansions of staff" and "unsustainable operating budgets." This again would not be borne out by facts. I wish he had quoted figures to support this statement. In almost all countries, particularly African countries, the system has only operated with the existing staff, particularly at the level of frontline extension staff. While mobility is essential for any extension service, it does not necessarily mean heavy operating costs. In India, most village extension agents move on bicycles; and in Ethiopia, they move on mules.

Professor Axinn seems to assume wrongly, perhaps due to this lack of familiarity with field conditions, that the regularity of visits built into the T&V is for "disciplining" the extension staff. The critical objective is to make the visit of the extension agent predictable, for the benefit of the farmers. Professor Axinn should know that not only professors living in rich countries, but also poor farmers in developing countries, have a right to order their lives and to know when to expect various services which they need, including extension advice.

The article contains the factually incorrect statement that the "two-way flow of information is minimal" in T&V and that the "bulk of the information flow tends to be down through the system." As I have stated earlier, the very basis of the system is active farmer participation. In India and many other countries, the feedback obtained from the field through extension is regularly documented and is discussed when research programs are formulated.

The statement that the "farming systems development approach . . . and the various cost-sharing approaches are much more suitable for worldwide diffusion" reveals lack of understanding of the process of technology generation and transfer. No extension system can afford to ignore farming systems, and it is one of the key areas of focus in T&V. FSR is therefore not an alternative to T&V; the latter is a management system for extension and the former is what extension (whichever type of management system it follows) should emphasize. The matter is so simple that I am amazed that he should have failed to grasp it.

As to cost-sharing, Professor Axinn is again at his academic best. Even in rich countries, extension is highly subsidized. I do not know of any developing country in the world that has an extension service on a "cost-sharing" basis. The idea is so impractical that it is not worth discussing. I would like to know whether he would be able to work out an implementable scheme of "cost-sharing."

He does sound ludicrous when he asks: "Where have the professional scholars of agricultural extension been while this great diffusion was going on. . . ?" Who are the professional scholars he talks about? They are not the ivory-tower university professors who churn out academic articles based on textbook knowledge, not field experience, but practical implementors who know their profession and want to offer their farmers an effective and workable extension service. In many developing countries these professionals, comprising extensionists, scientists, administrators, and political leaders, have decided to adopt the system after seeing its benefits in other countries and in pilot areas in their own.

Finally, every system has its critics, and in fact should have, so that it gains from suggestions for improvement. I was looking at the article for any suggestions it may contain that would help us assist the countries better. But unfortunately I was disappointed. Professor Axinn certainly is a "professional scholar" by his own definition.

*Extension and Research Specialist, World Bank Regional Mission for Eastern Africa, Nairobi, Kenya, who previously served as Extension Commissioner, Ministry of Agriculture of India.

Wonders for Women

Under the heading, "Special Fund Does Wonders for Poor Women", the June, 1988 issue of the **Agricultural Information Development Bulletin** discusses the work of the United Nations Development Fund for Women (UNIFEM). Its purpose is to support women directly in innovative and experimental activities and indirectly as a catalyst in opening mainstream development programs to women's needs and potentials.

During the past decade, more than $38,000,000 has been made available to 500 projects worldwide, ranging from training, employment, and extension activities to entrepreneurship and income generation through loans for start-up capital. This last type of help has been successful in Swaziland, where 1,500 rural women have access without collateral to a maximum of $120,000 at 10 percent repayable monthly over 12 months (with an 85 percent repayment rate).

Helpful Ideas: Old and New

Birol A. Yesilda, Charles D. Brockett, and Bruce Drury, editors. **Agrarian Reform in Reverse: The Food Crisis in the Third World.** Westview Press: Boulder and London, 1987 (339 pages).

Edited by three political scientists, this volume deals with a development determinant often neglected —political power and the economic structures. The central point is that if customary agrarian reform intends "a more egalitarian rural society, then recent dynamics have produced agrarian reform in reverse." The fallout has produced smallholders squeezed off their land, an increasing rural proletariat characterized by unemployment or underemployment, country migrants who transfer their problems to urban areas, the shifting of production from food staples to export crops, and the decline of domestic food production in relation to population growth. Twelve essays give perceptive descriptions (see "Who Governs the Rome Food Agencies?"), but remedies get little attention.

Alice Stewart Carloni, **Women in Development: A.I.D.'s Experience, 1973-1985.** Vol. I., Synthesis Paper (Program Evaluation Report No. 18). U.S. Agency for International Development: Washington, D.C., April, 1987 (51 pages plus appendices).

To be supplemented by Vol. II, **Ten Field Studies**, this protracted study of 102 USAID projects tells what has been learned and what can be done better concerning the crucial role of women in development. Stripped down to its simplest terms, the report says that awareness with understanding of gender variables is the necessary but often-neglected starting point and that women's participation "in proportion to their roles and responsibilities" does pay off both for immediate purposes and for broader socioeconomic goals.

There is a high correlation between women's education and improvements in health, hygiene, nutrition, and family planning; and also between understanding gender factors and successful transfer of technology within agricultural systems. While women's components in larger projects and women-only projects have their limited merits (e.g., if integrated into the whole or if used for training), the best results flow from the integrated or mainstream projects that are "gender sensitive."

Jack R. Kloppenburg, Jr., editor, **Seeds and Sovereignty: The Use of Plant Genetic Resources.** Duke University Press: Durham, N.C., 1988 (369 pages).

Here is the map of the battlefield over the preservation of plant genetic resources, including access and control. It is an international conflict, with the FAO in the middle between the developed and underdeveloped nations. It is both a geographic and conceptual struggle: between the North and South and between the idea of plant genetic resources as common heritage and as commercial commodity (to exchange freely versus to sell as private property).

In 1983, FAO adopted a resolution that "plant genetic resources are a heritage of mankind and consequently should be available without restriction." But what are "plant genetic resources"? The developed countries prevailed in having the FAO Undertaking specify that propriety germplasm shall be included, meaning elite and current breeders' lines and hybrid parents of private seed firms. The fat has been in the fire ever since. The Third World has seen a gross inequity in its supplying germplasm as "common heritage" and getting in return a chance to buy hybrid seed developed by a company in an industrialized nation.

The authors of this book present deliberately varied views to clarify issues, improve debate, and facilitate compromise toward an end to the "seed wars". A concluding epilogue by Jack R. Harlan, professor emeritus of plant genetics at the University of Illinois, takes the position that the developing countries are employing "more politics than genetics" and that their best compensation would be foreign assistance for plant breeding programs. Indeed a selling scheme would disadvantage the Third World, wherein "about 88 percent of African food production is derived from crops that originated elsewhere in the world, mostly in tropical America." The question of genetic debt is so complex and convoluted that "free exchange" still seems the best answer, and "if anyone is to benefit from sharing germplasm it should be the farmers."

Participatory Monitoring and Evaluation: Handbook for Training Field Workers. Food and Agriculture Organization, Regional Office for Asia and the Pacific: Bangkok, 1988 (51 pages typescript).

This timely little booklet, with readable text and apt drawings, is designed to convert the familiar rhetoric into reality and to develop active partnership among the targeted performers and beneficiaries instead of using "token representatives." It should succeed.

Jock R. Anderson, Robert W. Herdt, and Grant M. Scobie, **Science and Food: The CGIAR and Its Partners.** World Bank: Washington, D.C., 1988 (134 pages).

This is the report card on the CGIAR and its related international agricultural research centers—on how well they "have affected food production and the welfare of the poor." The grades are good, moderated by caution and modesty as perhaps befits a self-evaluation. Objectivity was sought by an advisory committee of "eminent scientists from all parts of the world" and by case studies under expert authorship.

This kind of business does not lend itself to precision, as the report confesses in conclusion, but few if any of the positive generalizations about success are likely to be challenged. They relate to the effect on national research systems (with their capacity to absorb research results and to modify them for local adoption) and to the often allegedly neglected poor farmers, poor customers, and women. Although the report says programs "must ultimately be judged by the results in farmers' fields," its index cites nine pages for treatment of "extension services" and five for "technological innovation" (with two pages overlapping).

The main thrust of the report is that the successes of the international centers will be continued, although perhaps with less spectacular gains unless the new biotechnology takes command.

Colleen Roberts, editor, **Trade, Aid, and Policy Reform: Proceedings of the Eighth Agriculture Sector Symposium.** World Bank: Washington, D.C., 1988 (224 pages).

This last in the World Bank's series of agricultural symposia, in typescript, has two chapters devoted to policies and strategies for research and extension. Three recommendations are made: better evidence from ample experience must be assembled and presented to convince governments that they are "doing a grave disservice to their countries by not creating and supporting an efficient extension service"; performance-based incentives should be provided to successful extension workers; and while the ultimate goal of a unified agricultural *advisory* service is retained, incremental use may have to be made of parallel services that are currently more "delivery" than genuinely "advisory."

Suggestion is also made that the Bank's lending policies should have a longer time frame, perhaps 10 to 20 years; that "we should be more cautious about our tendency to look for the unique, ultimate, and exclusive answer"; and that, inescapably, the enduring focus has to be on the link between extension worker and farmer, where "education and training of both sides are absolutely essential."

Donald C. Pickering, editor, **African Agricultural Research and Technological Development.** Proceedings of a High-Level Meeting in Feldafing, Federal Republic of Germany, September 24–27, 1987. World Bank: Washington, D.C., 1988 (208 pages typescript).

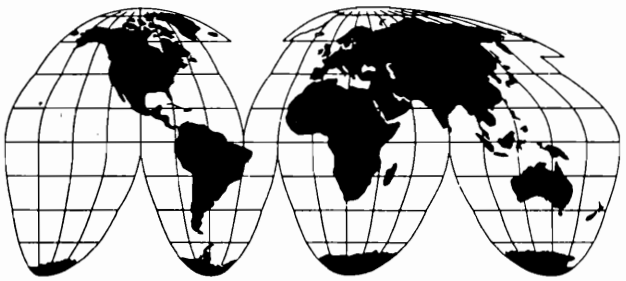
The consensus here is that African nations must increasingly take the lead in planning and implementing their needed research, but donor assistance will be required "for years to come." Also, it is agreed that regional and international institutes can now generate the new technology for Africa, "but few national systems are currently strong enough to complete the vital step of adapting this technology to the needs of their local farmers." The proceedings eventuate in many relevant recommendations, but not many bear directly on the last half of the challenge—"the vital step of adapting . . . to . . . farmers."

Zhores A. Medvedev, **Soviet Agriculture.** W. W. Norton & Company: New York and London, 1987 (464 pages).

This is about one of the several "grand experiments" in socialist agriculture, with lessons for agriculture everywhere. When the Soviet Union as a large country, historically anchored in agriculture, "is in a state of almost perennial food crisis," everybody needs to know more about the causes and possible solutions. Such history, chiefly political and economic, is the focus of this book, not agricultural science. That emphasis may prolong its relevance in the face of Gorbachev reforms (here treated only in the earliest stages), although even these gestures toward private and individual enterprise are seen as quite long-term and perhaps "too modest and too late."

John Howell, editor, **Training and Visit Extension in Practice.** Overseas Development Institute: London, 1988 (107 pages).

Not all the contents of Agricultural Administration Unit Occasional Paper 8 are here seen for the first time, but the new synthesis in six papers gives balanced presentation of the impact and significance of the T&V System. Impact studies are reported on four African and Asian countries, with an introduction and a cogent chapter of conclusions by the editor. Immediate concerns about costs and financing are less important than "the growing interest" in the research-extension linkage and the organization of support systems of subject-matter specialists.



Around the World

Asia/Pacific Crop Center

Active in agricultural development in Asia and the Pacific is the United Nations affiliated CGPRT Centre (for Coarse Grains, Pulses, Roots and Tubers). Its mandate extends to research, training, and information dissemination on such food crops as maize, millet, soybeans, ground nuts, cassava, taro, and yams—crops which lag behind the major cereals, rice and wheat.

While production in these crops has remained stagnant, they are the main source of livelihood for 700,000,000 people in the region and represent 45 percent of the planted area annually. Such crops are also important as raw material for agricultural processing, rural employment, and changing food and animal feed patterns. Information about publications and training is available from the CGPRT Centre, Jalan Merdeka 99, Bogor 16111, Indonesia.

Workshop in Caribbean

Course: 'Extension Field Workshop' by University of the West Indies in collaboration with the University of Wisconsin, August 6-19, 1989. *Objectives:* to analyze needs of smallholders from farming systems perspective; design development plans for the same; develop educational skills to link researchers, farmers, and extensionists. *Location:* in tropics—one week in St. Vincent and one in residence at the University (see below), with course credit and certificate. *Restrictions:* taught in English; deadline for application April 30, 1989. *Information:* P. I. Gomes, Department of Agricultural Extension, University of the West Indies, St. Augustine, Trinidad and Tobago.

World Bank African Workshop

A week-long workshop with field trips began January 29 for the World Bank's extension experts throughout Africa. The site was the International Institute of Tropical Agriculture in Ibadan, Nigeria.

The "Quiet Revolution"

The IITA (International Institute of Tropical Agriculture, Ibadan, Nigeria) knows its challenge and approaches it incrementally, with promise of a "quiet revolution" rather than a "green revolution" in Africa. The chosen four program strategies include focus on: the lowland humid and sub-humid tropics of West and Central Africa, the family farmer, key ecological zones, and a farming systems approach "to assure that the technology we generate will be productive in the real world of the African farmer." This is the Director General's message in IITA's 1987–88 report.

Success in Zambia

An African success story is USAID's appraisal of the five-year Zambia project concluded by the University of Illinois at Urbana-Champaign in collaboration with Southern Illinois University at Carbondale and the University of Maryland-Eastern Shore. The USAID-funded effort was to improve the welfare of small-scale farmers and increase national food production through research and extension. Maize production increased three-fold during the life of the project.

Sustaining the Sustainer

Agriculture sustains the bulk of the mountain population; hence mountain agriculture must be made sustainable. That is the mission of the mountain farming systems program in the Hindu Kush-Himalaya region, carried on by the International Centre for Integrated Mountain Development (ICIMOD) with major funding from the Asian Development Bank and the Ford Foundation. Objectives are to build a knowledge base and to find better technological and institutional means of not only reversing declining agricultural productivity but doing so in an environmentally sound way and better integrating agriculture into the wider market economy.—*from the ICIMOD Newsletter, July, 1988.*

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Director with JCARD, BIFAD

John J. Nicholaides, Director of the Office of International Agriculture and Acting Director of INTERPAKS, recently met with the Joint Committee on Agricultural Research and Development working group on the environment and natural resources and with the Board for International Food and Agricultural Development. The meetings were held November 16–18, 1988 in Washington, D.C.

Blum's T&V Seminar

A seminar/roundtable discussion on "Adaptations of Training and Visit Extension" was presented under INTERPAKS auspices on January 17, 1989 by Abraham Blum, Head, Department of Agricultural Education and Extension, Hebrew University of Jerusalem. His visit to the University of Illinois came at the end of his sabbatical spent at the Agricultural University, Wageningen, The Netherlands.

Swanson's Projects

In mid-February, Burton E. Swanson, INTERPAKS Research Director, was in Rome for technical review of the evaluation study he is leading on the agricultural research-extension projects of the International Fund for Agricultural Development. He then visited Egypt in connection with a proposed extension project in cooperation with Menoufia University.

Scholars Training at INTERPAKS

Alberto Zuloaga, former Agricultural Research Director for the Central Region of Mexico, has completed a year's sabbatical under Rockefeller Foundation and INTERPAKS auspices, with field work on five overseas projects. Since September, he has continued as a Visiting Scholar.

Samir El Sabae Ahmed, National Research Coordinator for the International Center for Agricultural Research for Dry Areas (ICARDA) located in Aleppo, Syria, and Ranier Zachmann, Office of Training and Communications at the International Potato Center (CIP) in Lima, Peru, completed sabbaticals at INTERPAKS during the second half of 1988, following their participation in INTERPAKS short courses.

Also serving at present as INTERPAKS scholars are two from the Academy of Agricultural Research Management, Rajendranagar, Hyderabad, India: K. Venkateswarlu and R. B. Gaddagimath.

New Dean of Agriculture

W. R. Gomes has been nominated for Dean of the University of Illinois College of Agriculture, subject to Board of Trustees approval in March. Coming from the headship of the department of animal sciences, he has served as Acting Dean since August, when his predecessor became President of Oklahoma State University.

Short Courses Again

INTERPAKS is again offering at the University of Illinois two short courses on knowledge transfer. "Training of Trainers for Agricultural and Rural Development," to be offered June 5 to 30, 1989, is aimed at participants who are already professionally involved in the training process. "Organization and Management of Agricultural Extension Systems: A New Look at Knowledge Transfer" will be offered from September 4 to 29 for persons now in administrative or academic posts related to extension.

Teaching will be conducted by faculty members, through INTERPAKS and the two course organizers: for the first course, Violet M. Malone, Professor and Specialist in Adult and Extension Education, Office of Agricultural Communications and Education; and for the second course, John B. Claar, former Director of the University of Illinois Cooperative Extension Service and Associate Vice President for Public Service. Those who complete the courses will receive certificates.

Applications, biographical data, and requests for additional information should be directed to: John W. Santas, Training Officer, INTERPAKS, University of Illinois, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, U.S.A.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign July, 1989/Vol. 6, No. 2

Training and Visit System Of Agricultural Extension

*by Daniel Benor and Kevin Cleaver**

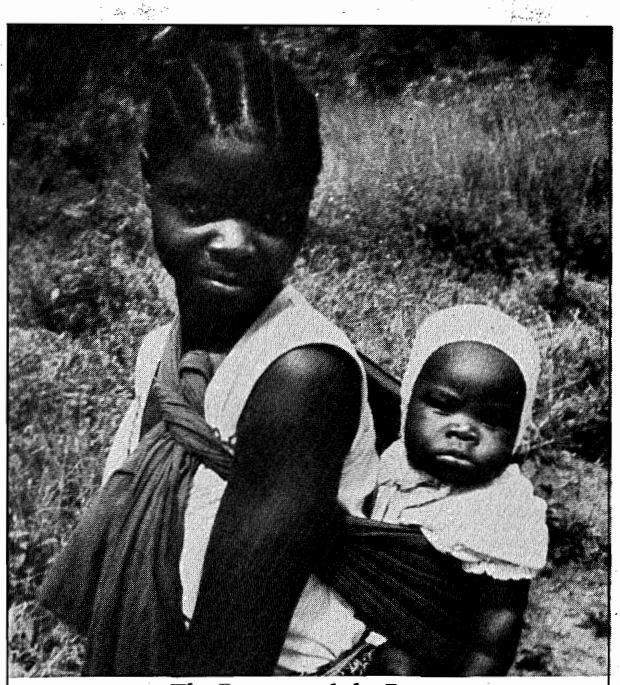
Improved agricultural technology and practices are available for use by many farmers in most developing countries. For resource-poor farmers, particularly in Africa, improved technologies need not involve at the beginning any additional purchased inputs, but rather better husbandry practices. For more sophisticated farmers, more complex technologies can be introduced.

One of the constraints to introducing such technology is the lack of mechanisms to learn what are the real main constraints and needs of the farmers and to transmit new and practical relevant knowledge to them. This is because most existing extension systems in developing countries have been poorly managed and disorganized, and depend on poorly trained and motivated extension agents. Knowledge has not therefore been effectively transmitted both ways: from farmers to research and vice versa.

When such knowledge begins to be effectively transmitted and to stimulate productivity improvements, demand by farmers for more knowledge, for farm inputs, for credit and other services increases. It follows that if extension can be made to work, a significant impact on agriculture can be obtained.

The basic solution to the agricultural extension problem is to improve the organization and the management of national extension services with the participation of, and in close cooperation with, the farmers themselves. One system used for improving these areas is the Training and Visit System. It is based on intensive and continuous training of extension agents and on their regular visits to farmers. It is from this fundamental concept that the name "training and visit"—T&V—has been derived. Some of its fundamental principles are:

- Extension service should aim to be able to provide advice on all farmers' agricultural enterprises such as field crops, tree crops, livestock, and inland fisheries.



The Farmer and the Future

In case you are surprised that she is a farmer, what does that tell about our perception, or misperception, of the majority of women in many developing countries? She was an active participant in the technical assistance project in Zambia recently completed by the University of Illinois in cooperation with Southern Illinois University and the University of Maryland-Eastern Shore.

- There must be continuous agricultural training for all staff in the extension service in order to increase their professionalism. Subject matter specialists who provide the main training to extension agents must also receive regular and frequent training from agricultural research staff and from other specialists. Training must be practical. Demonstrations in the field are used as a major training tool.
- A premium is put on gathering from farmers existing know-how and developing new extension messages. Message development, modification, and communication with farmers, followed by

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

feedback from farmers up through the system, is one of the most critical elements of the T&V approach. The close link to agricultural research is therefore essential.

- Farmers' needs are ascertained and agricultural knowledge is communicated by extension agents to the maximum number of farmers possible. This is done by choosing about 40 to 50 contact farmers, and/or contact groups, for each extension agent. In most cases, the agent visits each contact farmer and group once every two weeks on the same weekday and at the same hour. Other farmers are invited to these visits and come to the contact farmer's farm or the locale of the group meeting at the appointed time. Such farmers (called follower farmers) will come if the advice is worth listening to.

  If the advice is poor or impractical, there will be no contact farmers and no followers, and this situation will be very evident. The messages should then be scrutinized for validity and then changed or alternatives researched. In most African countries where the system has been introduced, farmer groups are becoming the principal contact points. In addition to personal contacts, mass media and other communication methods are being used.

- The management system which relies on a fixed routing for farmers, extension staff and their supervisors ensures that extension agents actually visit farmers. This is done through frequent field visits by higher level officers and subject matter specialists and by supervision of the visits by farmers themselves.

  If there is no impact of extension, or worse, if extension agents are not visiting farmers, this is quickly apparent. One can then determine the causes (poor messages, poor training, no supervision of agents, etc.). Remedies should then be sought.

The above are relatively simple ideas, in effect applying common sense management to agricultural extension. They have been applied nationwide in India, Thailand, Indonesia, and other countries in Asia for the last 15 years. Since 1982, the T&V system has been introduced in Africa and it is now operational, in various stages of development, in about 30 countries on that continent.

Precise evaluation of the extension results is almost impossible to achieve, but still there are enough data showing that the system assisted the mission of farmers to increase their yields and income, and thereby to improve their standard of living. Some examples of recent results: yields of maize and coffee in Kenya, maize and rice in Cote d'Ivoire, millet in Burkina Faso, vegetables and millet in Mali, and cassava in Nigeria increased by more than 25 percent due to improvements in management practices. No additional purchased inputs were used in most cases, and only very little was used in others.

Some other essential points in extension work include the following:

- The extension system needs to be national in scope. Most developing countries, especially in Africa, have numerous donor-financed extension systems introduced as part of regional development projects. There are often in a single country dozens of donor-financed projects which finance different and sometimes competing extension systems. The result is waste and inefficiency.

  The goal should be to consolidate these various systems into national extension programs which are streamlined, efficient, and cheaper than the aggregate of the independent confused systems. A concentrated effort is required to make an extension structure work in a country as a whole. For the above reason, donor coordination, preferably through the mechanism of co-financing national extension programs, is desirable.

- In Africa, it is becoming increasingly clear that efforts must focus on improving local capacity to manage extension, rather than relying on foreign management. Foreign management is not sustainable; foreigners eventually leave. By using foreigners as managers, the potential of capable Africans is underutilized, and repressed. Training, preparing and using local staff from the beginning to manage national institutions is critical to success. Our experience shows that there are unlimited numbers of excellent people in all developing countries who can do a better job than most expatriates.

- In designing an extension system, contact with farmers, their active participation and the determination of farmers' need for technology are critical. The design must emphasize the role of field staff contact with farmers and the critical need to obtain feedback from the latter so that extension and research can respond to their real needs.

  This is a departure from the traditional (donor-financed) agricultural project focus on investments in vehicles, equipment and infrastructures; on the central project organization; and on technical assistance. Often the best contact farmers are women and women's groups, informal associations of farmers, and groups of school children.

- Support to extension systems should be designed with a long-term perspective (15 years at least), not limited to the traditional five-year project cycle. The continent of Africa is littered with five-year projects, abandoned on "completion" by farmers.

- A political commitment is of fundamental importance for the success of the extension program in any country. Without such commitment, sustainable results are unlikely.

In the short term, farmers can benefit much from the work of good extension and research, but in the medium and long term, benefits cannot be sustained from these efforts alone. Increased agricultural productivity will therefore require a large number of actions including policy changes, improvement of infrastructure such as roads and markets, and the development and introduction to farmers of other services such as input supply, marketing, credit, and literacy.

Agricultural research systems also need considerable strengthening if not total rehabilitation in some countries. More efficient extension is therefore only part, albeit an important part, of the solution. The improvement of these parallel services also relies on significant improvements in the systems of management and awareness of the farmers' fundamental needs.

No system is perfect. Therefore, every effort should be made to adapt and improve any organization to fit different countries and changing situations.

*Daniel Benor, chief architect of the T&V System, is Special Agricultural Advisor to the Vice President, Africa Region, World Bank. Kevin Cleaver is Chief of the Agricultural Division, Western and Central Africa Department, World Bank.

Is Anybody Listening—Yet?

"Technological advance has decreed that a constantly dwindling number of farmers, on fewer acres but with greater investment of such inputs as machinery and fertilizer, can continue to increase total production; but we have not yet determined how to make the best use of those excess acres, nor have we developed programs for maximum benefit of the human beings whose labor is no longer needed by this efficient agriculture. We can and must find the answers to these questions, and without delay. We can do it by devoting to these problems the same kind of talent, ability, study, and research that we have given to problems of increased production.—*Spoken 28 years ago by U.S. Secretary of Agriculture Orville L. Freeman, October 4, 1961, in anticipation of the 100th anniversary of the Land-Grant College Act.*

Hardware and Humanware

"Technological advancement is crucial, but that alone is not sufficient for agricultural, economic, or social progress. The more advanced the technology, the more dependent the system is on highly trained individuals, teachers, researchers, and extension workers."—*Lamartine F. Hood, Dean, College of Agriculture, Pennsylvania State University.*

New Opportunity for Africa

*by Bernard Woods**

"It is clear that the economic and social strategies that we have adopted have led us into a morass from which it seems there is no escape. We can get out, but (to do so) we need to reexamine the strategies that we have followed."—Julius K. Nyerere

To advance success in the social dimension of development in Africa, it will be necessary to supplement and move beyond the approaches that have derived from the conventional wisdom that has guided development approaches to date. The perception that all generic communication channels are part of the essential infrastructure for development introduces new possibilities for addressing the whole spectrum of information transfer and learning on which self-sustaining development depends. It provides a basis for strengthening and exploiting all types of information channels—including the latest information technologies, low-cost folk media, and traditional communication channels, as well as the more familiar communication media used today.

That new understanding, and the policies, strategies, and new activities for development that will follow from it, offer a way out of at least a part of the morass which Julius Nyerere aptly described. It will establish a basis for providing mechanisms for conveying *all* the information and skills needed for development—in addition to those that are relevant to the technical disciplines and sectors in which most development activity has been confined to date.

This advance will follow from an acceptance that the establishment of communication channels (and all that is necessary to make them effective) is an objective of development in its own right. It is not part of the conventional thinking within which development has been planned and approached until now. Because new policies and strategies can only follow from new thinking, the need for governments and donor agencies to invest in making new thinking and understanding possible is paramount in advancing development in Africa, and needs to be treated on a par with investment for new roads and schools and the other physical goals with which most development financing has been concerned.

New and exciting possibilities emerge once it is accepted that much of the elusiveness of development goals in Africa until now follow from the inherent confines of conventional approaches to development to date and not from Africa itself.

*Senior Communications Specialist, World Bank. This is the "Conclusion" of a paper entitled "A Realm of New Opportunity for Development in Africa."

INTERPAKS

U.S. Extension Adaptation Only a Partial Success

*by George Beal**

One of the units of the U.S. agricultural education system, based on the land-grant universities, that most frequently has been subject to attempted transfer is the *extension* service. The attempts have often resulted in only limited success or in failures. The main reasons have not been fully examined. This article explores some of them.

The first section is a brief reminder of the most common concerns and criticisms of the transfer of extension. The second deals with what is believed to be equally or more important considerations that are not usually taken into account.

Traditional Concerns

Four concerns are often expressed in planning or in evaluating attempts to establish and implement extension services in developing countries:

1. **Transfer vs. Adaptation**—In the earliest periods of cross-national implementation of extension services, there seemed to be the assumption that extension as it was in the U.S. (as if it were monolithic even there) could be "transferred" to developing countries—as is. Later years saw a greater emphasis on adaptation, or taking what were thought to be the crucial elements and reformulating them in an organized system within the context of the environment of the targeted developing nation.

2. **Cross-Cultural Differences**—Consistent with the development above and after many blatant examples of disastrous results from cross-cultural value differences, the attempt was made to analyze cross-cultural differences as a part of most attempts at extension adaptation. Though partially successful, there still often remained the constraint on success from not being aware of or not understanding the existence and importance of these differences *or* overestimating their importance to the extent of becoming an excuse for non-action.

3. **Placement and Organizational Structure**—There has always been a concern (though perhaps not enough) with where extension should be placed or interfaced (e.g., university, government, community development), its horizontal linkages and its vertical structure. Though often not carefully analyzed, conceptualized, planned, and implemented, much attention has been given to this dimension.

4. **Availability of Appropriate Technology**—Among the important concerns usually recognized is that of the existence, form and accessibility of appropriate technology to extend—an important consideration in the placement of extension and the structuring of significant linkages. In some cases, extension is blamed for low productivity when in reality there is little appropriate technology to extend—not necessarily the fault of extension.

Additional Considerations

In trying to analyze the degree of success of cross-national adaptation of extension services, there are a number of additional considerations that have not, or only to a limited degree, been taken into account.

At a general level, there are two major propositions posed in this article. First, there has been the tendency to see extension as a separate entity unto itself, not in its environmental context and relationship beyond its bureaucratic placement and direct linkages with a university or government agency. Secondly, in general there has been an overestimation of what extension alone has accomplished in the United States.

Many complementary factors have contributed to the success of technological diffusion and acceptance in the United States. Thus, in those cases in developing countries where these complementary and related factors do not exist, there were probably unrealistic expectations of what extension should and could accomplish. A number of those factors will now be discussed:

1. **Farm Firm and Entrepreneurial Characteristics**—Though there is wide variation in U.S. farmers and farm firm characteristics, there is in general a large number of characteristics conducive to acceptance of new technology and progress toward productivity. The U.S. farm firms are blessed with good soil, a relatively dependable and adequate water supply, good climate, and favorable growing conditions. The size of firm, scale of operations, and capital position are conducive to optimum production. Transportation, farm supply, and markets are readily available.

In general, entrepreneurs are relatively well-educated, see their firm as a profit-maximizing business, see themselves as entrepreneurs or managers, and have a high scientific, risk, and innovation orientation. They also can be characterized as having a strong work ethic and motivation, as well as a high propensity toward active information-seeking behavior. Thus, in many ways, extension's target system has many characteristics that were weighed highly on the positive side toward extension success.

2. **Farm Policy**—Though there have been many different farm policies and little that could be called a coherent whole, farm policy in general has provided a favorable and profitable climate in which the U.S. farmer could operate. This includes a multitude of parity, price-support, subsidy, and stabilization programs. Favorable crop insurance, credit, land, and water policies are available, plus other favorable policies dealing with transportation, communication, rural electrification, mail service, and taxes.

3. **Related Private and Government Organizations and Agencies**—For move than 200 years, farmer organizations (such as the Grange, Farmer's Union and Farm Bureau) have played important and usually positive roles in the life and business of U.S. farmers. This influence has been particularly apparent in areas such

as political and legislative pressure, marketing, farm supply, credit, educational programs, and social activities. Farm cooperatives have and continue to be very important.

Many government agencies (e.g., Soil Conservation Service, Farm Credit Administration) have been set up to work directly with farmers. In many cases, the extension service has been given responsibility to help set up and operationalize these agencies at the state and farmer level. Most of these organizations have been highly complementary to extension and frequently carried out parallel education, demonstration, and service programs to aid farmers in reaching their production, marketing, and profit goals.

4. **Commercial Infrastructure**—Since almost the beginning of rural life and agriculture in the United States, there has been a relatively well-developed commercial infrastructure in the form of private-individual ownerships, partnerships, corporations, and cooperatives. This has provided high-quality, reasonably priced, readily accessible farm inputs (e.g., feed, seed, fertilizer, agricultural chemicals, animal drugs and feed additives, credit, information, and customer services) and an equally effective marketing and processing structure for the success of U.S. farmers.

Of special importance is the fact that these commercial entities usually are well-informed about their products and services and provide educational, informational, consulting, and programming opportunities for farmers. Recent studies indicate that such sources of information are the most frequently used and rated as most important (at the information, evaluation, and trial stages of adoption). Many extension services recognize the potential and importance of such commercial sources and cooperate with them in training workshops and conferences and in the provision of materials for distribution to farmers.

5. **Communication Media**—Farmers as well as farm product and service marketers and suppliers live in and are a part of a communication/media-information age: radio, television, general farm magazines, state farm papers, a myriad of specialized agricultural magazines and newsletters, and computer-based information access and analysis. In all these (with the probable exception of television), there are specific agriculturally oriented media directly targeted at farmers, farm supply distributors, and farm product marketers and processors, both in general and in highly specialized media for particular products or enterprises (e.g., dairying, sheep, hogs, soybeans).

In a recent study conducted in the U.S. Midwest, it was determined that the average farmer took 2.7 farm-related papers or magazines and more than 60 percent listened to agricultural radio programs or accessed farm information daily. Today, a sizable number of farmers have computers that can access agricultural information from already existing private and public data banks and program the information accessed to show the relative merits of alternatives for specified goals.

Summary

All of the above factors, and certainly others not mentioned, interact with and complement each other to help produce what success has occurred in information exchange, dissemination, and use in the United States. While extension may be an important direct and indirect element in the mix, it could not accomplish what it has been given credit for without these complementary variables. In most cases, these variables do not exist or effectively exist in developing countries.

Taking this into account, three main alternatives are available if extension is to be more effective in a non-U.S. context: (1) more realistic expectations of extension's potential must be set when considering extension "transfer"; (2) further adaptation of extension must be made taking factors such as these into account; and (3) if analysis shows these variables appear relevant, there must be better utilization of existing, or the creation of similar, functional variables in the context of the developing country.

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*Retired from the Department of Sociology, Iowa State University (part-time in the Cooperative Extension Service) and the Institute of Culture and Communication, East-West Center, Hawaii. This is an adaptation from a paper presented at the VII World Congress for Rural Sociology, Bologna, Italy, June 26-July 2, 1988.

IRRI's Short Course Impact for Long Term

Having given short course training for 20 years, the International Rice Research Institute has sought to measure the long-term impact on alumni. A random sample responding to a questionnaire has rated the impact on a scale of 1 to 5, the latter being highest. Greatest usefulness (above 4) was found in conducting training and extension or production programs and in the use of knowledge and skills, both in present employment and in decision-making capabilities generally. Overall job productivity on work produced and activities done rated high also, just below 4.

Constraints to application of what trainees learned were identified as inadequate materials, equipment, and funds; lack of organizational support; manpower constraints; inappropriateness of the training to job at hand; and national policies.

What are these alumni (almost 1,500 from 1977 to 1986) doing now? They are working in 27 rice-growing countries, with 76 percent in seven Asian nations. Two-thirds are engaged in research, almost eight percent in extension, and under seven percent in training. Most of the others are divided between supervision and administration.—*The IRRI Alumni, January, 1989.*

What Ag Deans Want

Deans of Colleges of Agriculture (or their designees) in the 50 major state land-grant universities have ideas about needed changes in the role and organization of extension functions.* In interviews, they made these suggestions most often, in descending order: more specialization and subject-matter competency, more operation on a regional rather than county basis, more use of the systems approach and social analysis, more involvement of extensionists in research, greater administrative integration (e.g., extension functions under the dean, with specialists under department heads), greater use of high technology in computers and transfer by media, and increased interdisciplinary work.

*Orville E. Thompson and Douglas Gynn, "Improving Extension: Views from Agricultural Deans," *Journal of Extension*, Spring, 1989.

As Some Others See Us: Cooperative Imposition

For the benefit of reason if not feeling, the advantaged world needs more often than not to see itself as the disadvantaged world sees it. As, nationally, the privileged at home need to understand how they are seen from the "other side of the tracks," so, internationally, the would-be donors, helpers, and uplifters need to understand the could-be receivers, helped, and up-lifted. Are the well-intended donors actually unintended masters? Have they forgotten the "co" part of "cooperation"? Are we in trouble beyond remedy when the preponderance of research, scholarship, and dissemination about the under part of the world comes from the upper part?

The often-stated desire to have some counterbalancing input from the too-inarticulate, too-underdeveloped world is met by Bruno Wambi, President of the Congolese Association for the Development of Library and Archival Documents, Brazzaville.* His blunt theme is that the poor nations are made the victims of the rich nations through the transfer of inappropriate models of Western technology. The result is a transfer of culture as well as technology, at "an enormous psychological cost" with a widening gap between the elite and the peasants. "Technology is like genetic material—it is encoded with the characteristics of the society which developed it. . . ."

There are three major mechanisms of technology transfer: export of massive amounts of capital, the use of technical experts, and the training of student apprentices. These, too, are implicit if unintended vehicles of cultural export, giving a "borrowed identity" to the recipients. The claim that science is universal can be made good only by making its technologies fit universally. Therefore, "this carnivore called science which devours nature and feeds on people and life" should be reconciled with nature "to avoid the wasteful habits that consumer societies have forced on us."

As a transfer agent himself (he is a librarian), the author cries out, not for an embargo on technology, but for a more appropriate kind (from the exporters) and a better-fitted use (by the importers). New technologies are definitely welcome, but they should be "adapted to the needs and means of our countries, enabling development to happen from within." That is the key refrain, repeated later: "If you truly wish to help us, give us the means to self-development." Respect our "potential to create new ways of thinking and acting." That is the way to transform so-called international "cooperation" into cooperation with harmony rather than with subordination.

**The IDRC Reports*, January, 1988.

Seeing People As Well as Trees

Forestry extension agents, 260 of them, and 10 mobile education units are being trained for a special mission in Thailand. Lessons learned in a "social forestry" project are being carried countrywide by UNDP, FAO, and other technical assistance agencies. The pilot effort focuses on people as well as trees, recognizing that the serious depletion of the great natural forests (cut by half in a generation) is tied in part to people's desire for new farm land and permanent homes.

Therefore, a long-term program has been set up both to meet farmers' needs *and* to restore the forests: the fraction of the land suitable for agriculture (60 percent) will be so used, with new opportunities and services for permanent settlement, while the remaining fraction (40 percent) will be reforested both for replenishment and erosion control. To make the farmers willing to take the long-term risk, a delicate compromise by the government gives use—not ownership—for five years, renewed with proper cultivation or even passed on to the children.—*from World Development, November, 1988.*

(Postscript: In the Philippines, with hardwood forests lost at the rate of 2.4 acres every minute for the last 50 years, leaving only 21 percent forest cover, President Corazon Aquino has resorted to the drastic remedy of banning timber exports.)

Reading the Great Book

"The world is a beautiful book, but of little use to him who cannot read it."—*Goldoni.*

"The world is a great book, of which they who never stir from home read only a page."—*Augustine, A.D. 430.*

Empowering Women: Loans and Advice

In the battle to empower women who are the majority of the world's farm workers, although generally propertyless and discriminated against, Women's World Banking is nearing a decade of service as a financial intermediary between women and opportunities for entrepreneurship. Headquartered with a small staff at 104 East 40th Street, New York 10016, U.S.A., it works through WWB affiliates in Asia, Africa, and Latin America (even one in West Virginia, U.S.), where decisions are made at the grassroots level.

Affiliates operate independently, even in financial viability, but in conformity to WWB goals and rules for the advancement of women in their economy. In return the international office in New York provides start-up services, management training, and program development.

Of the many services provided women through this network, including advocacy and intermediation where neglect has prevailed before, the WWB loan guarantee mechanism is best known. It generates financing for small-scale enterprises through affiliate-sponsored loans with a 50 percent guarantee from the WWB capital fund, a 25 percent guarantee from the affiliate, and the remaining 25 percent of risk borne by the lending bank.

Many loan forms are used: direct for animal husbandry, revolving for business working capital, and undergirding for women's cooperatives. The security of shared risk among the three institutions gives lending sources incentive for expanding the credit pool and opening it to women. After surmounting the big hurdle of access to credit, WWB affiliates address the borrowers' related needs for business information, management training, and free professional consultation.

This is not a colossal financial enterprise, since the capital fund administered centrally by WWB (raised from donors, both individual and international) amounts to only approximately $6,000,000. However, strength lies in the multiplier effect of many small, short-term loans always paid off and recycled for the benefit of still more women entering their economies for the first time.

At present, 45 registered affiliates exist (50 more in formation) around the world, with a record of more than 5,000 loans guaranteed, half in agricultural enterprises.

To Communicate, To Liberate

"Better communication, better information can be liberating. Something relatively unthreatening to the elite, a way of broadening the base of power, is to broaden the base of knowledge. Knowledge about law, rights, government regulations . . . is a source of power, and withholding that knowledge is a form of power."—*Robert Chambers.*

Why Foreign Aid?

In a philosophical article, Vernon W. Ruttan, University of Minnesota, explores the two common arguments in support of resource transfers from developed to developing countries with a substantial grant component: (1) the economic and strategic self-interest of the donor nation; and (2) the ethical/moral responsibility of wealthy nations toward poor nations.*

Acceptance of ethical responsibility for assistance from rich to poor leaves several questions unanswered. Among them are what level of assistance, who should be the recipients, the form of assistance, and the extent of trying to bring about institutional reform in the aided country. Ruttan concludes that the self-interest argument is weak and that there is "no obligation to transfer resources that do not generate either immediate welfare gains or growth in the capacity of poor states to meet the needs of their citizens." Furthermore, "we can never fully understand" the consequences of assistance intervention, despite great recent gains.

We are therefore left with the need to evaluate programmatically the consequences and weigh policy interventions that will lead to improvement, while we strive to discharge our remaining obligation to advance our understanding of the development process.

*"Why Foreign Economic Assistance?" *Economic Development and Cultural Change,* January, 1989.

Africa: The Good and Bad

The good news is that Africa has a brighter future because of hard lessons learned from the past; better prospects for new technology and other help from the industrialized world; and above all, the long-term promise of the development of Africa's own capabilities and resources for self-help.

The bad news is that formidable—sometimes shocking—problems must be overcome: a population on its way to tripling by 2025 (with a woman having 258 offspring in three generations, as compared to 16 in the U.S. and six in West Germany); the investment of only 10 percent of budget allocations to rural development, although 40 percent of national African earnings come from agriculture; the energy crisis from a growing fuelwood shortage, as 29 trees are cut for every one replanted; inadequate management of foreign aid; the challenge of food security without wrecking the environment; and discrimination against women farmers in access to land, credit, and markets.

By now, ample experience provides ground for both learning and unlearning, particularly "unlearning the lessons of the green revolution" where appropriate for Asia but inappropriate for Africa.—*from Jessica Tuchman Mathews, World Monitor, May, 1989.*

How About Those Ratios?

Figures don't lie, but neither are they self-explanatory. What worker-client ratio would you want ideally in good extension services? The world can give you 1:10 or 1:10,000—and everything between. Here is where mere reliance on the numbers can totally deceive.

Robert Bruce of Cornell University has given us fair warning.* If we want to talk about ratios and opt for the "labor intensive" variety, we had better step back and consider much more. For the first side of the ratio (the worker), are we considering professionals, paraprofessionals, contact leaders, or what? For the other side of the ratio (the client), are we referring to the general population, the farm population, the heads of farm households, or client groups like villages and cooperatives? Since extension is selective as to audience, it is imperative that the audience be identified before figures are attributed.

Therefore, a search for extension intensity may be wholly misguided. Far better is an analysis of the program, the objectives, and the constraints, particularly among these:

1. the type of agent performance called for in the program objectives and content and in client behavior,
2. geographical distribution and ease of travel/communication,
3. technology available, both knowledge and hardware,
4. client capacities and needs, and
5. the chosen methodology and program strategy.

The point is that any search for "ideal intensity" or its approximation has to be "situationally determined." Anything more general is a waste of time.

*"Labour Intensive Extension", in Gwyn E. Jones, editor, **Investing in Rural Extension: Strategies and Goals**, 1986.

INTERPAKS

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Search for New Approach To Extension in Poland

Poland is reshaping its extension services by combining its own initiative with proposals from the World Bank and the Food and Agriculture Organization.* The overall effect will be decentralization of the hitherto centralized system, with more open response to farmer needs, more attention to problem-solving rather than mere technology transfer, and modernization in the use of computers and protection of the environment.

In the country's self-examination, extension deficiencies have been identified as confinement to the more progressive clients, administrative reshuffling and intrusion, loose contacts with research advances, poor telecommunications, and vehicular and equipment shortages. Factors identified as needed for better service are greater autonomy for strategies adapted to local conditions, better trained personnel (with master's-degree level "significantly increased"), organizational stability and openness to reform on the part of directors of the managerially important provincial agricultural progress centers. In response to this awareness, the proposals from the international organizations have been supported by the Ministry of Agriculture and presented to the management of the provincial centers.

Responses are now materializing, with chief consideration being given the training of the staff in the management marketing approach and selective adoption of the Training and Visit System. The management marketing approach will be used in defining the role of the provincial centers and in developing advisory programs in keeping with national priorities. The T&V System will be adhered to in the organization of work (advisors' days in the field and collaboration with farmers and villages on a scheduled basis), in one day a week devoted to in-service training and office work, and in facilitating contacts with sources of new technology and knowledge. Also, the work of the provincial agricultural progress centers will be evaluated with a view to the use of more feedback on farmers' needs and the addition of advisory activity in household management, community problems, and environmental protection.

The intent is to move beyond the present stage, now concentrating on technology transfer and agricultural education, to broader programming, more openness, more decision making at lower levels, and, above all, improvement in the "practical behavior patterns of farmers in order to better their living conditions."

*A summary of a manuscript submitted by Nikodem Sakson, Centre for Education and Progress in Agriculture, Poznan, Poland, whose more general article on the Polish system appeared in the November 1986 issue of *INTERPAKS INTERCHANGE*.

Helpful Ideas: Old and New

Bangladesh: Promoting Higher Growth and Human Development. World Bank: Washington, D.C., 1987 (281 pages).

This study by a large team is illustrative of what the World Bank country reports are saying to developing member countries, here represented by one of the world's poorest, Bangladesh. Production-oriented policies are essential still, but they are not sufficient. With half the population classified in "extreme poverty—unable to afford even enough food to live a reasonably active life"—special interventions have to be made for those still by-passed: "the assetless," especially the landless and women. That means more attention to education, health, nutrition, and family planning, with targeted programs for women, who are hit hardest by acute poverty.

However, despite its lowest economic status, Bangladesh is also told that its education system needs that equitable-sounding remedy, "cost recovery", which means "increasing tuition and fees at the higher levels," coupled with a sop to "need and merit" by student aid.

Jim Hightower, **Hard Tomatoes, Hard Times: The Failure of the Land Grant College Complex.** Agribusiness Accountability Project: Washington, D.C., 1972 (308 pages)

Hard tomatoes, hard times, in a hard book. It is something the U.S. agricultural "complex" would like to forget—after 17 years. It is also hard on the land-grant college image abroad, where it is often seen as a desirable model to emulate. The style is confrontational shock treatment.

The book is an elaboration on its first sentence, page one: "Although the land-grant college complex was created to be the people's university, to reach out to serve the various needs of a broad rural constituency, the system has, in fact, become the sidekick and frequent servant of agriculture's industrial elite." The title comes from land-grant research that produced hardware (mechanization) to harvest appropriately hardened tomatoes (resistance to mechanical "fingers," but "a little tough for the consumer") at the hard cost of thousands of jobs for farm workers no longer needed by corporate agriculture to pick green tomatoes for ripening in gas storage.

Then follows castigation of research in need of being "humanized" instead of "lies, lip service and hogwash"; castigation of the land-grant colleges for "old school ties," an unholy alliance with agribusiness ("classrooms and boardrooms"), and even steering the best graduates into favored corporations. Also castigated is the wasteful extension system for catering to the largest producers, neglecting "the vast majority of America's farmers," running the 4-H youth program as "a frivolous diversion of 72 million tax dollars," and ending up "not much good to anybody." Then there are the rascals outside—the U.S. Department of Agriculture, the National Association of State Universities and Land Grant Colleges, the agricorporations, and some farm organizations and foundations.

This is the product of a task force of the short-lived Agribusiness Accountability Project. Its seven recommendations proved far less important than galvanizing attention on the underlying theme of return to the original egalitarian, small-farmer mission, choosing people over corporations, and "opening this closed world to public view and to participation by constituencies that today are locked out."

Shorn of stridency and exaggeration, that theme has a place *wherever* agricultural development is undertaken. By now, everybody in the agricultural complex has got the message or had failing memories jogged. They may be surprised, however, to know that the author and project director, Jim Hightower, is now the long-time Commissioner of Agriculture in Texas.

Charles D. Brockett, **Land, Power, and Poverty: Agrarian Transformation and Political Conflict in Central America.** Allen & Unwin: Boston, 1988 (229 pages).

The political context in which agricultural development has to operate is often neglected or totally ignored, while a host of less influential factors are analyzed as causes and sources of solutions. Usefully, at the other extreme, this book focuses entirely on politics, past and present, in relation to transformations in rural life in Central America, first generally and then country-by-country.

Donald L. Plucknett and Nigel J. H. Smith, **Plant Quarantine and the International Transfer of Germplasm.** World Bank: Washington, D.C., 1988 (53 pages typescript).

New technology, new problems. Increased worldwide distribution of germplasm has created tension between the eager and the cautious—the plant breeders and genebank curators who want speed and the quarantine officers who want safety. This study paper, with many recommendations, seeks a needed reconciliation, "with an emphasis on emerging biotechnologies that are revolutionizing diagnostic and cleanup work for plant germplasm."

A. W. Van den Ban and H. S. Hawkins, **Agricultural Extension.** Longman Scientific & Technical: Essex, England, 1988 (328 pages).

This is the English edition of the Dutch textbook widely used since it was published by the first author in 1974. Its thoroughness derives from long use, student and staff feedback, and the authors' varied international experience.

It is written in awareness that the 400,000 agricultural extension agents around the world will have eventual successors coming through the universities and other training facilities. It approaches this great need for extension education from the perspective of the farmer: his problems, his alternative solutions, and his final decisions. Extension as used in many fields is the conscious learning process used "to help people form sound opinions and make sound decisions." In agriculture, the book contends, the focus should be on the farmer, not on the technology.

The highly readable text is enhanced for teaching purposes by discussion questions, further readings, and a glossary of common terms. Its availability in English should be welcomed.

Development and the National Interest: U.S. Economic Assistance into the 21st Century. Agency for International Development; Washington, D.C., 1989 (158 pages).

This is an impressive report of self-evaluation, with some boasted successes and some admitted failures, but also with a candid call for "radically reshaping future official assistance programs." It may be read from two perspectives: the U.S. and the worldwide. From the former, it is understandably mixed with national politics—the shift between presidential administrations, the budget crunch, what is internally perceived as good for the U.S., and even some patriotic ego: the claim that "the growth-oriented example and wealth-generating dynamism of the American economy itself" can really do more for the world than governmental assistance programs.

When these issues and perspectives are stripped away for the non-U.S. reader, a wealth of relevant material remains on the components of economic development, with abundant statistical and graphic undergirding for contemplating the 21st century. A 24-page statistical annex gives comparative insight on national economic growth, population and health, education, debt, environment, foreign direct investment, trade, and aid (all sources). Startling facts emerge, like the surprising number of African countries which have received almost half or substantially more of their annual governmental expenditures from overseas development assistance.

The resulting balance is implicit in the second part of the title: "the National Interest." That interest is seen as calling for no bold strides forward except in sharply targeted ways, in the conviction that aid is a temporary crutch to "real development . . . from the bottom up." The "have nots" are to do what the "haves" have done. The accolades go, not to the official agency evaluating itself but to the unofficial private sector, including the markets, the voluntary organizations, the universities, and the for-all-to-see image of U.S. success.

The "growth-oriented" approach is so solidly and singly built into looking at the past and contemplating the future that one critic has called it a development report that is "anti-development." Fortunately, the 21st century is far enough away to allow for the "national dialogue" the report explicitly invites.

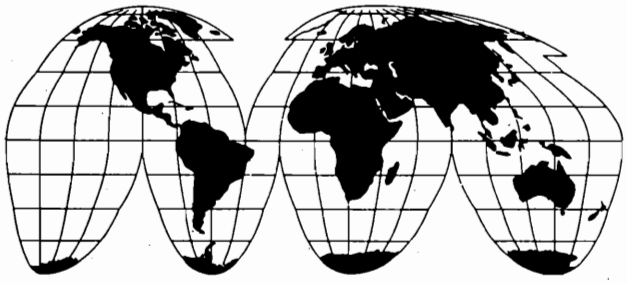
Paul Sommers, **Low Cost Farming in the Humid Tropics: An Illustrated Handbook.** Island Publishing House, Inc.: Manila, 1983 (38 pages).

Small farmers in the humid tropics and their extension agents can get much useful information from this little illustrated booklet on how to adopt a "system that is inexpensive, efficient, simple, and that relies on locally available inputs." This is an alternative to the modern costly inputs of purchased seeds, commercial fertilizers/pesticides, and machinery. Intensive land use is achieved with mixed multi-storied crops, unpaid farm labor, saving and using water, pest control by intercropping, and storage in crop by-products. *(Address: Sta. Mesa P.O. Box 406, Metro Manila, Philippines).*

George H. Axinn, **Guide on Alternative Extension Approaches.** Food and Agriculture Organization: Rome, 1988 (148 pages).

This is a useful typescript handbook for policymakers, managers of rural development programs, and academic personnel. It deals with a process needed and practiced worldwide yet a process embodied in many forms, calling for discriminating choice suitable to given situations. Help in making that choice is the focus of the book, which concentrates on major extension problems, eight different extension approaches, their comparative analysis on the basis of seven criteria, and 15 concluding general principles.

The eight approaches and seven criteria are combined in a suggestive matrix. While there is no "one best approach," the **Guide** is intended to suggest to a country's planning group which approach will best suit its needs in the light of stated assumptions, purposes, and type of program control.



Around the World

Doctor's Dilemma: "Ism" Transplants

Cooky cutter transplants of economic ideology from the "haves" to the "have nots" are getting a bad name in the Caribbean. They are too pat, too thoughtless, too optimistic, too "be just like us." In the March 17, 1989 issue of the *Christian Science Monitor,* a teacher/researcher, Jerome L. McElroy, deals with the problems of Jamaica, where popular discontent with pro-market, pro-capitalist, pro-industrialization policies have brought back a socialist-oriented government. More a warning than a solution, the article points out the need for further consideration of some peculiarities of island economies without a stabilizing middle class.

Centering on Pests for Pests

Largest of its type in the world, serving the African cassava belt of about 10 million hectares, the new Biological Control Center in Cotonou, Benin, has been established by the International Institute of Tropical Agriculture. It will develop biological instead of chemical control of pests to protect the environment. For example, to avoid chemicals on cassava leaves normally eaten as vegetables, a parasitic wasp has been imported to kill mealy bugs by laying eggs inside them. The search is now on for natural enemies of the African desert locust, as well as pests of maize, cowpeas, and citrus and mango trees.

Conquering River Blindness

A new little white pill is now available to conquer the ancient scourge of river blindness (onchocerciasis) in Africa, Latin America, and the Middle East. While the drug is not a total cure, untold numbers in these areas can now be spared the culmination in blindness which now afflicts 300,000 persons, plus alleviation for the estimated 18,000,000 whose bodies carry the parasitic worms spread by tiny black flies. The chief challenge is now to provide the required treatment once a year in inaccessible regions, even through mass campaigns. This is a welcome supplement to the insecticide programs conducted by the World Health Organization.—*New York Times Magazine, January 8, 1989.*

Improved Training in Nepal

A Training and Manpower Development Programme was set up in 1988 under the Department of Agriculture in Nepal, according to its *Training Newsletter,* July, 1988. It consolidates 39 scattered agricultural training venues into one Central Training Centre and 10 regional centers. The central facility now nearing completion will provide first time training for 120 agriculture officers, while pre-service, in-service, and orientation training continues at the regional centers for both lower officers and farmer leaders.

Improvement in Belize

Continued extension improvement is one of 10 specific interventions for upgrading the agricultural sector in Belize, according to the assessment team which USAID has supported under contract with the Midwest Universities Consortium for International Activities. The idea is to advance and consolidate gains already instituted under the same auspices: the Caribbean Agricultural Extension Project.

A key feature is the improvement of agent-farmer relations through decentralization of the extension staff into agro-ecological zones, where training and technology materials would be more location-specific. Coupled with this would be continued financial and technical support of a national communications unit focused on agricultural development.—*An Assessment of Belize's Agricultural Sector, MUCIA, March, 1988.*

Training in Sustainability

The means: a workshop linking development with conservation to assure sustainability—"Sustainable International Development." *The participants:* professionals from international development organizations. *The methods:* lectures, group problem-solving through case studies, and individual projects. *The time:* September 10-15, 1989. *The place:* the Kellogg Biological Station, Michigan State University. *More information:* George H. Axinn, Department of Resource Development, Michigan State University, East Lansing, Michigan 48824, U.S.A.

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

Director's Global Mission

John J. Nicholaides, Director, UI Office of International Agriculture and Acting Director of INTERPAKS, circled the globe on a project development mission with the Midwest Universities Consortium for International Activities in consultation with country and USAID personnel in Delhi, India, and Bangkok and Chiang Mai, Thailand, from late March to mid-April. In a stopover in Kenya, he assisted in mid-project review of the Illinois institutional development project at Egerton University, Njoro.

Training Officer Honored

As one of the "founding fathers" of modern-day international agriculture participant training, John W. Santas, International Training Officer, University of Illinois Office of International Agriculture, has been honored by the UI College of Agriculture with its Academic Professional Award for Excellence. Dr. Santas was cited for his 10-year contributions in placement, monitoring, and administrative support for more than 300 participants who have studied for advanced degrees under many development projects.

Project Completion

The INTERPAKS Cooperative Agreement with USAID will be completed in August, 1989. Although the Agreement received only about 60 percent funding from USAID, most original project objectives have been met. An analytical framework for evaluating the constraints to agricultural technology systems was developed and tested through case studies in Malawi, Mexico, Ecuador and Taiwan. The IFAD study described below was the first "field application" of the framework; and in the hands of experienced analysts, it was found to function well. Currently, the INTERPAKS staff is finalizing one of the case studies, preparing the technical report describing the diagnostic framework, and writing a field manual to assist others in conducting constraint analysis of agricultural technology systems.

INTERPAKS completed a global review of agricultural research and extension projects for the International Fund for Agricultural Development in February, 1989, including a desk-top analysis of 12 projects and in-country field evaluations of 10 ongoing projects. The integrative report, written by Burton Swanson and Warren Peterson and finalized in Rome with assistance from IFAD personnel, will be used by IFAD to strengthen future agricultural research and extension projects.

INTERPAKS Course Again

Following its annual cycle, "Organization and Management of Agricultural Extension Systems: A New Look at Knowledge Transfer," will be offered from September 4 to 29, 1989 for persons now in administrative or academic posts related to extension. John B. Claar will again be the coordinating leader. He is the originating Director of INTERPAKS, former Director of the University of Illinois Cooperative Extension Service and former Associate Vice-President for Public Service.

Applications, biographical data, and requests for additional information should be directed to: John W. Santas, Training Officer, INTERPAKS, University of Illinois, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, U.S.A.

Visitors from Kenya

Another in the exchange of staff/teacher visits and consultation between Egerton University and the University of Illinois at Urbana-Champaign was completed from May 28 to June 7, 1989. This time, the visitors from Kenya included the two Deputy Vice-Chancellors: C. A. Onyango and J. S. Lugogo; two Deans: P. K. Karau (Agriculture) and I. K. Rop (Arts and Social Sciences); Planning Officer A. Shibira; six Departmental Chairmen: Professors Shalo (Dairy & Food Technology), Motelin (Animal Health), Itulya (Horticulture), Ondiek (Education and Extension), Ndombi (Physical Science), Taruru (Biological Sciences); and Senior Lecturer Rose Mwonya, representing Home Economics.

The Illinois/Egerton partnership is part of USAID's Institutional Development for Agricultural Training project (IDAT), which involves cooperation in Egerton's movement to full university status, with added responsibility in research and extension as well as curricular expansion.

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The USAID-INTERPAKS Cooperative Agreement: A Retrospective

*Burton E. Swanson and Warren E. Peterson**

Introduction

After five years of sustained research effort, the cooperative agreement between the U.S. Agency for International Development (USAID) and INTERPAKS came to a close in August, 1989. The agreement was established to increase our knowledge about technology development, transfer, and feedback systems in agriculture. The project was built on the premise that technological change is the keystone to sustained agricultural development. A particular concern was to learn how to increase small farm household access to improved agricultural technology appropriate to need. A systems perspective and approach was utilized throughout the project.

Initially the INTERPAKS research team developed an analytical model or framework that was based on literature review and the first-hand experience of the research team and its advisory committee. The framework was subsequently modified and refined through a series of analytical case studies that were conducted in Malawi, Taiwan, Mexico and Ecuador. The result of this iterative approach was the development of a diagnostic framework, including system indicators and a flow systems analysis, which enables skilled analysts to identify key institutional and resource constraints to the development, transfer and use of improved agricultural technology.

As a direct result, INTERPAKS has produced an initial research report, a major technical report on the analytical framework and flow system analysis, a two volume annotated bibliography on the relevant literature, four in-depth case studies on the national systems mentioned above, a summary report including a comparative analysis across these four cases, and a field manual for conducting constraint analysis. From this process has evolved a basic set of analytical tools assess different types of agricultural technology systems (i.e., national, regional and commodity), to identify different types of system constraints and then to prioritize objectives for system improvement. The system perspective, concepts, and methods related to this analytical approach are briefly summarized below.

To test the diagnostic framework and determine its versatility, INTERPAKS carried out an evaluation of 22 agricultural research and extension projects for the International Fund for Agricultural Development (IFAD) in 1988 and early 1989. The framework proved to be as valuable for project evaluation as it is for constraint analysis which can serve as a basis for project design and evaluation. It also lends itself to comparative analysis across national systems and/or agricultural research and extension projects. Such analysis can raise policy issues about a donor's investment strategy and then form the basis for operational guidelines to improve the national system where such projects are implemented.

INTERPAKS is currently completing a worldwide analysis of agricultural extension systems for the Food and Agriculture Organization of the United Nations (FAO), using the system indicators from the analytical framework. This analysis, resulting in the first comprehensive data base on national extension systems worldwide, will be presented at the first Global Consultation on Agricultural Extension to be conducted by the FAO in early December, 1989.

The INTERPAKS Analytical Framework: An Overview

From the onset of the project, it was apparent that a systems approach offered the best means of

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

mirroring the complex realities of agricultural technology systems, both in terms of a general model and in terms of characterizing specific national systems and subsystems. Hence the research team developed a general model which included policy, technology development, technology transfer and technology utilization subsystems, and integrating linkage mechanisms. This organizing model was used to develop and refine an analytical framework which embodies two basic activities: (1) the assessment of resources, activities and outputs for each subsystem, using a set of indicators with corresponding measures, and (2) the representation of technology flow through the system from the research subsystem to extension, input supply and other subsystems, to the farmer, and to corresponding feedback channels. The first of these activities uses a set of indicators with related measures which guide data collection for the evaluation of specific functions within national, regional, or commodity systems. The second activity is the portrayal of paths or institutional channels through which different types of technology or technological components flow from source to users, including feedback. Both analytical techniques assist in the identification of constraints to agricultural technology development, transfer, and utilization.

Indicators and measures for the first activity were drawn from existing literature or were created by the research team. A total of 47 indicators with their corresponding measures were field tested through use in the four case studies of national systems, with reduction to a more manageable set of 18 indicators with 36 related measures designed to determine the presence or absence of commonly recurring constraints found in many systems. Since national systems are unique in structure, but not in function, each is unique in the set of institutional constraints that limit the flow of technology through the system. This limited set of diagnostic indicators now used by INTERPAKS focuses on certain resource and management constraints commonly encountered across many national systems, supplemented by a reservoir of additional indicators and measures which can be tapped to address those constraints unique to a given system.

The second activity identifies different types of institutional constraints that limit the flow of technology to farmers. This analysis isolates those institutional bottlenecks that may impede or delay the flow of technology through the system as a whole. These are commonly found in the linkage mechanisms between subsystems (e.g., between research and extension, research and input supply, or extension and farmers) or they may operate within a particular subsystem but affect the entire system. Hence specific types of technology, such as chemical, genetic or agronomic technology, are tracked through the national system, with specific technology channels or paths mapped to assist the basic system indicators in defining the flow problems in the larger technology system.

The System Indicators

Those indicators that have been found to be most effective as the basic tools of discovery, based on use in the four case studies, are grouped under each of four subsystems: policy, development, transfer, and utilization. Multiple measures for each indicator were found to be necessary to handle variations in data availability within individual countries.

Policy Indicators

Policy decisions impact all parts of the technology system, including the flow of technology through the system. For example in some countries, government policies favor the industrial and urban sectors, with corresponding negative effects on the agricultural sector, including both the technology system and farmer access to improved technology. Hence the INTERPAKS policy indicators focus on government investments in the agricultural sector, government price policy, credit availability, and farmer participation in policy matters.

Government investment in the agricultural sector is a general indicator that reflects the priority that government gives to agricultural development and continued technological output. The rule of thumb is that a country should invest between 1-2% of agricultural gross domestic product (AGDP) in research, depending in part on the size of country and factor costs, with roughly an equivalent or larger amount going to extension, especially in countries that have predominantly agricultural economies. The indicators for government investment examine different aspects of funding, including the percentage of AGDP spent on agricultural research and extension individually over time and longitudinal data on government expenditure on the agricultural sector in general, expressed as a percentage of total government expenditures.

A powerful tool of government is pricing policy. Price intervention occurs on both the consumer and producer sides; that is, government can keep food prices low for the urban populations and require farmers to sell crops at or below marginal prices. Input prices for farmers can be set to encourage or discourage the use of improved technology in the form of purchased inputs, with corresponding increases or decreases in farm production. Price policies which work against the interests of farmers tend to be

counterproductive in that they depress local production, increase dependence on externally produced food and generally undermine the nation's overall food security. The INTERPAKS price policy indicator compares farm gate prices to world market prices for major food and export/cash crops, and farmgate commodity prices for staple food crops in relation to the unit cost of fertilizer.

Availability of production credit is important if improved technology in the form of purchased inputs is to be accessible to all major groups of farmers, especially low resource producers. Inputs such as agro-chemicals, fertilizer, and improved seed require money. In many countries, government credit policies and/or the lending practices of banks favor larger commercial farmers to the near exclusion of production credit for small scale farmers who are important producers of the basic food crops. Therefore, the credit indicator determines the amount of credit going to the agricultural sector as a percentage of total institutional credit and then examines the distribution of credit by type of producers. These measures determine whether government is making adequate amounts of credit available to the agricultural sector and whether there is equitable distribution of credit among different categories of farmers.

Another policy area of importance is the degree of farmer participation in program planning and policy decisions; hence INTERPAKS indicators have been selected to determine that degree. The opportunity for all types of farmers to participate in the research and extension advisory boards at the national, provincial, district, and lower levels of the technology system is indicative of the type and level of farmer representation that appears necessary for effective policy and programmatic decision-making. In many countries, wealthy farmers dominate the mechanisms of farmer representation in the technology system, with the needs of low resource farmers rarely identified. Still another measure of the programmatic and policy feedback that government officials and policy makers receive is the percentage and type of farmers who are members of different types of farmer organizations.

Technology Development Indicators

Agricultural research covers a broad continuum from basic research, to disciplinary research within the agricultural sciences, to applied research programs that focus on specific production problems, and to adaptive research which produces location-specific technology. The development, testing, and adaptation of improved technology for farmers is that part of the research subsystem of concern for the INTERPAKS indicators which focus on these common weaknesses: serious resource problems, including insufficient operating funds, shortages of qualified staff, lack of access to external sources of technology, and sometimes an inappropriate research orientation.

Access to external sources of technology (new genetic material, information and training) from International Agricultural Research Centers (IARCs) and other sources is seen as an important means of accelerating and strengthening the technology development process. However, most types of technology cannot be transported directly from one country to another without first being adapted to local agro-ecological conditions. Therefore, even small developing nations must have sufficient research capacity to carry out adaptive research. The INTERPAKS indicator examines the interaction between national researchers and external sources of technology, including the areas of genetic technology, training, and consultation, to assess the existence and strength of these external linkages for key commodities.

The principal problem confronting many research systems in developing countries is the lack of well-trained research personnel and support technicians. For most countries, particularly those in Africa, there are still not enough scientists to meet current or future needs; hence the indicator for human resources evaluates the adequacy of personnel by establishing the number and percent of scientific staff at different educational levels, by field of study, over time. A second measure establishes the scientist-technician ratio.

In many countries, there are severe imbalances in the allocation of the research budget to salaries, program and operations and to the maintenance of capital facilities and equipment. For example, allocation to programs and operations may fall so low that scientists have too few resources to conduct meaningful research and to remain productive. This indicator examines the allocation of the research budget over time, thus revealing existing or emerging problems which will affect research output.

Another common problem encountered is the lack of research investment in the basic food crops, with a disproportionate share of research resources devoted to export/cash crops, reflecting in part earlier colonial investment patterns and the country's continuing need for foreign exchange. The INTERPAKS indicator examines either the human resources or program budget allocated to the different commodity research programs and compares these percentages with the contribution of such commodities to the AGDP.

Knowledge Transfer Indicators

Agricultural extension is part of the technology transfer system, which is primarily concerned with

transmitting information and knowledge about improved agricultural technology from research to farmer. As with research, extension requires adequate human and financial resources if the technical and management skills and knowledge associated with new technology are to be disseminated to farmers. There is a myth that good technology will spread by itself among farmers, by word-of-mouth. There is no doubt that farmer-to-farmer diffusion is important, but extension is essential to accelerate this process and to make sure that appropriate and validated technology is being disseminated. Hence, the INTERPAKS indicators focus on access to research results, human resources for extension, personnel administration, the nature of extension duties, the functional allocation of the recurrent budget, and the output of the extension subsystem as measured by extension activities completed.

Access to agricultural technology presumes that the national agricultural research subsystem has developed and adapted appropriate technology for farmer use. Weak linkage between research and extension is recognized as probably the most serious institutional problem that constrains the flow of technology to farmers in many countries. The causes of the problem are multi-faceted and include such factors as separate institutional housing, separate budgets and work plans, and attitudinal problems caused by social, economic, and educational gaps between research and extension personnel. The indicator looks at the nature and frequency of different types of interaction between research and extension personnel, including visits to research station by extensionists, joint on-farm trials, demonstrations and field days, training and workshops given by research for field extension workers, and joint meetings to finalize recommendations, discuss problems, and plan joint activities for the next season.

Since extension is an educational organization, the knowledge and skill level of its professional personnel is of central importance. The success or failure depends, in large part, on having an adequate number and mix of competent extension personnel. Thus, the level of education, training, and experience of extension administrators/supervisors, subject matter specialist and field extension staff are all important in assessing the adequacy of extension's human resources.

Good personnel management is also essential because the field staff is widely dispersed, its task is educational, and personal initiative, especially on the part of front line personnel, is required for program success. Many extension programs in developing countries have administrative policies and procedures which negatively impact employee morale and thereby limit extension system performance. Therefore, the indicator assesses a wide range of extension personnel management and administration practices, such as evaluation procedures, adequacy of supervision, and the presence or absence of incentives and sanctions. In addition, personnel salaries and benefits are compared to those received by comparable employees in other institutions.

The amount of time extension workers spend on educational and related technology transfer activities, as contrasted with non-extension duties, is an important factor in assessing extension performance. In nearly all developing nations, extension field agents are responsible for a range of non-educational duties, such as government regulatory work, census compilation and implementing credit programs. In addition to the actual time allocated to these non-educational duties, these activities also detract from the credibility of the field staff as they seek to disseminate new technology to farmers. Too often such staff are viewed as pursuing the "government's agenda," rather than disseminating useful technology and helping to solve farmer problems. The indicator used to measure the dilution of the extension effort determines the type of extension and non-extension duties carried out by the field staff and then computes the percentage of time spent on each activity.

As with the research subsystem, the allocation of extension's recurrent budget among salaries, program costs, and capital maintenance should be examined. Inflationary trends in the economy and/or the rapid expansion of the field staff over time can incrementally consume significant portions of the extension budget, with serious impairment of field operations. In some countries, the situation becomes so severe that transportation is not available for agents to visit farmers or for extension supervisors to visit their field officers. Therefore, as with research, this indicator computes the percentage of budgetary allocations to salaries, program operations, and capital costs over time.

The outputs of extension are the messages disseminated to the farm population. Since messages themselves cannot be measured, attention is shifted to the number and type of extension activities completed in the three general categories of individual, group, and mass media methods, which can be used in various combinations tailored to the needs and resources of a country. A number of different measures are used to evaluate the dissemination strategy and output of an extension system. These measures examine extension activities occurring at the individual, group, and mass media level, as well as the capacity of extension to produce its own teaching materials, farmer handouts, and radio broadcasts. The ability of the clientele to utilize specific dissemination techniques is also examined.

Technology Utilization Indicators

There are many constraints to technology utilization in a broad sense, including the lack of farmer resources, inadequate infrastructure, risk aversion among subsistence producers, and problems with access to inputs, as well as equitable distribution of benefits from improved technology. In some countries, improved technologies may have increased the gap between low and high resource farmers because the available technology is inappropriate for subsistence farmers and extension efforts may be concentrated on the larger commercial farmers. Therefore, in terms of this study, the widespread utilization or adoption of improved agricultural technology by farmers is regarded as the primary goal of a national technology system and a measure of how well the overall technology system is functioning. Thus for practical purposes, the indicators used for this subsystem include (1) access to and availability of technology, (2) use of inputs by the different categories of farmers, and (3) adoption of different types of new technology by each farmer category. Because of the high correlation between fertilizer use and crop production increase, fertilizer availability and use becomes the primary measure of assessing farmer access to, and availability of, improved technology in the form of purchased inputs.

Adoption patterns are evaluated by an indicator showing the percentages of different farmer categories who use specific types of new technology, such as improved seed, fertilizer, and recommended cultural practices. There is often a strong correlation between farmer resources and technology adoption rates, with more prosperous farmers showing higher adoption; low adoption rates for specific farmer categories may indicate that the system is not functioning effectively, nor contributing to the overall goal of broad-based agricultural development.

Flow Analysis

The second activity used as part of the INTERPAKS analytical framework is designed to examine technology flow at two levels. The first level tracks specific types of technology (such as genetic, chemical, or agronomic technology) for three or four major commodities through the national system, to map specific channels of technology flow. This process helps identify key institutional actors, functional linkages, major decision points, and time lags. For example, new genetic materials (i.e., new varieties) for the major staple food and protein crops are traced from their development and/or adaptation by research, through the seed multiplication process, to their eventual distribution to farmers. The result is a step-by-step portrayal of the pathway by which genetic material moves through the technology system, including an estimation of the time involved. This allows the analyst to focus on the institutional impediments to genetic technology flow, to simulate alternative arrangements and then to make recommendations for improving the process.

The second level of flow analysis views the operating technology system as a whole, including development and delivery to farmers and the essential feedback linkages, as a means of identifying the major institutional constraints. Thus, poor linkage between research and extension, or inadequate government investment in a particular element or linkage, might be seen as a major impediment to the flow of different kinds of new technology through the national system.

To isolate the key institutional constraints, both the micro and macro levels of flow analysis draw directly from the indicator analysis discussed earlier. Some indicators actually focus on and assess these linkages directly. All are tools of discovery which guide the data collection process by centering interviews on key problem areas commonly found in developing agricultural technology systems. The resulting summation is a creative step which combines the insights generated by applying these two sets of analytical tools (i.e., the indicators and flow system analysis) to an actual technology system and then comparing these insights with findings and patterns found in other national systems to reach a set of conclusions and recommendations for system improvement.

Summing Up the Cooperative Agreement

The USAID-INTERPAKS cooperative agreement was established to develop a set of analytical/diagnostic tools which can be used to identify constraints in different types of agricultural technology systems—constraints that limit system performance in producing a steady flow of appropriate technology to all major groups of farmers. The analytical tools that have been developed through this project and which are now available appear to be remarkably successful in measuring and assessing the functions of national, regional, and/or commodity technology systems. These tools are also useful in evaluating the impact of factors heretofore considered external to the technology development and transfer process, including such matters as government policy and farmer access to and utilization of improved technology. The indicators guide the analytical process, while the flow analysis provides an interactive perspective on the functional linkages that affect the flow of technology to farmers. Together, the two sets of tools that make up the analytical framework give a thorough diagnosis of the functional adequacy of an overall technology system or any of its subsystems. This information in

turn can be used by government policy makers and administrators within national agriculture technology systems, and/or by donor agencies, to focus their efforts on the principal constraints within these systems. Therefore, any planned intervention that results from such an analysis can be clearly focused on important constraints and thereby make efficient use of both governmental and donor resources.

. . . .

For More Information

Because of the size of research outputs resulting from this cooperative agreement and its resource constraints, the primary publications from this project will not be available for general distribution from INTERPAKS. However, microfiche copies of all reports and manuals will be available in the near future from USAID through its Center for Development Information and Evaluation.

A major summary paper, which describes the analytical framework in more detail and which includes the comparative analysis of the four in-depth case studies, will be published shortly by the International Service for National Agricultural Research (ISNAR) as part of the Proceedings of the Technology Management Workshop, held at Rutgers University during July, 1988.

Governments or organizations which are interested in having INTERPAKS carry out such a constraint analysis of their national, regional, or commodity technology system should address the Director of INTERPAKS directly. Such an analysis can be arranged and carried out through a contract with the University of Illinois.

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INTERPAKS

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Caution in Swallowing "Rhetorical Capsules"

"Sustainability" is the latest agricultural "rhetorical capsule," writes Vernon W. Ruttan, well known agricultural economist of the University of Minnesota.* Earlier ones have been "appropriate technology," "integrated pest management," and "low-input technology." For research on new uses for agricultural products, we have created "chemurgy," "utilization research," and now "value added." But the trouble is that to lead desired reforms, the "sustainability" banner must represent definitions broad enough to accommodate the several traditions that must march under it—organic agriculture, land stewardship, agroecology, etc. So far, sustainability does not have the undergirding of research required for success; hence its definition should be a guide to the needed research rather than a guide to immediate practice.

But the key is that any "meaningful definition of sustainability must include the enhancement of agricultural productivity" as well as the maintenance and enhancement of the quality of land and water resources. That is because of the rapid growth in both population and income. It will no longer suffice to rely on a system able to sustain growth in the 0.5 - 1.0 percent per year range, as in past history. The challenge ahead is to sustain rates in the 1.0 - 2.0 percent or even 3.0 - 5.0 range common in the developing and newly industrialized countries. Nothing like it before in history!

As a result, the sustainability impetus calls for research with dual goals: the development of technology and practices to preserve the natural resource base but also the improvement of plants, animals, and production practices "that will facilitate the substitution of biological technology for chemical technology," thus defining "what is biologically feasible."

*"Sustainability is Not Enough, *"American Journal of Alternative Agriculture,"* Spring/Summer 1988.

The Spanish Connection

In the nothing-new-under-the-sun category, we now learn that the world-famous American land-grant agricultural system had century-old antecedents in Spain.* Economic societies founded there as early as 1764 had ideas and objectives similar to agricultural education, experimentation, and extension as they emerged in 1862, 1887, and 1914 in the U.S. system of land-grant colleges, state experiment stations, and federal-state extension services.

The drive toward secularized education and

applied knowledge in place of the church-dominated and socially indifferent type of university education anticipated the characteristics of the later American land-grant institutions: practical, egalitarian, and developmental. The economic societies founded two colleges (both short-lived out of political instability), fostered practical experimentation, and urged the application of knowledge to solving national problems. They did differ from their later American counterparts in having a development mission somewhat broader than agriculture, in "loose and uncoordinated" private efforts rather than public support, and in failure to leave behind comparable enduring institutions.

*Donald R. Street, "Spanish Antecedents to the Hatch Act Experiment System and Land Grant Education," *Agricultural History*, Spring, 1988.

Hell-in-Handbasket Rebuttal

That the world is going to hell in a handbasket has always had vigorous proponents. It is refreshing, and one hopes equally or even more logical, to find convincing advocacy of the opposite view—that there is indeed hope. The hopeful news is that a confluence of recent changes gives us a whole new global system fostering cooperation rather than conflict. Jessica Tuchman Mathews, Vice President of World Resources Institute, thinks this new era also bodes well for saving the world's resources and improving the quality of life. (*Christian Science Monitor*, September 13, 1989).

The new era derives from ending the cold war, uniting Europe in 1992, changing the U.S. from creditor to debtor nation, and spreading global gains for democracy. New, innovative solutions to old problems can be undertaken, outside a rigid, time-honored framework. On the environmental front, for example, hope lies in rethinking the meaning of "national security," which can now shift from fighting nations to fighting resource abuse. The turning away from conflict deemed to be "natural" will also extend to relations between government and the private sector, leading again to more planned cooperation. Self-interest will dictate it, along with perhaps more fear than an ethical sense of right and wrong.

Putting into practice what we already know justifies optimism because the barriers are neither economic nor technological. In fact, a momentous start can be made simply by correcting what we have been doing wrong (most of it). "And I find that optimistic because clearly, if we choose, in our physical impact on the planet, we can tread far more lightly as a species, even with today's technology."

Shortfall in FSR/E: USAID's Evaluation

Preoccupation recently with agricultural "systems," or the holistic approach, has led to several experiments in combining the system components for optimum results. One with the acronym FSR/E, or farming systems research and extension, has been supported by the U.S. Agency for International Development, which has now released an evaluation of 12 projects funded between 1975 and 1987.*

The conclusion is mixed. These projects did provide opportunities to research and extension personnel for training and cooperation in the field, but the method, often insufficiently understood, has not been incorporated into the research/extension systems to an extent needed to attain project expectations. Key constraints have of course included the ever-present lack of linkage between research and extension, non-cooperation among disciplines, and a lack of the problem-solving approach. Too much has been expected too soon. Instead, "the total time needed to institutionalize FSR/E is probably 15 to 25 years or more." Assessing the direct impact is confounded by the fact that conventional agricultural research and FSR/E are complementary, not separable, and adoption of new technology depends on factors not under FSR/E control.

Nevertheless, what are some of the lessons learned? 1. The farmer plays an active, not passive, role in technology development/transfer. 2. The interlocking system concept is inadequately embraced as a guiding rationale. 3. Too little attention has been given the institutional constraints that impede farmers' access to support services (credit, inputs, markets). 4. FSR/E is too often regarded as a research strategy, not as a means of integrating research and extension. 5. The desired impact will be negligible until research and extension personnel work out a joint strategy for full incorporation of the FSR/E methodology into programs undertaken. 6. For USAID itself, new challenges will need to be met on "a sustained, long-term basis," rather than by "magic bullets" sought quickly to achieve smallholder development.

*A.I.D. Evaluation Highlights No. 4, "A Review of A.I.D. Experience: Farming Systems Research and Extension Projects—1975-1987," June 1989.

Ah, Systems!

"Our little systems have their day. They have their day and cease to be." —Alfred Tennyson

Per Youth/Education $193; Per Soldier/Defense $19,536

This worldwide 100 to 1 ratio tells a significant part of the story of current priorities in national development and the low value placed on the needs and potential of youth in comparison to economic, political, and military power. Paradoxically, this applies to the well developed countries with much capacity as well as the developing countries with little capacity. The real trouble is that most of the youth are in the poorest countries, most of which have a high youth ratio (relation of ages 15-29 to ages 30 and older). This prompts the Syracuse University authors of a global assessment of youth status to conclude: "The outlook for the world's future appears dismal."*

The underpinnings of this conclusion are:

1. Age structure, like economics, is a major dimension for social stratification in the world system.
2. Youth ratios range from .343 in Sweden to 1.159 in Zimbabwe, with 12 nations above 1.00 (more youth than adults).
3. Prospects for integration of youth into society are worsened by high youth ratios, since youth are dependent on adults for their well-being and opportunities for participation.
4. There is "a strong inverse relationship between the relative size of a nation's youth population and its level of educational and political development."
5. An "important area where relative size of the youth population is not associated with national economic development is unemployment," where youth even in affluent nations find "no or only a limited place for them in the workforce."
6. There is "marked educational and political inequity facing the majority of youth" worldwide (e.g., from $2,600 per pupil versus only two dollars; and 1 versus 119 in the democratization index rank).
7. A high youth ratio offers potential for cultural and social innovations but also for violence and "dismantling of old institutions."

The global status of youth will improve only when nations change their priorities, to devote more resources and give greater opportunities for their youth to participate in national and world development.

*Richard G. and Margaret M. Braungart, "Youth Status and National Development: A Global Assessment in the 1980s," *Journal of Youth and Adolescence*, Vol. 18, No. 2, 1989.

Fitting Old Extension To New Biotechnology

With biotechnology affecting everything about agriculture, what should be said about extension?

The challenge has to be understood and new strategies devised. With the likelihood that biotechnology will hasten the trend toward larger, fewer farm operations and earlier adoption of new biotechnologies by commercially successful farmers, the competitive disadvantage of the smaller farmer will increase. Better management will be required to use and capitalize on innovations in many fields. Against this background, Thomas J. Hoban, North Carolina State University-Raleigh, suggests several appropriate strategies.* Agents and specialists will need in-service education to integrate the new elements into total farming systems. Extension can provide unbiased information and also give needed feedback to specialists and researchers to insure technologies that are "the most environmentally, socially and economically sound." By further involvement in conducting adaptive field research, extension can work more closely with university scientists and industry to turn basic scientific innovation into useful technology for farmers. To evaluate impacts, agricultural and social scientists will need to join in interdisciplinary teamwork and greater collaboration with the private sector. Public policy education becomes more important to reach both the nonfarm public and the public policymakers in developing more informed decisions affecting health and environment.

Reorientation of effort will be required of the land-grant universities and extensionists toward new biotechnology products, with more resources coming from cooperation with industry. Closer relations with the private sector will raise questions about university autonomy and free information flow. It will also heighten competition in the "information marketplace" with the ever-present threat that extension will be bypassed in the technology flow to farmers.

To maintain its service and the confidence of its clientele, extension will need to move out in a leadership role, with a developed capacity to answer "increasingly sophisticated questions." "Like all new technologies, biotechnologies will have both positive (intended) and negative (unintended) consequences. The challenge is to maximize the benefits, while minimizing negative impacts."

*"Biotechnology: Implications for Extension," *Journal of Extension*, Fall 1989.

INTERPAKS

Using Universities

Universities are themselves a great resource for economic, including agricultural, development. They are grossly underutilized in many, if not most, developing countries. They offer a potential not yet fully harnessed even in the developed countries, where the challenge is dual: not only to help domestic development but also to provide personnel, knowledge, and technology to interested developing countries. Precisely to capitalize on this potential is the mission of the Title XII partnership between U.S. universities and the U.S. Agency for International Development. Much has been achieved; much lies ahead.

BIFAD Briefs, newsletter of the Board for International Food and Agricultural Development, May/June 1989, looks at achievements and future challenges. Greatest change will come in the balance between technical assistance and cooperation. "Partnerships in development cooperation," not one-way technical assistance, will be the wave of the future—in the advanced developing countries now and in the less developed countries as "institutional sustainability questions begin to overshadow institutional building concerns."

In this change, the universities will have a much greater role if they are prepared to reach out for it and if governments are prepared to respond by entering into partnerships. The benefits are obviously mutual.

Behavior Befitting Credit

While not a required conduct code for loans to the destitute, mostly women, the Grameen Bank in Bangladesh does suggest "Sixteen Decisions" for each group formed for borrowing. With emphasis on hard work, discipline, and group solidarity, the suggested commitments are intended to improve family and community living conditions. They urge sanitation with home cleanliness, latrine use, and safe drinking water; small families kept healthy; investment in home improvements; school attendance of children, including girls; and refusal to give or take marriage dowries for their children. The Bank expects group support to aid in changed behavior, as it has aided in the remarkable loan repayment rate of 98 percent.

Professor Mohammed Yunus, University of Chittagong, who started the unconventional Bank 12 years ago, reports that 84 percent of the borrowers in the almost 300 branches are women "because they are better payers and because the income they earn tends to be used more for improving the welfare of the family, especially the children."—from *Agricultural Information Development Bulletin*, June 1989.

Optimism for the 1990s

Reducing agricultural research and rural development is exactly the wrong response to the global food surpluses and other pressures of the 1980s, in the opinion of John W. Mellor, Director of the International Food Policy Research Institute.* Instead, the 1990s should exploit the "extraordinary opportunities" for eliminating the bulk of poverty and hunger in the world while protecting the environment. Technological innovation will be the key, building on the huge past investment in human capital and institution building. Developing countries will need to emphasize growth for smallholders in the labor-intensive sector—growth with cost reduction and intensified production through new technology. They will still need technical help from the developed nations in educational expansion and more scientific research, plus the bottom-up participation that can come from more rural education and rural infrastructure supported by food aid from the surplus-producing nations. Finally, developed and developing nations will need to cooperate, both short-term against hunger and long-term for the growth processes. These strategies, coupled with developed-country markets kept open to developing-country trade, "will greatly facilitate accelerated growth and poverty alleviation in the 1990s..."

*Food Policy Statement, No. 40, June 1989.

Restoring U.S. Research To Competitive Position

If U.S. agricultural research wants to keep its eminent historic place and the nation's competitive edge, it will have to reverse some alarming trends. So says William R. Furtick, Director for Food and Agriculture, U.S. Agency for International Development.*

Past practices are no longer adequate. The old U.S. domination of global agricultural research and training of a high proportion of the world's agricultural scientists has been dwarfed "during the past two decades (by) a large and creditable global...system." Outside the private scientific sector, the U.S. has only seven or eight percent of the world's agricultural researchers, having dropped to "a minor contributor" status. Surprisingly, patent filings and imports show that the U.S. has moved from a major exporter to a net importer of agricultural technology—the opposite of the older days. The emerging problem is how to remain competitive without access to "the first use of new technology." Finally, while other developed countries are providing "substantial funds to link into the global system," the "comparable U.S.

investment is negligible."

Proposed remedies are quite specific, including these major ones:

1. Increase Hatch Act funds by 25 percent earmarked for core support and competitive grants for research collaboration between the state agricultural experiment stations and foreign research institutions.

2. Earmark a similar percentage increase for similar collaboration on the part of the federal Agricultural Research Service.

3. Match the Hatch Act increase with similar dollars to the National Science Foundation for competitive grants for research collaboration between U.S. institutions and the international research system.

4. Establish a $150,000,000 competitive linkage grant program to tie U.S. scientists into programs of the international agricultural research centers (ICARs), as European donors now do.

5. Strengthen USAID development programs by both more dollars and the inauguration of advisory panels for continuity, strategic planning, and program implementation.

With dollars involved in all remedies, where do they come from? Among potential sources, "it would make sound investment sense to channel some of the savings from decreased military assistance into agricultural development, both foreign and domestic."

*"Change Necessary for the U.S. to Compete in an Expanding Global Agricultural Economy," presented to Association of U.S. University Directors of International Agricultural Programs, Newport, Oregon, June 7, 1989.

Agriculture's "One Voice": History, Growth, Future

To have a single voice to represent the agricultural science and education system in the U.S., the Congress in 1977 created the Joint Council on Food and Agricultural Sciences. Its mission is to foster coordination and planning in a necessarily complex system of federal government and in the face of daunting agricultural changes. The unique system encompasses three major functions (teaching, research and extension) which operate on three major levels (federal, state, and private). Now that it has completed 10 years of service, the Council has issued a special report, *Continuing the Momentum: History, Growth, and Future Challenges*. Achievements include information sharing, program analyses, budget development, long-term needs assessment, a process for development of national priorities, and consensus-building. Emphasis is given agricultural biotechnology and the development of scientific expertise in the food and agricultural sciences, with a strengthened interface between science and policy. To exercise its leadership role in the future, the Council proposes to expand its mission by involving appropriate public and private audiences in the base input for the Council's functions; to improve public understanding of the societal benefits of research, extension, and teaching by use of Council-generated information; and to go beyond the mandated reports to the preparation of issue papers, the use of symposiums/forums for generation of alternative solutions to defined problems, and assessment of emerging issues.

"Continuing the momentum" seems assured by what has happened to the Council's co-chairmen. In the transition from the Reagan to the Bush administration, Orville G. Bentley (former Dean of the College of Agriculture, University of Illinois), co-chairman as Assistant Secretary of Agriculture for Science and Education, has been succeeded in his USDA capacity by Charles E. Hess, who served as the other co-chairman while Dean of the College of Agriculture, University of California at Davis.

Swanson New INTERPAKS Head

Effective October 21, 1989, Burton E. Swanson has been named Director of the International Program for Agricultural Knowledge Systems (INTERPAKS). He was one of the originators of INTERPAKS and has served as Research Director since 1984. During this period, he has given leadership for the USAID-funded Cooperative Agreement on Technology Development and Transfer Systems in Agriculture, as well as three studies for the Food and Agriculture Organization of the United Nations (FAO) and a major agricultural research and extension evaluation study for the International Fund for Agricultural Development (IFAD). In making the announcement, John J. Nicholaides, III, Associate Dean and Director, Office of International Agriculture, said the appointment signals the need to integrate INTERPAKS more directly into the ongoing academic programs of the University, including the new Department of Agricultural Communications and Education. He also expressed confidence that Swanson will provide outstanding leadership for INTERPAKS as an important international program of the University.

Seeing the Big Picture: Facing the Competition

With the rat-tat-tat of words like "trade," "markets," "competitive advantage," and "globalization," what is THE word for U.S. agricultural educators, researchers, and extensionists (and others who want to listen in)? G. Edward Schuh, Dean, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, attempts to spell it out by answering what is needed in instruction, research, and extension.* He challenges university agricultural administrators to fill in his "big picture" scenario.

For instructional programs in higher education, he prescribes knowledge and understanding in three areas of greater emphasis: the global economy and society, international agriculture and its impact on the U.S. competitive potential (with every discipline infused with transnational knowledge of both practices and policies), and worldwide institutional arrangements including policy making focused on markets and the role of organizations like the World Bank, FAO, and others.

For research, he says build a research base ("simply not available" now) for understanding the above factors, with special attention to cultures, policies, and exchange rates in relation to both comparative and competitive advantage.

For extension, undertake the harder task of extending to appropriate citizens essentially what the students need to know (and should learn through the curriculum) in order for all to "make better informed economic and technological decisions." At present, "we are missing a golden opportunity" with "sorely inadequate" help for clients competing in the global economy. Extension gives farmers access to technical information but not to information on the global economy and its relevance at home. Present sporadic efforts should be replaced by "sequenced programs and conferences that help to provide the knowledge our constituents need on a systematic basis."

*Council of Administrative Heads of Agriculture, North Central Administrative Symposium, "Proceedings," October 11-13, 1988, Rosemont, Illinois.

Quintessentially Human

"With one stick you can drive 40 sheep, but it takes 100 sticks to drive 100 men."—West African proverb.

What FAO Has Learned About Needed Education

Knowledge gained through long experience with aid to agricultural and rural development should throw important light on changes needed in higher agricultural education. The two are unavoidably linked but not necessarily in the most productive ways—sometimes hardly consciously. What FAO has learned is shared by W. D. Maalouf, its Chief of Agricultural Education and Extension Service.*

Speaking of colleges and universities for agricultural education, he concludes that "these institutions must be deeply integrated in the development process," as is unfortunately "not the case in most developing countries." As repositories of problem-solving resources, as well as teaching, higher education agricultural faculties simply are not adequately used, as corroborated by the experience of other international donors and specifically the evaluative studies by the U.S. Agency for International Development. That leads to lack of relevance in the curriculum and in education of the needed agricultural manpower.

Six directions are proposed for higher education for the future:

1. More involvement in rural development, from living and working in the country to participation in policy-making for national development
2. Curricular development relevant to assessed needs
3. Improved teaching quality even if quantity suffers
4. Leadership role in the national agricultural education/training system, including intermediate and in-service
5. Recognized centrality of both the institutions' own research and the training of researchers, with field application and cooperation with extension and subject-matter personnel
6. Regional and interregional collaboration among institutions, as they exist and as they might agree on shared specializations.

To reiterate the major point: "These institutions need to be deeply involved in the development process. They should reorient their programmes and curricula towards the development needs of the rural people, and especially those of the small farmers and disadvantaged groups."

*"Views on Strategies for Higher Agricultural Education in Support of Agricultural and Rural Development," USAID Conference, Washington, D.C., October 2-8, 1988.

Helpful Ideas: Old and New

Lester R. Brown, **Building a Sustainable Society.** W. W. Norton & Co.: New York and London, 1981 (433 pages).

Examination of this nine-year-old book, with its 40 pages of bibliographic notes, is a useful reminder that "sustainability" is not a concept as new as its current popularity might attest. With his usual cogency, Lester R. Brown, Worldwatch Institute, devotes a third of his book to "converging demands" and two-thirds to remedies by new directions. Stabilizing world population size is the overriding problem, which some recent national efforts show to be "not necessarily unmanageable." Other directions look to preserving our resource underpinnings; turning to renewable energy sources, including solar, instead of fossil fuel; changing life styles and values (less materialism, more equity along with growth); mounting strategies of transition; and altering public, corporate, academic, and media institutions. Also needed are a new definition of "national security" involving people-to-nature as well as nation-to-nation, adoption of a new economic yardstick giving more attention to human welfare than mere GNP, and, overall, a de-escalation of "the extraordinary claims on the earth's resources by our generation..., raising the question of intergenerational equity."

These challenges are still here and long will be, justifying further consideration of the remedies and options presented.

Pervaiz Amir and Hendrik C. Knipscheer, **Conducting On-farm Animal Research: Procedures & Economic Analysis.** Winrock International Institute for Agricultural Development: Morrilton, Ark. 1989 (244 pages).

This training manual is designed to help animal scientists catch up with crop scientists in using farming systems research tools, thus aiding small farmers through better integrated crop-animal research.

Jean Davison, editor, **Agriculture, Women, and Land: The African Experience.** Westview Press: Boulder & London, 1988 (278 pages).

Here are 10 case studies, with an opening contextual chapter and a closing chapter on where to go from here. The cases represent countries where women play a primary role in agricultural production within regions of changing practices in land use and agriculture. They come from Francophone, Lusophone, and Anglophone Africa and from both capitalist and socialist states. The Conclusion considers what is "clearly Africa's best hope for generating the food production it so desperately needs to buy the time to generate long-term solutions to its very complex agricultural problems,"and answers with four policy recommendations: (1) to empower women "by freeing their individual and group energies," (2) to ease "their most stressful labour demands,"(3) to provide legal means for "reasonable security of expectations for women of all ages and statuses," and (4) to support "women's access to credit and their capital accumulation."

Edward C. Wolf, **Beyond the Green Revolution: New Approaches for Third World Agriculture.** Worldwatch Institute: Washington, D.C., 1986 (46 pages).

This is a tightly organized essay on the remaining challenge in Third World agriculture — 300 million hectares supporting more than a billion people — "not measurably improved" by the "mixed results" of the green revolution. That challenge is found among small, low-resource farmers who do not irrigate their fields and cannot afford to buy fertilizer and pesticides, as in Africa, the least benefited by the green revolution. The suggested approaches have become familiar by now (e.g., with biotechnology, sustainability, and the rediscovery of traditional practices) but two cautions are advanced. First, the trend toward agricultural research by private companies (now doing two-thirds of all in the U.S.) distorts the research agenda away from crops and priorities most needed in the Third World; hence the need for a greater commitment to public research at both national and international levels. Second, the green revolution's success with largely one-way technology transfer will have to be replaced by "flow in both directions—between researchers and farmers, between developing and industrial countries."

Nikos Alexandratos, editor, **World Agriculture: Toward 2000.** New York University Press: New York, 1988 (338 pages).

With particular attention to 94 developing countries examined, this is an updated version of a study submitted to the 1979 FAO Conference and published in shorter form in 1981. It takes account of the global recession and extrapolates from a scenario of less rapid economic growth (with slower expansion of demand for agriculture) and a lower growth rate of population than forecast 10 years ago. Chapters take a 25-year backward look and a forward look to 2000, analyzing familiar major issues and newer emphasis on trade, equity along with growth, sustainability interlocked with environment, and technology for the transition from extensive (more arable land) to intensive agriculture.

A rare dissenting note is sounded in the current good-for-one, good-for-all rush to privatization of just about everything right now:

> "Governments must...keep an appropriate balance between the public and private sectors and enthusiasm for reform must not lead governments to curtail too severely the involvement of the public sector. The focus should be rather on improving efficiency, which will often imply some shift in the composition of the public sector rather than an overall reduction in size... Care must be taken to avoid the collapse of a particular service through withdrawal of the public sector when there is no private enterprise ready to take over. Any change-over must be phased and assistance given to the private sector to equip itself to be an effective replacement."

Joseph A. Yager, **Transforming Agriculture in Taiwan: The Experience of the Joint Commission on Rural Reconstruction.** Cornell University Press, Ithaca, N.Y., 1989 (301 pages).

This is the fascinating story of a unique experience in technical assistance and rural development—the work of the Sino-American Joint Commission on Rural Reconstruction. Its work in administering U.S. economic aid began on the mainland less than a year before the historic move to Taiwan after the communist victory. The three Chinese and two American members of the Commission began and carried out programs responsible for, or inseparably interlocked with, the phenomenal transformation of Taiwan agriculture over 30 years. That joint effort lasted through USAID's termination of assistance in 1965 and then, with wholly Chinese membership, still carried on until 1979. The remarkable aspects are many—in competency, in binational cooperation, in shaping national policy, in freedom from bureaucratic constraints, in reconciling growth in production and equity, in income distribution, in land reform, and much else.

The final chapter asks the inevitable question: Can this type of joint commission, existing outside the cooperating government agencies, be adapted and used elsewhere? Given a host of unique historical and economic features in the China-Taiwan relationship, the question "remains open." However, the possibility of some kind of eclectic follow-on is invited in the Foreign Assistance Act of 1966—an invitation nowhere yet accepted.

Jean L. Marx, editor, **A Revolution in Biotechnology.** Cambridge University Press: Cambridge and New York, 1989 (227 pages).

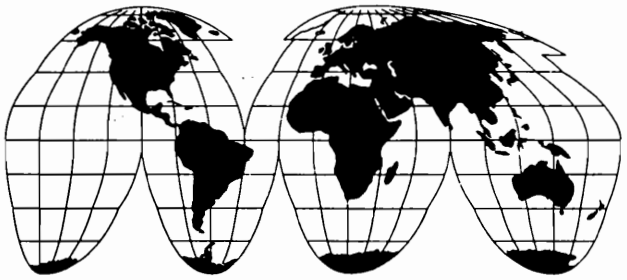
Mankind has been exploiting biotechnology for a long time, as shown in the brewing of beer and many other ways of exploiting (or domesticating) living organisms for the benefit of man, whether animals, plants, microorganisms, or bacteria. The "revolution" is the discovery of directed ways of altering the genetic make-up of microorganisms instead of the trial and error ways of breeding for a permanent change in the hereditary make-up. The resulting new potentialities of biotechnology shape the contents of this book: what is known, the ethical problems involved, and the likely future.

The outcome of the emerging international competition in developing and marketing the new products will depend on interaction and cooperation among the three major actors: government, academic research institutions, and the private sector (investment capital and industry). Government regulation is important because it, ideally, "has to preserve the safety of mankind and the environment without hindering unduly the development of new products."

The authors have a flattering view of the scientific literacy of "the general reader," to whom the book is addressed.

Paying the Price

"If you think education is expensive, try ignorance."



Around the World

Extension Degree to Aid EEC Impact on Portugal

The rural population of Portugal needs some softening of the impact of the country's entry into the European Economic Community with its declining agricultural subsidies. One answer is being sought in the disadvantaged northern region where the majority of farmers cope with less than two hectares in difficult terrain.

With a grant from the Luso-American Development Foundation, the Universidade de Tras-os-Montes e Alto Douro (UTAD) has begun a master's degree program in rural extension education specifically geared to the practicing professionals in technology transfer. The class schedule is part-time, concentrated in two-day periods. Interaction among the professionals-in-training is a key learning feature; hence participation by professionals outside Portugal is welcomed, particularly including linkages with Lusophone Africa. The required four semesters of work, taught by UTAD faculty augmented by visiting professors from European and U.S. universities, conclude with a third semester of action-oriented research planning and methodology and a final semester of thesis work.

Inquiries should go to Professor Artur Cristovao, UTAD, Department de Economia e Sociologia, Apart. 120, 5000 Vila Real, Portugal.

Extension-Clinic Integration

Extension linked with plant clinics can provide a more effective means of integrated pest management for farmers by using locally collected and processed field data for fine-tuning the technical message extension gives growers. *Plant Clinics*, a 36-page report of an international conference held in Germany in 1987 and published by the Technical Centre for Agricultural and Rural Co-operation, 6700 AJ Wageningen, The Netherlands, offers guidance in promoting this idea in developing countries.

Successful Land Reform

Whether land reform benefits the small farmer generally depends on whether (1) it is wrung from the state by peasant groups alone or with powerful allies or (2) it is granted by the state without pressure or on moral grounds. So writes John P. Powelson, University of Colorado, who has published widely on historical land reform with summary conclusions in the *Journal of Economic Growth*, Spring 1989. In (1) the leverage tends to last, with continuing potential for powerful alliances, whereas in (2) the reform may be altered or removed by the state as original grantor. The major distinction is that when the state acts "graciously," land reform is followed by state trading and price controls, "through which the farmer is forced to buy inputs at higher than market prices and sell outputs at lower than market prices." The usual beneficiary is not the farmer but the state, sometimes sharing with the urban consumer. The farmer is effectively deprived of the right to the product of his newly gained property. So the conclusion is that successful land reform calls for farmer participation rather than policies imposed top-down—that is, avoidance of what has gone on for centuries: "land reforms bonded to government intervention in agriculture."

Facing the 21st Century

Agricultural universities will have to be different in the 21st century. What new directions they should take are outlined by Richard Bawden, Hawkesbury Agricultural College in Australia, and Lawrence Busch, University of Kentucky, in a paper prepared for the U.S. Agency for International Development. They will need to turn from:

-production to productivity
-immediate needs to sustainability
-disciplinary to interdisciplinary research
-commodity to systems focus
-reactive to proactive organization
-hierarchical to participatory approach
-agricultural to rural universities.

For Global Education

Michigan State University's Cooperative Extension Service has published *International Connections: Resources for Extension and Community Education Programs*, a seven-chapter, three-ring-binder compilation of background materials, handouts, and lesson plans for non-formal education in international development and understanding.

"Small Farmers" in Court

The view that small farmers ought to be the primary target of the research/extension efforts of the U.S. land-grant universities has had its day in court. Two years ago, a Superior Court judge in California ruled that federal law required the University of California to refocus its agricultural research program to give "primary consideration" to small farmers. An appellate court then reversed that decision and now the California Supreme Court has let the reversal stand.

What Helps Java Maize

Improved varieties are not enough. Physical and natural, social and economic, factors are important, too. Indonesian research on maize production confirms it. Exposure to extension significantly aids adoption of high-yielding varieties, which are also chosen by the better educated, the larger landholders, and the older farmers, contrary to the myth that the older are the more conservative. Land tenancy does not seem to be a constraint to maize improvement, despite the fact that high-yield adoption does vary according to credit access, purchased inputs, and product markets. Limited family labor is a constraint to hybrid adoption because of the more labor-intensive requirements. Increased off- and non-farm income tends to provide more working capital for input purchases and technology adoption. Finally, access to seed production and distribution systems is a positive factor, the betterment of which is widely sought by farmers.—from *Palawija News*, June, 1988.

INTERPAKS Short Course

With extension practitioners enrolled from Somalia, South Africa, Sri Lanka, Zambia, and Zimbabwe, John B. Claar's short course on extension management completed its sixth year of presentation in September.

UNDP Courses

Seven short courses are announced for 1990 by UNDP's field unit: Development Training and Communication Planning (DTCP/UNDP), 5th Floor, Bonifacio Building, University of Life Campus, Meralco Avenue, Pasig, Metro Manila, Philippines. Participants receive practical knowledge and skills for rural development, including extension, training, management, and communications.

User-Supported Extension

What can be done when extension outreach is needed but funds are declining? Sometimes the benefitting users are willing to pay the costs. So it was among 66 homeowners in Massachusetts, who paid $50 each to have regular visits and recommendations from a university-trained program scout. Users received expert lawn service not otherwise available, extension was relieved of the costs, and sustainable cultural practices were adopted (minimum pesticides).—*Journal of Agronomic Education*, Fall, 1988.

Trypanosomiasis Workshop

Addressing a major impediment to livestock productivity in Africa, the International Laboratory for Research on Animal Diseases and UNDP sponsored an international "Chemotherapy for Trypanosomiasis Workshop" in Nairobi, Kenya, August 21-24. Participants represented ILRAD, seven African chemotherapy research institutes, eight Kenyan research institutes, and university and research centers overseas.

Center for Indigenous Knowledge

A center devoted to the preserving and using of local agricultural knowledge of rural people was established at Iowa State University in 1987 and now has a quarterly newsletter, *CIKARD News*. Center functions include a clearinghouse role for indigenous knowledge, relevant research, and training courses for extension workers.

INTERPAKS Activities

Pakistan Project Extended

Shaping a land-grant-type university in Pakistan, the Northwest Frontier Province Agricultural University at Peshawar, will continue with the extension of the University of Illinois contract with USAID, begun in 1984. The $7,400,000 second phase will continue revising the curriculum, developing problem-solving research, and creating effective linkage of outreach to research capabilities. Training of the Peshawar faculty is a major continuing objective. Eighteen have already completed their degrees and returned; 54 are now enrolled in U.S. universities, with 11 at the University of Illinois.

The contract is shared with Southern Illinois University at Carbondale, and its director of international agriculture, Gilbert H. Kroening, has begun his service as team leader for this phase, which will also involve the services of five additional specialists from the University of Illinois at Urbana-Champaign, Southern Illinois University at Carbondale and other supporting institutions.

Swanson Travels

Burton E. Swanson, INTERPAKS Director, participated in the Research-Extension Linkage Workshop at ISNAR, The Hague, Netherlands during September 25-29, 1989. He is a member of the Project Advisory Board.

He was at Egerton University, Njoro, Kenya from November 1-15 coordinating activities on the Institutional Development for Agricultural Training (IDAT) project. Enroute home, he stopped in Egypt to meet with the new President of Menoufia University, Said Hassanein, regarding a joint Menoufia-Illinois proposal on research-extension linkage.

Director in Latin America

John J. Nicholaides, Director, Office of International Agriculture, spent September 17 to 30 in Costa Rica, Ecuador, and Peru, serving on the screening committee for candidates for Fulbright scholarships to the U.S.

Visitors

A delegation from Menoufia University in Egypt — Vice President Haider Ghaleb and Dean Salah El-Kholie, Faculty of Agriculture — met with top University of Illinois officials and INTERPAKS representatives on August 31 and September 1.

Cora Azcena, Director of Extension, University of the Philippines, met with INTERPAKS and other University extension officials on October 2.

Dean in USSR

Dean W. Reginald Gomes, College of Agriculture, participated in the Illinois Agribusiness/Food Processing Equipment Trade Mission in Moscow and Leningrad, September 8 to 18.

FAO-INTERPAKS Study

Under contract with the FAO, INTERPAKS will prepare a booklet of policy guidelines on the recent developments and future directions in agricultural higher education worldwide. It will be based on the findings of case studies of agricultural education institutions in approximately 20 countries and the views of a panel of consultants. The authors will be two former senior University of Illinois officials: Eldon L. Johnson, Vice President Emeritus (and Editor of INTERPAKS *Interchange*), and Orville G. Bentley, Dean Emeritus, College of Agriculture and recently Assistant Secretary, U.S. Department of Agriculture.

FAO Extension Consultation

Burton E. Swanson, Barbara Farner and Ram Bahal will present a paper, "Current Status of Agricultural Extension Worldwide," as one of the keynote papers at the first Global Consultation on Agricultural Extension held by the Food and Agriculture Organization of the United Nations (FAO) during December 4-8, 1989 in Rome. Swanson will also assist in preparing the final report.

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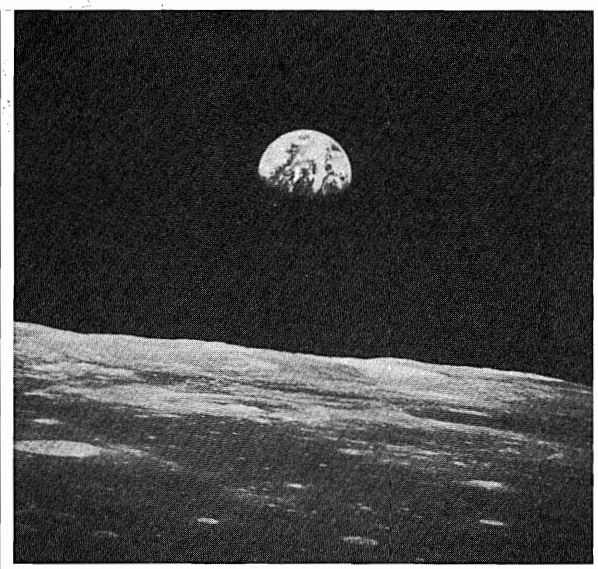
Universities for Development: Problems and Lessons Learned

Purists in the university community may view with skepticism the suggestion that universities should be *for* something, thus incurring the risk of capture by special interests and undue restriction of the university's professed universality of knowledge. Nevertheless, if knowledge is ever to be applied, rather than left purely theoretical, it has to be relevant to *something*. Hence "putting the university to use" for whatever the sponsoring nation most needs has gained understandable credence, with rising expectations of the university as such national needs become urgent. Where specialized agricultural universities exist, the institution is already designed *for* something (agricultural development), but many questions still remain about priorities among the many pressing needs. What are the problems to be prioritized and what are the lessons learned from past experience in the agriculturally oriented universities?

These matters are addressed by Gary E. Hansen, who headed evaluative studies of agricultural education in 10 countries that had received technical assistance from his employing agency, the U.S. Agency for International Development (USAID).* Drawing also upon a related international conference of university leaders from 25 developing countries and the United States, plus representatives of donor agencies (Reston, Virginia, October 2-8, 1988), he identifies six major problems and lessons learned about them. They are discussed below.

1. *Overcoming the legacy of primary devotion to agricultural production.* The time has come for consideration of other critical features of the development process—new technical questions, new institutional structures, and new policy issues. These include the challenges of resource management, extension education, marketing, agro-industry linkages, and employment and income generation, as examples. What lesson has been learned? The universities in question can exercise more leadership and make more impact by focusing on a mission which is more closely geared to new development conditions, the more interested constituencies, and policies and structures fitting a new environment.

2. *Weak external linkages.* Both information and financial resources can be wrung from strong exter-



Planetary Problem: 1990s

Balancing "ism", order, equity

"For 40 years we have lived in a secure system. Yet we have no choice. Most people were equal for many years, but now there will be rich and poor, maybe very poor."—a Polish journalist.

"Capitalism is a great system for the blacks—if they can get a little capital." —a white merchant in South Africa.

"The law, in its majestic equality, forbids the rich as well as the poor to sleep under bridges...and to steal bread."—Anatole France

INTERPAKS (International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.

nal linkages with public and private client groups, leading to "a strong sense of community service," with both curriculum and research attuned to known local needs. Lesson learned: strategic planning (envisaging and programming for the future) needs to be promoted as a management tool, major actors need to be drawn in, and international donor agencies ought to lend financial support, including the training of university personnel in the required management concepts and practices.

3. *Program distortion by university structures.* Traditional disciplinary specialization too often shapes program development, "rather than letting the needs determine the structure." Lesson learned: once mission or program is defined, structures ought to be devised to give needed support, thus making for a "more holistic perspective" and letting faculty allocate and share their time according to problem rather than discipline alone.

4. *Inappropriate learning methods for improving institutional and resource systems.* Methods of inquiry used in the sciences work best "where the human and institutional context can be held constant or factored out of the equation" but less well "where human behavior, individually and collectively, is a dominant factor," as in rural and agricultural development. Where whole systems are interlocked, as in resource management and institutional improvement, the disciplinary approach is "only partially successful or not successful at all." Lesson learned: new research methods can directly involve the university in field level strategies and new education methods can shift from dispensing facts to passive students to learning management/research competencies from problem-solving.

5. *Stifling of innovation by overcentralized government policies.* Static and narrow concepts held by government leaders and controlling ministries often restrict the resident faculty to handing down to passive students what reposes in the pool of stored knowledge—an inadequate role where the outside world cries out for the proactive mobilization of resources to meet the needs of modern agriculture. Lesson learned: the government's agencies controlling the agricultural university (e.g., ministry of agriculture or ministry of education, or both) should assume roles as facilitators, not regulators, tolerating more decentralization of programming because "autonomy appears to be a necessary precondition for creative action and institutional vitality."

6. *University leaders are isolated from cross-national influence.* After the completion of USAID project support, many institutions have suffered from the lack of infusion of ideas from external contacts, indeed sometimes with "a degree of ossification in programs and structures." Lesson learned: obviously developing country leaders should maximize their access to all worldwide sources of university experience, reform, and renewal—personnel exchanges and "twinning" of a developed and a developing university continue to be useful, but a worldwide perspective is also needed. There is likewise a need to train agricultural graduates in understanding and managing the complexities of agricultural systems and to use some of the strongest existing universities as regional in-service training centers for the relevant faculty and administrators.

While these conclusions from the author are intended for technical assistance personnel in project design and implementation, they obviously have broader significance for agricultural education and development.

*"Universities for Development: Lessons for Enhancing the Role of Agricultural Universities in Developing Countries," USAID, February, 1989.

African Growth with Equity

About 30 countries in Sub-Saharan Africa are undertaking structural adjustment programs to restore economic growth, with World Bank help, in the hope that the poor will both participate and benefit. "Neither the World Bank nor anyone else has all the answers," writes Ismail Serageldin, Director of the Bank's Occidental and Central Africa Department in a succinct little 1989 volume, *Poverty, Adjustment, and Growth in Africa.*

Emphasis is put on the *social* dimension—the social aspects of adjustment and the strengthening of governmental capacity to integrate the social dimension into program implementation. The programs have to be country-specific because of Africa's 23:1 range in GDP from the richest to the poorest countries and population growth rates from 1 to 4.4 percent. The object is poverty alleviation by self-sustained growth, which means not only raising per capita incomes and reducing income disparities, but also "systematically developing human resources—a primary engine of long-term development."

Central to this project and to dealing with hunger in Africa is the development of agriculture, where restored and sustainable growth is the only hope for the alleviation of poverty. What is new in growth promotion is the realization by governments and donor agencies that the concerns of the poor and vulnerable must be the "built-in" and not the "add-on" of development programs. "Ultimately, progress lies in the empowerment of the weak and the marginalized so that they may become the producers of their welfare and bounty, not the consumers of charity or aid."

Decentralized Extension Brings Better Results

by John B. Claar, former Director of INTERPAKS

Top-down management and decision making generally result in ineffective extension systems. In both programs and operations, such systems are characterized by decisions made by a few people at the top. There are several reasons why such an approach is unsatisfactory.

Reasons for Change

Extension systems are different from many functions of government. They are educational and advisory rather than regulatory, with no sanctions or authority to bring actions into line with advice. Thus a client-oriented approach is preferred. Top-down management tends to focus on national concerns, sometimes even government-made national plans, and on the distribution of nationwide information. In contrast, "one size does not fit all," since each household is an independent decision-making unit. Instead, priorities and program content of extension must be geared to local attitudes and situations. Involvement, interaction, and feedback among farmers, local extensionists, and adaptive researchers are important in keeping program content relevant. This type of interaction rarely occurs in top-down systems. Even feedback is often weak.

Top-down systems usually feature vertical communications, mostly one-way, with top-only communication laterally with other concerned organizations. Lateral interaction between extension and other parts of the total system, especially adaptive research, is important for extension, as it is also with various levels of government.

In top-down management systems, employees at all levels may resist acceptance of responsibility since they lack both authority and incentives. They may be quite content to let the people at the top make the decisions and accept total responsibility for success or failure.

In top-down systems, decisions may not only be too slow in coming, but they are likely to suffer in quality because of decisions made on inadequate information about local conditions.

Resistance to Change

Given these weaknesses of an authoritarian style of management which could be alleviated by a modified system, why is resistance to change so persistent and difficult? There are several reasons.

Extension managers may not understand the options and may be more comfortable with the current system. Because it has always been done that way, they may feel that this type of behavior is expected of them and that a less authoritarian style would be interpreted as lack of knowledge and will.

Extension managers may feel they cannot risk decentralization because they would not be supported from above when problems occur because of delegation. How the "boss" acts when errors occur has much influence on the extent of delegation.

The extension director may not feel that those below are prepared for decentralization—by training, competence, or understanding of the role expected of them.

There may be reluctance or even resistance on the part of staff to accept more responsibility, particularly if delegated without commensurate authority. Too often the incentives are lacking for the staff to assume such duties and risks since those in similar positions are paid the same regardless of performance.

Change with Benefit

Changing from a top-down authoritarian management style to a decentralized style that functions through delegation, involvement, and interaction is complex. Successful operation calls for more sophisticated skills on the part of managers and staff alike. Considerable training must be done and a supportive philosophy for a decentralized interactive responsibility must emerge. For example, it is important to have a wide understanding of the need and merits of a new system, how it would operate, what will be required, and "what is in it for me." Frequently changes in personnel, employment, and compensation policies must be made to get competent people in the right places and to encourage high performance. Delegation must be clear, dates for completing tasks must be given, and tools for performing the tasks must be provided. For example, locally designed programs of work are normally key components of a decentralized system of extension.

Some parallel changes of a supportive nature will also be needed, particularly in altering basic personnel and compensation policies, without which change is likely to end in disappointment. Personnel systems should offer tangible rewards to those who accept responsibility, develop locally relevant programs, and execute them well. Too often money has been spent to improve extension without addressing these basic problems and prerequisites for success. It is critical that they be addressed along with a changed, decentralized, interactive system in order to achieve the desired results.

In summary, top-down management with most authority held at the top is the easy way, and perhaps the way of least risk, or so it will seem if that is the way it has always been done. But the evidence is overwhelming that it is not the most effective way. Huge dividends will come from changing to a decentral-

ized system that fosters acceptance of responsibility through incentives and provides for local programming through involvement and interaction with the clientele.

"Why Isn't the Whole World Developed?"

Cutting out the suspense, the answer is: the tardy development of mass schooling. There are qualifications, but that is the central thesis of the presidential address to the Economic History Association, Boston, 1980, by Richard A. Easterlin, University of Pennsylvania.*

This is "the foremost question of modern economic history." Two centuries after the onset of the technological age with James Watt's invention of the steam engine, why does the majority of the world's population remain largely unaffected? The answer will also throw light on the outlook for the new era of modern economic growth: When and, if so, how soon, will the whole world become developed? Insight is found in the rate of technological change or the diffusion and adoption of a body of knowledge about improved ways of doing things. Did such adoption in each country come from home-grown or borrowed technology? The latter seems "the more realistic" because of "the striking likeness of modern industrial technology among the various high productivity nations themselves." The limited diffusion of this common technology came from differences in formal schooling and the consequent ability and willingness to adopt the new technology.

That disparity is shown graphically by charting the number enrolled in primary school per 10,000 total population in the 25 largest countries, or three-quarters of the world total. For the period 1830 to 1975, there was extremely limited formal schooling outside northwestern Europe and Northern America, a condition that persisted until 1940 largely "in Africa, most of Asia, and a substantial part of Latin America." This suggests a direct link to "learning potentials and motivations" derived from formal schooling and it is borne out in the march of economic growth progressively to southern and eastern Europe, to the colonies in North America, to Argentina in South America, and then to the "clearly distinctive" development in Japan after the mid-1800s.

This link between economic growth and "appropriate traits and motivation through formal schooling" does not answer what types of education produce what effects but does suggest the indispensability of "a substantial primary education system" reaching the mass rather than the elite. Analysis of different national growth rates also seems to support the thesis that the effective educational content was "secular and rationalistic." This tended to provide greater incentives as well as greater aptitudes.

Now, what of the future? Professor Easterlin is optimistic: the diffusion of modern economic growth is already apparent in the Third World, foretelling a complete transition within another century, despite continuing international income differences. That will not mean human satisfaction and relaxation after material need is banished. Instead, material aspirations will rise, with the luxury of one generation becoming the necessity of another, catching all up in a "hedonistic treadmill." Along with this, recent research suggests, will come increased cultural uniformity.

So the answer to the original question about what produced the present world is "the growth of science and the diffusion of modern education."

**The Journal of Economic History*, March 1981.

Up-dating "Agriculture"

Production of crops and animals is still "agriculture"—some would still say "the bottom line"— but that is not enough. No better proof could be offered than the goals and priorities set by the Joint Council on Food and Agricultural Sciences, U.S. Department of Agriculture, in *Fiscal Year 1991 Priorities for Research, Extension, and Higher Education*. The societal goals are heavily weighted toward environmental concerns and the global aspects of modern-day agriculture. These are also embodied in 12 priorities, as follows:

1. Improve water quality and quantity.
2. Expand biotechnology and its applications.
3. Develop agricultural production systems compatible with the environment.
4. Nurture the nation's talent base in the food and agricultural sciences.
5. Improve understanding of diet, human nutrition, and health relationships.
6. Enhance competitiveness of U.S. agriculture.
7. Genetically improve economically important plants.
8. Improve safety and quality of food products.
9. Investigate potential effects of global climate changes on agriculture and forest productivity.
10. Enhance control of agricultural and forest pests and diseases.
11. Develop new and expanded uses for agricultural and forest products.
12. Enhance rural economic development.

Some Development Don'ts

Sub-Saharan Africa's development, or absence thereof, has lessons for everybody. Lack of progress is bad enough. Slipping back is worse. The reasons are explored in the World Bank's *Sub-Saharan Africa: From Crisis to Sustainable Growth*, from which *The Economist* (December 9, 1989) drew some conclusions which might be cast in a series of "don'ts".

First, don't treat all African countries alike. Zambia has 53 percent urban population; Burkina Faso has seven percent. Annual per capita incomes vary from $130 in Ethiopia to $2,700 in Gabon. While a few countries have improved living standards in the past 30 years, six have fallen from "middle" to "low" income status in World Bank classification in the last decade—Equatorial Guinea, Ghana, Liberia, Nigeria, Sao Tome and Principe, and Zambia.

Second, don't follow an anti-farming strategy. For speedy development, the newly independent African nations chose the Western model of industrialization. That meant urban investment, workers to the cities, and an agricultural "tax" of subsidized prices to consumers and less-than-world prices to farmers. The industrial transformation did not result. When slowed farm output also slowed foreign exports, lack of foreign exchange led to the accumulation of foreign debt. Manufacturing and other industries have grown by only two percent since 1965.

Third, don't rely on hasty, expensive, poor-quality public investments. Africa's public spending is 27 percent of GNP, compared to a 19 percent average for other poor countries. Africa's rate of return fell to 2.5 percent in the 1980s, while South Asia's was 22 percent. The World Bank reports "countless examples of badly chosen and poorly designed public investments," including some with Bank participation.

Fourth, don't take on so many tasks that performance is bound to be poor. Both donors and African governments are guilty.

Fifth, don't rely on government for everything. Governments have their uses, but not for economic management. Proper resource allocation needs freely moving prices. Spending should match revenues, with more going to education and health and less to overstaffed public bodies and more to incentives and less to interference.

Finally, don't think poverty is self-perpetuating. Look at the progress of South Asia, where they have learned some of the "don'ts."

Goals and Holes

"It is not possible to dig a hole in a different place by digging the same hole deeper."—E. de Bono

Farmer-to-Farmer Extension

How to make the most effective linkage with farmers for technology transfer is widely discussed, but not much is said about farmer-to-farmer extension as a mode of dissemination. That sounds too simple, too uninformed, too unscientific. But maybe the trouble is what kind of "science" we are measuring by—natural or social.

In any case, studies in the villages of Niger show that farmers have "a rich body of local technical knowledge in agriculture that could be useful to farmers throughout the Sahel.* They also have active communication networks linked by groups and individuals. So both content and mode of communication are present—and widely used to adopt technologies the farmers believe are affordable and readily available, reduce risk, generate income, save labor, and fit into farming practices. Learning from other farmers is more common than learning from researchers and extensionists because very few technologies coming from these latter sources "are deemed appropriate by farmers."

A multiplier effect is achieved through the group process—peer opinion, testimony, and demonstration through networks like cooperatives, women's groups, and youth associations. A wealth of informal and formal communication modes are now in use, from women talking while drawing water at wells to mass media, with radio most utilized. In contrast, the study questions whether "a network actually exists" among farmer, research, and extension, "other than on paper."

The Niger farmer has a thirst for agricultural information and is perpetually involved in research validation with his/her own "on-farm trials...as done...long before there were universities, agricultural research institutes or extension services." This argues for putting the farmer in the feedback loops with research and extension, and allowing participation in trials of new technologies and in more experimentation for self-help.

The major recommendation calls for strengthening farmer-to-farmer communication of indigenous agricultural knowledge, with the mobilization of participation by women's and youth associations. The reason: "the notion that African farmers are hidebound traditionalists is itself hidebound."

*Constance M. McCorkle, Robert H. Brandstetter, and Gail D. McClure, *A Case Study on Farmer Innovations and Communication in Niger*, Academy for Educational Development, Washington, D.C., 1988.

INTERPAKS

Women in Pakistan: The Long Road Up

Sometimes the worst-scenario case is the most illuminating. So it is with the World Bank's country study of *Women in Pakistan*. It is blunt but sympathetic. The bad news is that women's status is incredibly low even by the standards of other developing nations, even immediate neighbors. The good news is that the government of Pakistan is committed to doing something about it. Doing something is essential for "Pakistan's transformation into a dynamic, middle-income economy." But then the bad news shows up again: "wanting to" runs into "ability to," particularly when a third of the central government's total expenditures goes to defense, which is three times the figure for developing countries generally.

What is the status of women in Pakistan? Extremely complex as well as extremely bad. The elected Prime Minister is a woman. Women are accorded esteem and importance in many social situations. "But on most counts, the welfare and productivity of women in Pakistan is almost the lowest in the world." The number of women living compared to the number of men is the lowest ratio in the world, and getting worse. Female life expectancy, 51 versus 52 years for men, contrasts with other developing countries, where women outlive men by about five years. The female-to-male primary school enrollment ratio is the lowest among Asian countries and the gap between females and males enrolled in secondary school has widened compared with other low-income countries. Women have "very poor health, partly because of their excessive reproductive burden." This projects the expectation that Pakistan's population will double in the next two decades, with no decline in the fertility rate since the mid-1970s. Female participation in the labor force is much lower "than in other Asian, Muslim and low-income countries," with low levels of productivity because of lack of access to needed inputs and services.

What are the strategies for meeting the issue? The authors of the Bank study make strong recommendations for investing more in human resources, for improving economic productivity, for removing overt discrimination, and for the government to make "a strong, visible and sustained commitment" to women's development as part of national development.

On human resource development, this means giving girls better access to education and keeping them longer in secondary school; focus on the poor in bettering women's health, including provision for family planning; and preparation of more female teachers, health workers, and service providers.

Improving economic productivity calls for income-generating services, including agricultural extension for all areas of personal and community development and access to specially designed credit programs for the purchase of improved inputs and technology. It also calls for the organization of women into self-help associations for leadership and empowerment.

Overt discrimination remains but should, "regardless of what else," be removed and the legal status of women improved, with the government better heeding its own rhetoric.

In other words, the government should strongly and visibly embrace a policy recognizing women's development as an integral part of national development, with the same responsibility undertaken at all lower levels of government.

Finally, the mass media should be targeted primarily at men, "to raise the nation's consciousness about the importance of women's role and potential contribution to development."

Perhaps precisely because it is an extreme case, Pakistan carries some transparent lessons for much of the agricultural world.

Dutch Privatization

The Dutch government's privatization of part of the agricultural extension service in 1986 has led to extensive reorganization. This has followed from the need to reshuffle and better define interrelated tasks. Two departments of the Ministry of Agriculture and Fisheries (Animal Husbandry and Dairying, and Arable Farming and Horticulture) have been entirely restructured, with their direct extension functions transferred to the new Agricultural Extension Service incorporated in the privatized Agricultural Extension Foundation. Now to supply direct services to farmers and gardeners, 700 employees will operate through 61 extension teams (10 to 12 members each) out of 21 team offices nationwide. Each team is responsible for all extension in its area, a deliberate effort to maximize special expertise and to produce new ways of thinking.

Also a new Information and Knowledge Centre has been created in each of the animal and plant departments mentioned above to assure the free flow of information among research, extension, government, industry, and education. This can include extension material, instruction packages, policy views, support systems, or research suggestions.—translated from an article by Jo Bos in *Agrarische Voorlichting*, May 1989.

Art, First and Still

"The first and most respectable of all the arts is agriculture." — Rousseau

New Look, Old Problem

Closing the gap between research and extension is an old theme. Since problem-solving requires interdisciplinary collaboration, a systems approach is needed. How to get it or to incorporate it into the agricultural infrastructure is examined in the October-December 1989 issue of the *Journal of Production Agriculture.**

The systems structure can take at least three forms. The first and most informal is ad hoc, linking people across departmental lines. That approach runs the risk of bringing together people of similar orientations, rather than extending the representation more broadly.

The second form is the creation of a new entity (e.g., a "center") to bring together participants from different disciplines, irrespective of departmental lines.

The third approach is to confer departmental status on agricultural systems, providing an umbrella for groups of scientists under some such rubric as "Department of Agricultural Systems: Program in _____ ". This has special appeal at the graduate level.

Future agricultural research will go beyond basic research along disciplinary lines to the "generation of information for decision-making involving complex problems that cut across disciplinary lines, ranging from environmental concerns to international competition." That is where agricultural systems are most relevant. They give the needed continuum between research and extension.

An important footnote to assure faculty participation, especially among junior staff: "A reward structure must be developed that acknowledges this principle and encourages cooperation," with promise of career growth.

*A. Weiss and J. G. Robb, "Challenge for the Future: Incorporating Systems into the Agricultural Infrastructure."

Extension and the Future

"The next generation of agriculturalists must farm from an ecological perspective, but we can no longer wait for a gradual bridging between agricultural and ecology. Current agricultural practices are best modified through education, and the Cooperative Extension Service is ideally suited to assume this challenging task."—Lorin I. Nevling, Chief, Illinois Natural History Survey, *Agro-Ecology*, November/December 1989.

Research: Doing Something

"Doing something about it", beyond the rhetoric, is often the missing part of government policy-making. The Board of Agriculture, U.S. National Research Council, has made a bold attempt to fill that gap. It has proposed a tenfold increase in federal investment in research for the agriculture, food and environmental system—from $50,000,000 to $500,000,000 annually, to support competitive grants to be administered by the U.S. Department of Agriculture.

Modern agriculture has long outgrown the early bounds of raising crops and nurturing livestock. "It is a major influence and component of industry, world trade, and global ecology." Hence it requires "much more knowledge," to be gained by grants both to institutions and to individuals.

In making the proposal in *Investment in Research: A Proposal to Strengthen the Agricultural, Food, and Environmental System*, the Board of Agriculture noted that the U.S. government's support of scientific effort *began* with agriculture in 1862 (the Land Grant College Act) and should be continued with much greater investment.

Two Issues a Year

As a free-subscription journal, *INTERPAKS Interchange* is reducing its costs by publishing two issues a year hereafter instead of three. This issue appears six months after the last (November 1989) and is simply designated as Vol. 7, No. 1, 1990.

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From Aid Awry to Aid Aright

Anyone who has worked much in, with, or around technical assistance in developing countries has seen the disorder (some would say "appalling disorder") often created by scores of donor-financed projects which have little in common except money, good intentions, and external priorities. The cynic may be prompted to say this is not unlike the colonial days except that the national recipient has to dance to the tune of not one master but to a cacophony from many masters. Surely the compounding of good intentions can add up to a better outcome. But it will not be easy.

This possibility is explored in three articles about aid coordination in Africa, published in the *Development Policy Review*, the journal of the Overseas Development Institute in London. The concluding article, June 1989, by Martin E. Adams, ODI Research Associate, gives an analytical summary of experience in Sudan and Kenya, both of which suffer from "advanced forms of donor and project saturation." These "free-wheeling activities" impair the disbursement of aid and muddle its impact.

What is the problem? On the donor side, coordination can be seen as a threat to donor policies or an unwelcome dilution; also "attitudinal obstacles" intrude. For example, there is a patronizing attitude toward planning organizations in the recipient governments and an inadequate appreciation of financial management problems created by donor procedures and priorities, sometimes accompanied by demands which the donors themselves "did not know how to address." On the recipient side, leadership toward coordination is lacking, organization is inadequate, and country needs are seen as jeopardized by the donors' global policies. These characteristics in Sudan and Kenya have counterparts elsewhere.

What are some remedies? A strong central planning unit in the recipient government could give the leadership needed and the protection of agreed priorities or, if that is not forthcoming, a second-best approach would be "a separate, donor-financed monitoring unit to stimulate recipient leadership." Note the emphasis on recipient leadership, existing or induced, which could then be assisted by decentralization of donor aid management to the country level. Parallel to need for attitudinal changes on the part of donor officials is need for incentives in that direction—a combination of "explicit policy directives from top (donor) management" and personnel procedures and evaluations recognizing and rewarding time spent on coordination.

A meliorating circumstance is the economic condition of the recipient government. If annual budgeting of development and recurrent expenditures has broken down and financial autonomy has been lost in economic crisis or mismanagement, then the recipients are without leverage and the donors "tend to be a law unto themselves."

It seems to be a business of neither devils nor demigods, but of common mortals who could do better if they would but try.

The Lumping Syndrome: Danger for Policy

It is common to characterize national economies in terms that imply uniformity, ignoring regional differences. In varying degrees, all countries have the richer and the poorer, in both people and regions. A country as large and diverse as the United States gives graphic evidence. A study of regional characteristics of U.S. farms and farmers paints the picture of "the heterogeneity of the farm sector at the national level" as derived from the analysis of the nine "relatively homogeneous subregions" identified.*

Understanding these differences is essential in determining national policy in agricultural and rural development. For example, government crop supports will impact on the Midwest and Northern Plains in contrast to the impact on the Delta, Eastern Highlands, and Coastal Plains subregions. The former areas are most dependent on agriculture and on commodities that lend themselves to government price support, have fewer off-farm sources of income, and possess a large number of "financially vulnerable midsized farmers"; whereas the latter areas produce varied products less relevant to commodity price support and have the lowest income for the farm population, which "makes up only a small portion of rural residents and earns two-thirds or more of its total income off the farm." Also, non-agricultural policies, like job retraining, may be more relevant and helpful in these latter regions, although often seen as a remedy in the financially distressed Midwest and Great Plains.

The study also cautions that focus on small farms will have to recognize the differences between and within subregions. For example, both California and Eastern Highlands subregions have many small farms but in the latter the occupants are less educated, have less access to off-farm employment except of the manual type, and earn much lower incomes. In some regions, the farm population will be less affected by "farm policy" than by policies directed to all residents.

*Matthew G. Smith and Fred Hines, "Regional Characteristics of U.S. Farms and Farmers in the 1980's", Agricultural and Rural Economy Division, U.S. Department of Agriculture, 1988.

Helpful Ideas: Old and New

Training for Agriculture and Rural Development. Food and Agriculture Organization of the United Nations: Rome, 1988 (163 pages).

This is a presentation of "studies, problems, and strategies" in university-level agricultural education in the developing nations, intended for use in "training for agricultural and rural development." Four articles cover general issues, four are case studies or particular programs, and others deal with intermediate agricultural education and women in development. An excellent lead-off article by R. N. Khan, Unesco educational consultant, emphasizes that since higher education offers underprivileged individuals "opportunities for personal advancement and improved career prospects," it must not permit the continuing neglect of two important sources of agricultural development: excellent talent from the rural areas and the contributions of the social sciences. Rural area talent must share access to higher education because it is the best ladder for upward mobility. Now that production agriculture is not enough alone but needs to be coupled with social change, the social sciences become particularly relevant. In fact, "development" is simply "controlled social change through purposeful action, both individual and collective."

Viqar Ahmed and Michael Bamberger, **Monitoring and Evaluating Development Projects: The South Asian Experience.** World Bank: Washington, D.C., 1989 (91 pages).

The management technique of monitoring and evaluation has received much attention in recent years, with more acceptance in theory than success in practice. This seminar report of case studies in the management of development projects in South Asia makes theory quite concrete in application, with critical analysis of strengths and weaknesses and recommendations for the future. The focus is on organizational arrangement, from national to local levels.

The basic elements of the needed systems are in place in most countries studied but the full potential is rarely achieved, as the data is also rarely used, if used at all. That is why the seminar devoted attention to the development of training materials for future courses in the Bank's Economic Development Institute and in national training institutions in Asia.

Jaime B. Valera, Vincente A. Martinez, and Ramiro F. Plopino, editors, **An Introduction to Extension Delivery Systems.** Island Publishing House, Inc.: Manila, Philippines, 1987 (188 pages).

This is written from the point of view of needs in most of the developing agricultural world, where 65 percent of the people depend on agriculture for a living and 80 percent of the poorest are rural-based. This is the situation in the Philippines, where the editors and authors are experienced professionals connected with the University of the Philippines at Los Baños. The thorough treatment of all aspects of agricultural delivery systems begins in the conviction that the bias against agricultural development must give way to concern for "equity and social justice...farm family-focused, rural community-based, and farm management-oriented."

Constance M. McCorkle, editor, **The Social Sciences in International Agricultural Research.** Lynne Rienner: Boulder & London, 1989 (266 pages).

Concrete cases are here presented as evidence that, when given the opportunity, the social sciences have made wide-ranging contributions to agricultural research and development. The evidence comes from the Collaborative Research Support Programs (CRSPs) funded by the U.S. Agency for International Development. More than 20 authors present their views.

The last four-part section of the book gives non-social scientists an opportunity to tell about the tensions between disciplines, the problems encountered, and the modes of improved collaboration. All participants, regardless of discipline, join in the editor's conclusion that "based on a decade of experience with the CRSP model, the firm consensus is that it is well worth the effort" and worth emulation in the future.

Dan R. Minnick, **A Guide to Creating Self-Learning Materials.** International Rice Research Institute: Los Baños, Laguna, Philippines, 1989 (219 pages).

This how-to-do-it manual is used to assist trainers and communicators in extension work on rice, but it is also highly suggestive for use in all kinds of training situations. Well organized with an economy of language and use of two-color graphics, the book presents a way to increase training coverage by self-study systems for independent learning and the adaptation of learning packages for better communication with technology users.

Kenya: Role of Women in Economic Development. World Bank: Washington, D. C., 1989 (172 pages).

In its first country study on women in development, the World Bank gives education and extension prominent roles in Kenya's considerable achievements. Women living in rural areas (nine out of ten) are 60% literate, representing "great gains" in the last 20 years. Agricultural extension, with a good record in reaching women as the majority of farmers, has raised yields from 20% to 40%. Women adjust readily to extension because they are accustomed to group effort, which permits the possible doubling of extension's reach and great reduction in time and costs through regular meetings of 15-20 with extension agents.

Each major section of the study ends with conclusions about how best to make improvements in the status of women. Education is highly touted as "the single most effective way." Pessimism is expressed about "free" instruction as in the past in the view of population pressures; hence user charges should be explored—particularly at the university level, in the Bank's now common refrain. This route to elevating women's role is not reconciled with the recognition that "girls are more dependent than boys are on their parents' ability to pay for their education."

J. Lin Compton, editor, **The Transformation of International Agricultural Research and Development.** Lynne Rienner Publishers: Boulder & London, 1989 (237 pages).

Nine chapters give a partial assessment of the impact of U.S. type agricultural research and extension institutions on agriculture in developing countries. Covered are history, a case study, problem areas, the role of the international agricultural research system, and the new farming systems research and extension.

In his chapter on transfer abroad, Everett M. Rogers concludes that the U.S. extension "model" (tied directly to land-grant university teaching and research) was "only partially transferred to Third World nations." Of the three interlocking components, extension was the poorest fit for overseas transfer: either no base for extension existed or it existed in a ministry of agriculture rather than a university. Hence there were deficiencies in farmer contact, availability of technology, and feedback to guide research.

The book was commissioned as part of the centennial celebration of the passage of the Hatch Act of 1887, assuring an agricultural experiment station in every U.S. state.

Abbas M. Kesseba, editor, **Technology Systems for Small Farmers: Issues and Options.** Westview Press: Boulder, San Francisco, & London, 1989 (229 pages).

This is published in cooperation with the International Fund for Agricultural Development and partially derives from an IFAD seminar held in Korea in 1988. The authors are respected experts who approach common concerns from different views, all aimed at the generation and maintenance of research-extension systems best suited to the needs of poor small farmers. In fact, the approach is explicitly stated as "solely from the perspective of the small farmer."

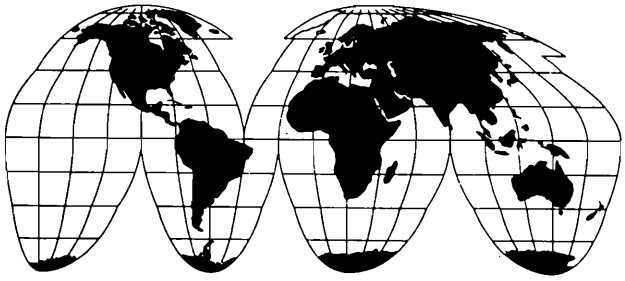
Provocative thoughts are added to the familiar conception of technology transfer: expansion to include human resource development of the rural community, less emphasis on message transfer and more on skills development among farmers, the need for sustainability as an added new objective, and the strong contention that raising farm family income is the ultimate extension objective—"a powerful proposition with powerful implications."

Michael Baxter, Roger Slade, and John Howell, **Aid and Agricultural Extension: Evidence from the World Bank and Other Donors.** World Bank: Washington, D.C., 1989 (76 pages).

Technical Paper Number 87 explores issues and options in improving existing extension systems, admitting that no single one is "best" everywhere all the time. Fortunately, many developing countries already have a good starting point: a field-oriented administrative structure; requisite staff (field, supervisory, and specialist); a system for developing work programs and technical recommendations; links with research and agricultural planning; training programs for staff and for agent communication with farmers; media support; and some monitoring/evaluation procedure. "The challenge is to improve on this beginning."

World Development Report 1989. World Bank: Washington, D.C., 1989 (251 pages).

Here again is the annual indispensable storehouse of data on world development—a treatise on financial systems and almost 100 pages of development indicators and revealing statistics. Among the hundreds of answers to hundreds of questions in this summary of economic growth rates (average annual change since 1965) are: the greatest increase, Asian countries; the lowest, Sub-Saharan Africa (an actual decline); and in between, all other developing countries.



Around the World

Workshop: Women and Policy

A four-week workshop for producers and consumers of policy-related research on the role of women in international development will be held at the University of Illinois at Urbana-Champaign, June 18-July 13, 1990. The intent is to meet the critical need to develop research and computer skills to address gender issues more efficiently in development planning through the use of national and international databases—specifically WISTAT (UN's Women's Indicators and Statistics), containing extensive data from 134 countries. Potential beneficiaries are computer novices and professionals who want access to new databases and both academics and field-level researchers in this policy/planning area. This will be a hands-on workshop with the ultimate goal of assuring proficiency in applying micro-computers for policy analysis.

Faculty and workshop organizers are Sam H. Johnson, Department of Agricultural Economics; Jane S. Johnson, independent consultant in information systems; and Kathleen Cloud, Director of the Office of Women in International Development. For further information on the workshop, "Women, Public Policy and Development: Utilizing Microcomputer Databases," address Sam H. Johnson, 1301 West Gregory Drive, University of Illinois, Urbana, IL 61801, Telex: 206957 INTAG URBA.

Research-Extension Association

A new international association has been formed "to promote the development and dissemination of methods and results of participatory on-farm systems research and extension." It is the Association for Farming Systems Research-Extension, which will sponsor the international farming systems symposium, now approaching its tenth year, and publish the *Journal of Farming Systems Research Extension* three times a year.—*FSRE Newsletter*, No. 3, 1989, 3028 McCarty Hall, University of Florida, Gainesville, Florida 32611.

Diversion to Agriculture

The new government in India has announced that it will invest 50 percent of available resources in agriculture and the rural sector. But "available resources" depends on some reallocations. India is now thirteenth among nations in military expenditure, while its per capita GNP is less than half of the average in all developing countries and education is only a third on a per capita basis (US $9 vs. US $27).—*South*, February 1990.

Workshop in Israel

A workshop on "Curriculum Development and Evaluation for Agricultural Schools and Institutions" will be held at the Faculty of Agriculture, The Hebrew University of Jerusalem, in Rehovot, Israel, from October 7 to 26, 1990. The main topics will be agricultural education in different parts of the world, school farms for different purposes, introduction to curriculum development, curricular elements and their use, computer-assisted curriculum development, integration in agricultural education, implementing agricultural curriculum reform, and curriculum evaluation.

"Food Grant" University

To assure the stability of Jamaica's College of Agriculture, Louisiana State University in cooperation with the U.S. Agency for International Development proposes using local currency generated by the U.S.P.L. 480 food aid program to establish a foundation. The intention is to support ongoing budgets after development assistance ends.—*BIFAD Briefs*, Sept/Oct 1989.

Vetiver Grass

The World Bank has issued the third edition (1990) of *Vetiver Grass: The Hedge Against Erosion*. This slim 78-page handbook is a good extension piece which promotes the conservation merits of the grass long used in India to prevent topsoil losses, which "in the past have brought down whole civilizations."

To make this section a useful permanent feature, items are solicited: news about organizational changes and new programs or methods, excluding personal items. Editing will be done for reasons of space and consistency.

INTERPAKS Activities

INTERPAKS Expands Resources

INTERPAKS is currently refocusing its efforts and expanding its resources to be more responsive to project opportunities around the world. Specifically, the number of INTERPAKS Associates has increased to more than 40 internationally experienced faculty and staff at the University. This expansion increases both the breadth and depth of expertise that can be directed toward development problems overseas.

INTERPAKS Papers

Three INTERPAKS-originated papers were presented at the annual meeting of the Association for International Agricultural and Extension Education in Washington, D.C., March 29-31, 1990, by Burton E. Swanson, INTERPAKS Director, Barbara Farner, Illinois Cooperative Extension Service, and Ram Bahal, Ph.D. candidate specializing in agricultural extension.

Draft Report to FAO

Under the FAO-INTERPAKS contract, Orville G. Bentley and Eldon L. Johnson have submitted a draft report to FAO on "Strategy Options for Higher Agricultural Education," preparatory to an informal consultation in Rome later in the year. The report is based on approximately 20 FAO-commissioned case studies of agricultural institutions of higher education around the world.

Costa Rican Dedication

John J. Nicholaides, Director, Office of International Agriculture, was in Costa Rica, March 24-29, for the dedication ceremonies of the Regional Agricultural School of the Humid Tropics.

Director's Activities

On an extended overseas mission in early February, INTERPAKS Director Burton E. Swanson combined several activities. In Rome, he reviewed the Global Consultation on Agricultural Extension report at FAO headquarters and held exploratory discussions in the International Fund for Agricultural Development. In Cairo, he met with officials of the U.S. Agency for International Development, Menoufia University, and the Agricultural Research Center. In Portugal, he conducted a mid-project evaluation of the master's degree program in rural education and development at the Universidade de Tras-os-Montes y Alto Douro in Vila Real and reported his findings to the Luso-American Development Foundation in Lisbon. In New York City, enroute home, he presented a seminar at the headquarters of the United Nations Development Programme.

Interuniversity Partnership

The Director and Associate Director of the Office of International Agriculture—John J. Nicholaides and Thomas A. McCowen—visited Kenya in January, conferring with representatives of Egerton University in Njoro and USAID in Nairobi.

Mexican Field Trip

Eleven advanced students from the College of Agriculture took their spring break, March 18-24, on a field trip to the central agricultural region of Mexico under the leadership of Alberto Zuloaga, INTERPAKS Associate and visiting scholar. They visited subsistence farmers, experiment stations, the Puebla Project and CIMMYT headquarters. Dr. Zuloaga was director of agricultural research for this region of Mexico before taking sabbatical leave at Illinois.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign Vol. 7, No. 2, 1990

Whacking the Pendulum Or Middle of the Road?

Conventional agriculture is getting a bad name and a bad press. Everything has to be "sustainable," with great divergence in what that means. Predictably, some of the most ardent critics want to whack the pendulum over to the other side. Also predictably, long-quiet voices are now being raised for some moderation and, at minimum, return to the middle of the road. Four articles in the July-September issue of the *Journal of Production Agriculture* address the controversy. The authors (Robert Rodale, Robert E. Wagner, Dennis Keeney, and Peter E. Hildebrand) have something to say to all the principal actors.

To all of us: the agricultural road has changed and is now crowded with many former outsiders (inventors, consumers, lobbyists, politicians, environmentalists, input suppliers, and, yes, scientists, but they must now share their power to transform agriculture).

To the press: "Media mania has developed to a fever pitch." It has given the impression that the National Research Council's report "lauds chemical-free farming" and given a favorable gloss to unsound science.

To the extreme critics: "Remember, many are talking about abandoning the system that is envied around the globe as the epitome of agricultural development." They are creating a "groundswell of misperceptions that American agriculture is hopelessly sick with overdoses of chemicals and that the only cure is organic..."

To the researchers: "sound science" is the answer, not merely an "obsession to cut inputs." Sustainability is readily accepted and will indeed shape future research, but much of it will need to be carried out on farms, under farm conditions. Many researchers "will need to return to the farm" in a most literal sense and turn to colleagues in multidisciplinary effort. There needs to be less fixed-location station research and less preoccupation with journal publication instead of technology adoption.

To the universities: agricultural universities, writes author Rodale, did not create the sustainable agricultural method—farmers did. Instead, universities broke agriculture into discrete departments with "a poor match for the idea and practice of sustainability." To correct this fundamental weakness for their own good, quite apart from sustainability but to create a climate "to solve *any* kind of farm operational challenge," the universities must move toward a systems approach. They should grasp this "heaven-sent opportunity" presented by "the idea of an agriculture designed for all time." Use it; don't fight it.

The consensus is that rhetoric is wasted in debate about an all-chemical or an all-organic system. Improvement of agricultural productivity must continue if the world is to be fed. The problem is how to do it with preservation of the environment and with the ability of the poor to afford what is produced. Significantly, two of the authors use the same title: "Finding the Middle of the Road on Sustainability."

The Great Tablecloth

"Eating alone is a disappointment, but not eating matters more... let us sit down soon to eat with all those who haven't eaten; let us spread great tablecloths, put salt in the lakes of the world, set up planetary bakeries, stables with strawberries in snow, and a plate like the moon itself from which we can all eat. For now I ask no more than the justice of eating." — Pablo Neruda, Nobel Laureate in Literature.

INTERPAKS *(International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.*

Is Extension Extinct?

That is not exactly the question posed by Charles H. Antholt, Head of the Farm Technology Unit, Technical Department/Agriculture, Asia Region of the World Bank. Rather, he asks whether and, if so, how extension is overrated as a factor in agricultural productivity; and at least minimally, how extension can be improved when properly understood.*

The author's address, prepared for an extension seminar in Islamabad, Pakistan, March 7, 1990, first examines the "new level of importance and urgency" of concerns about "the relevance and responsiveness of agricultural extension." Three new factors have to be considered: the interdependence of nations through trade and telecommunications; the limits of land and water resources (yield per unit of water rather than kilos per hectare may soon be the measure for many countries); and budgetary constraints in all governments.

Then are presented the experiences in three case studies of agricultural technology diffusion in India and Pakistan, in order to "raise the level of debate about generic, strategic issues in agricultural extension." While the experiences have some contradictions, the conclusion is that intensive efforts to extend new technology to farmers (sometimes with a doubling of the extension staff) yielded disappointing results, sometimes "no better—and no worse" and disappointing even where a small yield increase was found. In general, growth appeared to depend on added irrigated land, fertilizer use, and considerations of markets and price. As to T&V, "it is difficult to conclude that T&V had a differential impact on the rate of change in overall agricultural productivity or wheat yields when comparing Haryana and Punjab." None of this means that "agricultural extension is unimportant." It does mean that the discovery of the "right" technology is critical and that when the farmers find the technology "good" for them, they will quickly adopt it; hence "the central importance of 'getting the technology right' in the first place."

What is left, then, after this "more realistic perspective" of extension as only one of the factors in agricultural development? Still, "effective agricultural extension can facilitate the adoption of new technology, and more importantly, enhance the capacity of farm families to cope with their environment and respond to new opportunities more productively." Complementary to technology transfer is the creation of human capital—by education generally and by an "enhanced level of staff competence." Several other concepts are useful. These include *relevancy* with mechanisms to insure "rapid recognition and accommodation to change" and *responsiveness* to the needs of farm families, recognizing the internal requirement of incentives to motivate front line extension personnel. Also since farmers learn quickly from other farmers, *traditional communication systems* should be put to better use.

On the negative side, two concepts had better be thrown away: the idea that a large number of extension agents is required for an effective service and the notion that extension is the implementing arm of national planning and agricultural production. Rather, if extension succeeds in its intended impact on farmers, "the planners have little to worry about."

A word about the extension staff: professional competence is the key, not mere ability to carry messages or transmit information. Understanding farming as a whole, communicating with farmers, and identifying different options—even having "real farm background" — these are desired qualifications.

Also a word about organization: the needs are for abandonment of top-down systems, strong research-extension linkages (sometimes with personnel exchanges), and "closer integration between agricultural universities and extension." In fact, in looking ahead, the author concludes, "the single most important initiative that agricultural extension could take would be to evolve control and responsibility for support of agricultural extension to farm families," linking the well-being of extension with the well-being of its clients.

* "Strategic Issues for Agricultural Extension in Pakistan: Looking back to look ahead."

1991 Land-Grant Priorities

Six program-funding and strategic-investment goals have been set by the National Association of the State Universities and Land-Grant Colleges to continue "the modern miracle of U.S. agricultural productivity, spearheaded by the land-grant university system." They include:

1. Agricultural sector — insure that it is profitable and sustainable
2. Food supply — maintain it as safe, wholesome, and nutritious
3. Environment — conserve and protect natural resources
4. Competitiveness — enhance and sustain it in agriculture
5. Rural economy — revitalize for families and communities
6. Human resources — maintain their excellence.

These program priorities are turned into funding recommendations presented in *Strategic Investments for Agricultural Research, Extension and Higher Education for Fiscal 1991.*

Agricultural Education: "The Second Generation"

The time has come for institution building to change to institution revitalization, now that the new agricultural universities in the developing countries are facing second generation problems. That is the theme of Gary E. Hansen as he interprets the issues derived from evaluative studies of agricultural universities in 10 countries, under his leadership for the U.S. Agency for International Development.* (The problems and lessons learned were reported in the last issue of *INTERPAKS Interchange*.)

An era is ending — the era of three decades of USAID assistance in developing agricultural colleges and universities in 40 countries by pairing the host institution with a U.S. land-grant university. USAID is returning to some of the previously aided institutions in a new project cycle but with "the emphasis less on institutional pairing than on revitalizing" through broader-scale multi-institutional collaboration. The new challenge is how to counter increasing internal inertia and external decline in political and financial support — how to build "an environment that encourages vigorous university leadership and innovation." There are four variables: policy, mission, organization, and philosophy.

Major policy considerations relate to government control over university affairs, as in enrollment, budget, curriculum, and particularly the structural mechanism through which relations operate. University-government linkage is best, the author contends, if the vehicle is the ministry of agriculture and not the ministry of education. That provides a like-minded professional interest and the "only bureaucratic ally," with greater likelihood of budget support and cooperation rather than competition.

The entire mission of the agricultural university needs reexamination and restatement in broader terms. To the traditional dominance of the plant and animal sciences for production agriculture should now be added more of the social sciences to produce institutional capacity "for influencing social and economic change in the rural sector." This fruitful combination has been thwarted in the past by preoccupation with technology development and diffusion derived from the physical sciences.

These universities also need concomitant organizational change to shift from the fragmented discipline-based mode to "cross-disciplinary structures...integrated around a set of common themes and agendas." Small agricultural colleges in particular should capitalize on their comparative advantage, which lies not at the leading scientific edge but "at the other end of the spectrum, where learning occurs in the application of knowledge to problem solving."

Another change should embrace the philosophy of student education for an active role, with much more "hands-on exploration of complex issues" and much less passivism in the classroom. This admittedly means more and better learning materials and equipment.

All this, the author thinks, adds up to a new conception of the university, going beyond the now common neo-classical type, which combines the medieval classical and the German scientific/technical. In summary, such universities would have four new characteristics. Their agricultural mission would go beyond production to "enhancing rural well-being" in the broadest sense. They would have "a much more programmatic and activist orientation," using rural areas as learning laboratories. Their teaching philosophy would prepare graduates for problem solving by analyzing and managing change. Finally, their basic organization would "become a matrix of interconnected task groups clustered around major programmatic themes" in place of dominant disciplinary departments.

In what might be a fifth characteristic, such universities will also operate in international networks to assure revitalization through exchange of information and experience in "new ways of engaging the university with its environment."

Knowing that change rarely flows from a unanimity of opinion, the author courageously announces that his intent is to provoke debate and dialogue. In that spirit, some critic is likely to suggest that there is preoccupation with having precisely the right organization rather than perfecting what has to be done to make *any* organization work. For example, in a country where the agricultural institution reports through the ministry of education instead of the ministry of agriculture, should the particular *channel* preempt all attention, thus subverting the establishment and perfecting of mechanisms for collaboration? The world is full of experience with *both* reporting channels — and full of debate about their respective merits. Eliminating organizational ambiguity in every circumstance would not seem to be an indispensable university goal. (Nor can it be in making an either/or choice between disciplinary departments and issue-oriented clusters, as also suggested in the essay.)

Other questions emerge about the indispensability or superiority of reporting through the ministry of agriculture. As a prescription, it may fit a free-standing agricultural college, but what happens to the comphensive university if other faculties insist upon reporting to their ministerial allies: business to the ministry of commerce, law to the ministry of justice, etc.? How does this aid, rather

than inhibit, the recommended drive toward a broadened conception of "agriculture" both in the university community and in the external world? And what price is to be paid in the marketplace by the graduates of "ag programs" which resist integration with the nation's educational mainstream?

Nevertheless, these and other specific questions in the invited dialogue in no way detract from the general merit of this contribution based on evaluative studies of worldwide experience.

*"Beyond the Neoclassical University: Agricultural Higher Education in the Developing World — An Interpretive Essay," *A.I.D. Program Evaluation Report No. 20, January, 1990.*

Terrorizing the Potato

Terrorism against the lowly tuber does not seem to make much sense. But that is the point to terrorism: it is senseless and thus wholly unpredictable.

In any case, the terrorists are the Shining Path organization; the victim, the research of the International Potato Center (CIP); and the place, the original home of the potato, Peru. This international agricultural research center, one of 13 in a worldwide network, has been forced to pull all of its staff out of Huancayo, high in the Andes, after the field station there was bombed and burned. The blame focuses on the Shining Path guerrillas, who are not given to logic in their methods of trying to destabilize the Peruvian government. CIP is not a creature of that government and its research has greatly aided Peruvian agriculture and small farmers, whom the Shining Path professes to be aiding by its Robin Hood tactics.

Internationally, as a research wholesaler, CIP distributes germ plasm that can be adapted by local plant breeders to local conditions. Developing countries are aided by eight regional operations designed to foster the collaboration of national and international counterparts.

CIP's director general has no intention of letting 2000 percent inflation and terrorism drive CIP out of Peru. There is no problem of getting and retaining good external staff and in relying on several hundred Peruvians with on-the-job training and experience. One means of security in any developing country, says the experienced director general, is to maintain a low profile, avoiding flashy cars, the best houses, and a "country-club style." — *Science*, March 16, 1990.

Watch New Zealand

Whether or not the wave of the future, New Zealand is already where some policy-makers predict all public technology transfer systems are going. The government stopped funding agricultural extension five years ago, but authorized the Ministry of Agriculture and Fisheries to sell its services on the national and international market. A new advisory service, Consultancy Business, is budgeted to be self-supporting after June, 1990, with the government now paying for the services it still receives, like policy advice and data collection. International consultancy and training now devolve upon MAF International, which promotes "bringing New Zealand technology to the world" through experienced MAF consultants. Funding comes chiefly from national governments and international donor agencies.

With the growing discussion of privatizing public extension systems, New Zealand's experience will be carefully observed.

Frustrations of Foreign Aid

Assistance through the U.S. Agency for International Development has led to frustrations, particularly in Africa, despite a large infusion of funds. In contrast, however, 15 countries in four world regions are now listed as "graduates" from further assistance.

Dollars are not everything, but they now amount to only one-tenth of what they did in the late 1940s, putting the U.S. close to the bottom of the donor list in terms of percent of GNP, although the dollar total is still highest. Stability of funding in Africa is now the need, coupled with focus on low-resource agriculture (as measured by size of modern inputs, scale of operations, proportion of crops sold, and cash income). In fact, the large-scale operations that thrive on greater amounts of inputs probably contribute no more than five percent of food production for the continent, where agriculture employs three-fourths of Sub-Sahara's labor force.

*U.S. Congress, Office of Technology Assessment, *Enhancing Agriculture in Africa: A Role for U.S. Development Assistance*, 1988.

Unsavory Advice

"An empty stomach is not a good political adviser." — Albert Einstein

Fitting Green Revolution To Needs of "Hungry Poor"

The 700 million "hungry poor" in the Third World need an expanded Green Revolution. Most live in rural areas with incomes tied directly or indirectly to agriculture. That applies to 60 percent of the hungry poor in Latin America, 80 percent in Asia, and 90 percent in Africa. Ironically, these populations are concentrated in "potential breadbaskets," most amenable to productivity-inducing technologies. But it also takes something more than technology, write John W. Mellor and Frank Z. Reily in *Issues in Science and Technology*, Fall, 1989.

It takes several complex elements, including: decentralized competitive domestic markets as incentives for technology adoption, international markets that preserve local comparative advantage, institutions and people capable of managing the technologies and support systems, and broad participation in the development process by expanded rural education. It also takes foreign aid still.

The authors conclude that the Green Revolution is not guilty as often charged in widening income differences and short-changing the poor. These are misconceptions. Instead, in actual practice, the new technologies have proved to be "scale-neutral in their impact on production," and have also increased badly needed demand for labor. Too much has been written about the shortfalls and inefficiencies and not enough about the documented extraordinary returns as well.

Helping the 700 million will be more difficult than previous successes. Further research has to be the answer. Among the areas needing attention are food crops important in the affected regions (no longer rice and wheat but millet, sorghum, and maize in Africa, for example), new high-yield varieties (including the needed genetically-engineered characteristics) for new environments, traditional export crops for foreign exchange, labor-intensive crops like fruits and vegetables, and, quite importantly, developed-country encouragement of research capacity in Third World countries themselves.

A remedial action program calls for foreign assistance because local poverty runs so deeply. It must emphasize the building of managerial and analytical skills; more aid for institutions of training and education, with expanded access; more capital for rural infrastructure (emphasis on *rural*); and the opening of the world economy "so that developing countries can realize their potential advantage in agricultural exports and import the goods and services vital to their economic progress."

Optimism is justified. Look at the "people lifted out of poverty" in India, Brazil, and Thailand, for example. Fortunately, half of the 700 million hungry poor live in potentially fertile regions where Green Revolution technologies can make an adequate diet "a readily achievable target." Although harder and slower, reaching the other half will be "easier than we think" because of the lessons of experience.

In short: "It is time for the richest countries of the world to bring those who have been left behind by the Green Revolution into the process."

New Development Index

Reliability of statistical analysis as the route to "truth" may itself need some statistical validation. So much depends—; and so many qualifications—. How do you determine human well-being in the various countries of the world, since comparison would be both useful and interesting?

Old comparisons based on gross national product (GNP) have been upended and scrambled by the *Human Development Report 1990* of the United Nations Development Programme. The measurement criteria have been changed: no longer the economically stark GNP but measures of development impact on human lives, including purchasing power, literacy, and life expectancy. By these new standards now expressed as a "human development index," some remarkable changes appear. The oil-rich countries generally drop greatly in rank. Saudi Arabia drops 43 places. Developing countries look better, with rising ranks. Both socialist and free-market developing economies go up—China 44 places, Vietnam 40, Cuba 26, Chile 34 and Thailand 23. Despite its middle-level purchasing power, Costa Rica stands out because of its 93 percent adult literacy and life expectancy of 75 years, putting it with the East European nations. Japan tops the list, up four places from its old GNP rating. On this new index, the U.S. drops most among the developed nations, down 17 places; next is Singapore, down 14 places.

Back to the question of measurement methods: these impressive statistical tables have their critics, who point to unbelievable results like the new rank of North Korea above Brazil. In any case, UNDP promises a new assessment each year, with attempted improvement. These may not be statistical headstands after all. There is growing recognition that *economic* man is not the only kind.

Doubling Up on Politicians

"...Whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together." — Swift's *Gulliver's Travels*.

Transforming Systems: Pakistan Outreach Case

by William Seiders

(Editor's note: This is a recital of first-hand experience in a technical assistance project aimed at the transfer of the extension function from an established government base to a new university base, capitalizing on the university's competencies in instruction and capacities in technology development - - and experience with the next-best alternative when the optimum could not be realized.)

Introduction

After decades of experience with agricultural development efforts in the Third World, it is clear that institution building projects take time. The amount of time depends on many factors, including broad social and economic situations in a country, traditions and cultures within the society, and the complexity of the institution itself. There are special difficulties when a new system is introduced within an existing governmental establishment as is the case in Pakistan with the creation of the Outreach Program of the Northwest Frontier Province (NWFP) Agricultural University (AU). Outreach development is part of the University of Illinois-Southern Illinois University/USAID Transformation and Integration of the Provincial Agricultural Network (TIPAN) Project.

This article deals with some of the conditions and situations related to imposing a new system within an existing one. It will focus on some problems associated with the outreach-extension interface that influenced the slow early development of the Outreach Program of the NWFP Agricultural University and will continue to influence the rate at which the full potential is reached.

Background

As a major component of the broader institution development project, Outreach was established to link teaching and research functions of the new NWFP Agricultural University to the various extension services in the province. TIPAN was designed along the lines of the U.S. land-grant university system. The idea was not to copy the approach used in the United States, but rather to evolve a system with some of the essential elements that would work best in the Pakistani setting in general and under NWFP conditions in particular. A key feature of the system is that research, teaching, and extension are to work together.

As a result of the TIPAN Project, the provincial research system was merged with the teaching program of the NWFP Agricultural University. Because of the already large size of the project in terms of money to be allocated and manpower affected, it was impossible at the time also to merge the main agricultural extension service of the provincial government with the university. Short of the merger, an alternative was sought to maximize the university potential by the creation of the NWFP-AU "Outreach Program" to build an external bridge to the provincial extension services and an internal bridge to research and teaching. Thus, "outreach" deliberately connoted the university's abbreviated part of the "extension" process.

Rate of Development Factors

Two main areas of work for Outreach to assist extension field personnel outlined in the project implementation plan were in-service training and print and audiovisual media communications support. After four years, there was little evidence of results in either area. In-service training and communications support are considered a main part of the new NWFP-AU Outreach Program and yet those functions were already firmly entrenched within the provincial government's extension establishment.

Intensifying the apparent threat of competition from an outside effort, strong feelings exist among government extension personnel at all levels that they are completely left out of a project designed to help farmers and their families in the province. TIPAN was designed to integrate and bring about changes in the agricultural network of the province and yet, while extension is a critical link in the process, it is not receiving any of the millions of dollars in technical assistance, buildings, vehicles and training that are going to the university.

Although TIPAN did not provide any resources to extension, it was designed to impact extension in very specific ways. All the TIPAN planning papers, including the Government of Pakistan project document, agreed to by the national and provincial governments, stated clearly that the Outreach Program was to provide in-service training to extension field staff. There were no indications of how this might be carried out and, to make matters worse, there were no arrangements for funding from any source to support in-service training by the NWFP Agricultural University.

The Agricultural Training Institute (ATI), as an integral part of the provincial extension service, has traditionally for many years been in charge of in-service training of their Agricultural Officers and Field Assistants. As a result of TIPAN, Outreach was dropped into an existing governmental system with little consideration for how adjustments could be made to accommodate the recommended changes. The Principal of ATI, a fairly high-ranking government officer, as a result of the TIPAN Project, in theory, would be asked to turn over his responsibility for in-service training of extension agents, a major part of his job.

During the initial four years of the project, no changes were possible in how in-service training was carried out. It is assumed that over the course of TIPAN, the university will gradually be able to play an increasing role in supporting in-service training of extension field personnel as it has more to offer in terms of facilities and a corps of outreach faculty knowledgeable in training skills, the latest technology, and how it can be applied to local farm situations.

After four years, there was still a lack of cooperation between NWFP-AU Outreach and extension's Bureau of Agricultural Information. Again, as in the Agricultural Training Institute, the Director of the Bureau is a fairly high-ranking government official. His job is to provide print media and audiovisual support to extension field personnel and mass media information to farmers. There was interest and cooperation with NWFP-AU Outreach until it became obvious that, because of differences in provincial government and university personnel systems, there was no possibility for the Director to gain promotion within the university; therefore he lost interest and the "turf" protection walls went up. Here again an outside project was to be superimposed on an existing system with discouraging results.

Lessons Learned

As a key player in the technology generation-transfer link to farmers, extension should have been given some resources as part of the project. Despite their great needs, extension personnel feel they were left out completely.

Although very close working relationships between NWFP-AU Outreach and extension were developed at the division level in carrying out adaptive research and farming systems research activities, more formal relationships should have been established at the provincial level between the university's Director of Outreach and the government's Director General of Extension.

In the short-run, the university has little to offer to extension in terms of providing support for in-service training and communications; however, this should change in the next several years with the completion of the new continuing education and hostel facilities and the increased training competencies of campus faculty and research station staff. Formal dialogue should begin and continue on a regular basis between Outreach and Extension administrators to ensure a smooth transition as NWFP-AU accepts more and more of the responsibility for in-service training and communication support of extension field workers. Informal contacts, although on a regular basis, do not allow for the purposeful, directed discussion on important topics.

There should have been some funding to support early cooperation with the Principal of ATI for in-service training. He would have wholeheartedly supported NWFP-AU Outreach in order to supplement the meager budget that he now has. In addition, USAID policy should have been more flexible in terms of sharing audiovisual production equipment with extension's Bureau of Agricultural Information. This would have led to closer working relationships earlier in the project in this important area.

In the extremely complex socio-cultural environment of the Northwest Frontier Province of Pakistan, there are many factors affecting the slow rate of progress of the development of the Outreach component of the TIPAN Project. Without a doubt, a significant contributor has been an attempt to introduce major programs intended to support extension field staff that appear to be in direct competition with similar functions already existing in the extension establishment. The problem was exacerbated by the feeling among government extension personnel that they were left out of a major project designed to help farmers and their families in their province.

The Bottom Billion

Of the world's five billion-plus population, the bottom billion live in poverty while the top billion consume most of the resources and do the most environmental damage. Ninety percent of the population growth is in developing nations, 15 of which (13 in Africa) show birthrate increases since 1960. The rate of the 1990s, the fastest of any decade, could triple the world's population in the next century. The source of this information, the *State of World Population 1990* from the United Nations Population Fund, concludes that decisive action is necessary "to slow population growth, attack poverty, and protect the environment" because the "alternative is to hand on to our children a poisoned inheritance."

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Transfer Guidelines for National Research Systems

by John L. Woods*

1. Since farmers make the ultimate decision on whether and how to use new technology, the national agricultural research systems and transfer agents should respect and facilitate the farmers' prerogative.
2. The national systems bear the responsibility for making new technology available to transfer agents for adaptation, repackaging, and transfer to farmers.
3. The systems should present technologies in the form of information, inputs (products), or services, recognizing that the testing, verification, approval, and dissemination processes may be different for each.
4. All should recognize that there is no such thing as a "mature technology" good for all farmers for all time: a viable technology today may be out-of-date tomorrow.
5. The formal approval process required for releasing technologies should be kept to the absolute minimum and employed for technologies only where essential to meet the requirements of public health and safety; to the extent possible, technology transfer agents and farmers should determine whether a technology is viable.
6. The systems should maximize the availability of information on new technologies and particularly the flow to transfer agents.
7. Maximum communication, interaction, and collaboration is needed between researchers and transfer agents during the entire development process, from national to village levels.
8. For most technologies, no restrictions should exist on who conducts on-farm adaptive research — instead, it is appropriate for scientists, FSR specialists, private sector agencies, *and farmers*.
9. All parties engaged in the development process should recognize that the public, and agencies which serve the public, have a right to information from publicly supported research.

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Outrunning Catastrophe

"Human history becomes more and more a race between education and catastrophe." — H. G. Wells

Private Research Funding, Public Policy Questions

In the United Kingdom, government has cut its funding of agricultural research and done it rapidly, assuming that the private sector could and would take up the slack. Making a "mixed economy" of research is, in fact, a hasty transition from "an almost totally state-sponsored R&D structure."* Several important policy questions result and remain unresolved.

The first concerns the control of, information about, and benefits from research. What new research should come from this change, and how should it be decided by whom? Study and experience (as in the U.S.) show that "the structural importance of the rural producer has declined significantly." As agribusiness dominates the food production system, "their interests, rather than those of farmers *per se*, have become more influential in determining the direction of public sector agricultural research." Biotechnology moves in the same direction — toward "relatively expensive packages on which farming will depend" and larger family and corporate farmers can best afford.

The new agriculture, with its packages and patents, will also have to protect the proprietary rights of sponsors. Therefore, information about research results and technological innovation may be restricted (and, again, in favor of what beneficiaries?).

Second, unresolved policy questions arise from the new overlap of basic and applied research. Biotechnology tends to wipe out this traditional distinction, leaving questions about "strategic research" or "problem-solving and applications research." Given the predominance of molecular biology and genetic engineering in this type of research, Josef Sehell, Director of the Max Planck Institute, says," "Right now the basic questions and applied questions are the same." Suppose government maintains a commitment to basic research and industry funds "near market studies," what is missing? "...(I)t is not clear who will provide funds to bridge the diffuse but important gap between the underlying knowledge base and its application."

Third, the "strategic gap" will be made wider when decisions are made in haste, with government cuts outrunning private substitution. The human skills base will be eroded, not to be easily replaced later, quality will decline, and the infrastructure will lose its ability to serve problem-solving research.

* N. J. Read and A. J. Webster, "Funding of Applied Agricultural Research in Great Britain: Unresolved Policy Questions," *Research and Development in Agriculture*, Volume 5, Number 3, 1988.

Helpful Ideas: Old and New

World Development Report 1990. Oxford University Press for World Bank: Washington, D.C. 1990 (260 pages).

This could be advertised as "All You Wanted to Know about World Poverty." It is the thirteenth annual report focused on a major development issue—and this a rather grim one. Per capita incomes in the 1980s grew and poverty declined sharply in East Asia and more moderately in South Asia, but for the poor in some Latin American countries and most Sub-Saharan African countries, "the 1980s was a lost decade" of slippage. Of the total population of the developing world, one billion people, or a third, live on less than $370 per capita a year. International aid is most effective when it complements the recipient country's commitment to programs for poverty reduction. Policies needed are those that encourage growth by efficient use of assets owned by the poor and expand "access of the poor to land, credit, infrastructure, and productive input." The critical avenue of the poor to better opportunities is education and investment in human capital, including health care.

The invaluable 90-page section, "World Development Indicators," covers the basics (population, GNP, inflation rate, life expectancy, and adult illiteracy), with 31 other tables ranging from growth of production to women in development.

Ruben G. Echeverria, editor, **Methods for Diagnosing Research System Constraints and Assessing the Impact of Agricultural Research,** 2 volumes. International Service for Agricultural Research: The Hague, 1990 (Vol. 1, 282 pages; Vol. 2, 250 pages).

The first volume deals with "constraints" and the second with "impact".

These proceedings from an international workshop at Rutgers University (New Jersey, U.S.) include both general diagnostic methodologies (with one paper by INTERPAKS authors Burton E. Swanson, Carolyn M. Sands, and Warren E. Peterson) and special cases. Arthur J. Dommen examines why agricultural research has had so little impact on Sub-Saharan Africa. Progress has been impeded by the scientists' "failure to conceptualize the mixed cropping systems of low-resource African agriculture in a manner that treats conservation of resources as an output similar to annual crop output." We now have sufficient evidence, if systematized and put to use, to overcome the old barriers. The era of large payoffs from high-yielding single commodities is passing and the time has come for attention to "the relatively disadvantaged areas," where low-resource farmers produce the most and offer "the largest potential for employment generation." Intercountry research networks would help both in critical mass and in financial conservation. Farmer organizations would also help in countries where research organizations (most of them) are "cut off from their farmers" in allocating budgets and setting research priorities. The hopeful message comes from the realization that resource use depends more on the level of techniques than on the physical environment.

Another paper, by Margaret Sarles, looks at the results of the ideological propensity of the U.S. Agency for International Development to shift the balance from public to private in agricultural development—in this case, agricultural research in Latin America and the Caribbean. The vehicle is the private-sector "foundation." The ups, downs, and contradictions are examined, with the conclusion that the justification for the new foundations is incomplete, calling for more analysis. The key unresolved challenge is "how the foundations will relate to the rest of the agricultural technology sector." Unresolved contradictions are the expectation of self-sufficiency (ability to pay) along with the mandate to help poor farmers and the inside-outside expectation that the foundations will "both bypass the system and improve it."

Michael Baxter, Roger Slade, and John Howell, **Aid and Agricultural Extension: Evidence from the World Bank and Other Donors.** World Bank: Washington, D.C., 1989 (76 pages).

Technical Paper Number 87 explores issues and options in improving existing extension systems, admitting that no single one is "best" everywhere all the time. Fortunately, many developing countries already have a good starting point: a field-oriented administrative structure; requisite staff (field, supervisory, and specialist); a system for developing work programs and technical recommendations; links with research and agricultural planning; training programs for staff and for agent communication with farmers; media support; and some monitoring/evaluation procedure. "The challenge is to improve on this beginning."

Ian Goldin and Odin Knudsen, editors, **Agricultural Trade Liberalization: Implications for Developing Countries.** Organization for Economic Co-operation and Development: Paris; and World Bank: Washington, D.C., 1990 (489 pages).

Preoccupation with many little things sometimes overlooks the really big issues. So it may be with the problems confronting the world's developing countries—problems of global dimension amenable only to global solution. Such is the problem of international agricultural trade now conducted on a far-from-level playing field, with developing countries most often affected adversely. Attempted reform through trade liberalization will create, or reshuffle, winners and losers at least in the short run; and just to complicate already difficult matters, what will be the effect of technological change?

These complexities are explored in depth in these essays from an October, 1989 symposium jointly convened by OECD and the World Bank. They use the state-of-the-art modelling of the implications of agricultural trade liberalization, a technique begun only a decade ago, to provide perspectives for multilateral negotiations (as in the Uruguay Round of GATT), important policy directions, and additions to the agenda for research. Both processes and outcomes are complex, and while the aim of liberalization is "a more efficient and equitable international allocation of agricultural production" and its benefits, some developing countries will lose in the short term while many will gain. The determination of who will share the "liberalization dividend" (estimated at well over $200,000,000 a year) is important, but the outcome will depend on the time allowed for phased-in changes, on technological advancement, on whether the developing countries are themselves a part of the liberalization process, and, by no means least, on sheer political will.

How does this affect future research? Existing models should be expanded to give developing countries more complete (rather than "very partial") treatment, with disaggregation of their treatment and the inclusion of tropical products in the analysis. Research should also extend to the debt problem, technological change, the sequencing of reforms, the more efficient allocation of resources between town and country sectors, and the inclusion of the previously neglected planned economies, particularly China, the Soviet Union, and Eastern Europe.

INTERPAKS

J. Hector St. John Crevecoeur, **Letters from an American Farmer,** published in London in 1782 and in many later American editions.

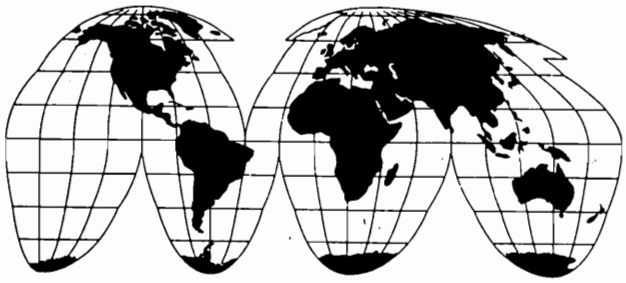
This is one of the classics in agrarian literature. The author was a Frenchman, who became a naturalized citizen and farmer in the English colonies, through which he traveled extensively. Given the supreme role of farming among all occupations of the time, the letters are more about the new America generally than about farming in particular. Ecstacy about the plow and the "oderiferous furrow" is mixed with sage observations about the future of the emerging new continental empire, its cheap abundant land, its absence of aristocrats "cloathed with useless dignity," and its boundless opportunities for fortunate immigrants. His spirit is found in the suggestion that England and Scotland could give more punishment to their criminals by transporting them to some regions at home (like the barren outlying islands) than sending them to the more abundant American colonies.

Crevecoeur was friend to Jefferson and Franklin, who must have agreed with Washington that despite "a great deal of profitable and amusive information...founded in fact," the letters were "in some instances embellished with rather too flattering circumstances."

Joseph P. Lewis and Valeriana Kallab, editors, **Development Strategies Reconsidered.** Transaction Books: New Brunswick, N.J., and Oxford, 1986 (190 pages).

This is an effort by the Overseas Development Council to help the non-specialists understand what the specialists regard as the best strategy for the future. The need is there because this is a down time and a "period of disarray" in the development strategy game. The "mainstreamers" want to play the game more effectively, while the disillusioned critics think the game is unplayable.

The format of an ODC conference around expert papers on central themes leaves some slack and discursiveness, but policy perspectives are presented, the revelation of a single development strategy is avoided, and light is thrown on what has been learned in 40 years of development experience "in terms of economic growth, societal equity, and political participation." The approach is comparative and analytical, more descriptive than prescriptive.



Around the World

University Consortium

Five Southeast Asian universities are forming a consortium for regional cooperation in graduate education in agriculture. Fostered will be student cross-registration, faculty exchanges, equivalency in admission standards, sharing of information, and joint research. This is an institutional development plan to make better use of scarce academic facilities and human resources. The originating Philippines-based Southeast Asian Regional Centre for Graduate Study and Research in Agriculture (SEARCA) will provide the secretariat. The cooperating members are Universiti Pertanian Malaysia, University of the Philippines at Los Banos, Kasetsart University of Thailand, and Institut Pertanian Bogor and Universities Gadjah Mada in Indonesia. — *Agricultural Information Development Bulletin*, March, 1990.

New Directory

Based on data from almost 4,000 librarians and documentation centers, *Agricultural Information Resource Centers: A World Directory 1990* has been published by the International Association of Agricultural Librarians and Documentalists. It represents the work of five librarians, two of whom are associated with the University of Illinois at Urbana-Champaign — Carol Boast, Agricultural Librarian (and INTERPAKS Associate) and Jane Johnson, Information Consultant. Donors are being sought to distribute the directory free in developing countries. It sells for $140 in U.S., Canada, Australia, New Zealand, Japan, Israel, and Western Europe. Profits will be used for the continuing education of librarians and documentalists from developing nations. (Address: IAALD World Directory, 716 W. Indiana Avenue, Urbana, IL 61801-4836, USA.)

New Journal

Journal of Agricultural and Food Information is a new publication of Oregon State University, Corvallis, Oregon. Michael Kinch is the editor; Burton Swanson, Director of INTERPAKS, is on the editorial board.

US-USSR Collaboration

Iowa State University and USSR representatives have expanded their two-year agricultural agreement, facilitating exchanges, information flow, and research. The benefits are two-way: for the USSR, improved practices, greater harvests, and post-harvest savings; and for the U.S., access to genetic materials, markets, and scholars in the All-Union Academy of Agricultural Sciences.

Zimbabwe's Success

From 1979 to 1985, small farmers led Zimbabwe's agricultural productivity. They tripled corn production while all farmers, large and small, only doubled production. Governmental incentives helped: higher crop prices, availability of fertilizer, and access to loans and markets.

New Handbook

Technology transfer by agricultural libraries is exhaustively treated in the winter 1990 issue of *Library Trends*. Thirteen articles, by experienced library professionals, in 638 pages, comprise a handbook on the acquisition, management, and dissemination of agricultural information, including all types and all formats, as well as the worldwide infrastructure. The state of the art is reflected both retrospectively and prospectively.

Editors of this issue are Keith W. Russell and Maria G. Pisa of the U.S. National Agricultural Library. The journal is published by the Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, and edited by F. W. Lancaster, who is also an INTERPAKS Associate.

Jubilee Conference

An international conference on "Extension Strategy for Minimizing Risk in Rainfed Agriculture" will be held in New Delhi, November 12-17, during the celebration of the Silver Jubilee of the Indian Society of Extension Education.

INTERPAKS Activities

Joint Course Venture

A series of specialized intensive courses in agribusiness for international managers will be sponsored jointly by the Department of Agricultural Economics and INTERPAKS next year. They are Current Policy and Trade Issues in Agricultural Commodities, May 19 - June 7, 1991; Market Management and Strategic Planning for Agribusiness, June 9 - June 28, 1991; and Use of Futures and Speculative Markets in International Commodity Trading, June 30 - July 20, 1991.

The courses have been designed specifically for international professionals involved in agribusiness enterprises, such as managers, development planners, and senior staff in government, finance, and education. An important benefit will be the interaction between participants who hold challenging positions in different countries. Because of the importance of international markets to the United States, a limited number of spaces have been reserved for U.S. professionals.

For more information address the Director of INTERPAKS.

Director on China Team

INTERPAKS Director Burton E. Swanson spent from August 11 to October 3 in Rome and China as a member of an international team assisting on the design of the China Agricultural Support Services Project for the FAO Investment Center in Rome. During this period, the acting directorship of INTERPAKS was held by Robert P. Bentz, Associate Director of the Illinois Cooperative Extension Service.

On October 16, Director Swanson discussed "U.S. and Developing Country Extension Services: Challenges for Development Cooperation" in the workshop on "The U.S. Agricultural Science and Education System and International Development," at the University of Minnesota, sponsored by the Board of International Food and Agricultural Development, USAID.

Nicholaides Abroad

John J. Nicholaides, Director, Office of International Agriculture, was a member of Illinois Governor James Thompson's trade mission to Poland and Hungary, July 14-25.

He was also in India from September 20 to October 7, as a consultant under the auspices of Winrock International/USAID. He worked with the Indian Council for Agricultural Research in planning national soils programs consistent with national priorities.

Enroute to India, he stopped in Pakistan, September 17-20, for meetings with personnel in the Transformation and Integration of the Provincial Agricultural Network (TIPAN) project.

Visitors

Charles H. Antholt, Head, Farm Technology Unit, World Bank, visited INTERPAKS, September 5-7, met with College of Agriculture officials and INTERPAKS Associates, conducted a seminar, and gave a lecture to the International Agricultural Student Association.

Niels Roling and Janice Jiggins, Wageningen University, The Netherlands, currently visiting scholars at Cornell University, led a special INTERPAKS roundtable seminar October 22.

Short Course

The annual presentation of the INTERPAKS short course on extension organization and management ran from September 2 to 28, with 13 participants from Egypt, India, Malaysia, Nepal, Somalia, South Korea, Zambia, and Zimbabwe. The coordinating leader again was John B. Claar, first Director of INTERPAKS, former Director of the University of Illinois Cooperative Extension Service and former Associate Vice President for Public Service.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign Vol. 8, No. 1, 1991

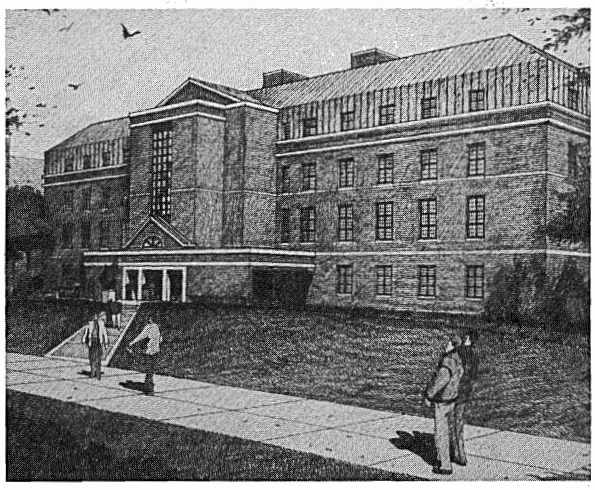
World Experts Assess Agricultural Extension

The first Global Consultation on Agricultural Extension was held at the headquarters of the Food and Agriculture Organization (FAO) of the United Nations in Rome from December 4 to 8, 1989. Sponsored by the FAO, this consultation was organized under the leadership of W. D. Maalouf, Chief, Agricultural and Extension Services and T. E. Contado, Senior Officer for Extension and Training. Burton E. Swanson, Director of INTERPAKS, served as major consultant and general rapporteur for the consultation. Fifty outside experts attended, including national policy-makers and extension administrators, extension scholars and practitioners, and donor and clientele representatives.

The consultation began with the presentation of major technical and donor papers; these papers are included in an annex to the consultation report which has been published by the FAO.* Major findings, conclusions, and recommendations emerged out of small group workshop discussions; these results were summarized, discussed, and approved during plenary session on the final day. The following is a verbatim summary of the seven major problem areas or issues addressed in the report.

The first issue focused on the concept and policy of agricultural extension. There was broad consensus that extension is a central mechanism in the agricultural development process, both in terms of technology transfer and human capital development. It was recognized that economic pressure is forcing extension to justify itself on more immediate economic criteria that are closely related to technology transfer and increasing agricultural productivity. However, this viewpoint ignores extension's traditional role in human resource development, a contribution that is essential to broad-based agricultural and rural development. The consultation agreed that to achieve long-term, sustainable agricultural development, both objectives must be pursued in a balanced programmatic effort. The consultation noted that legislation is generally essential to provide the policy mandate, direction, and necessary support to build a stable, effective extension system.

The second issue considered was the target clientele of extension. It was recognized that urban food requirements and economic factors frequently reinforce extension's tendency to focus more heavily on the



Enhanced Capacity

Capacity for knowledge-driven development and transfer of agricultural technology is greatly increased by the construction of two new buildings on the campus of the University of Illinois at Urbana-Champaign, with a third in the planning stage.

The $35,000,000 Plant and Animal Biotechnology Laboratory is now completed (photograph in the July 1988 issue).

The $17,000,000 renovation of the Animal Science Laboratory includes an extensive addition, consolidating previously scattered facilities (see architect's drawing above.)

To bring together research on a major crop with special significance for Illinois, a $5,000,000 National Soybean Laboratory is planned for completion by 1993.

INTERPAKS *(International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.*

commercial farm sector. However, in light of the 1979 World Conference on Agrarian Reform and Rural Development (WCARRD), which emphasized "growth with equity," the consultation concluded that all farmers — especially those who are resource poor and operating at or below the subsistence level — should receive greater attention from extension. Also, special attention should be given to the needs of women farmers, young farm families, and landless producers. The consultation noted that low-resource farmers merit increased attention from extension because generally they have no other source of advice and many operate on marginal land that is undergoing serious environmental degradation. Working with these marginal farmers to improve their capability and to provide appropriate technology is essential to broad-based, sustainable agricultural development.

Alternative approaches to extension have been widely debated over the past decade. The consultation concluded that different approaches serve different objectives. National extension systems should select approaches that are appropriate for the target groups to be served and the programs to be conducted. There was consensus that organizing farmers into groups such as cooperatives, associations, and credit societies and increasing farmer participation and feedback into extension programs is essential in developing a "demand driven" extension system. Also, many national systems need further technical, communications, and management support to improve system performance.

It is estimated that there are well over 600,000 extension workers worldwide, representing an overall agent to farmer ratio of approximately 1:2,000. Extension coverage is highest in the industrially developed countries. The extension agent to farmer ratio is much lower in developing countries, and these personnel spend about one-fourth of their time on noneducational activities, which represent a significant loss of educational resources. Approximately 40% of these extension personnel have only a secondary school education, and another 33% have an intermediate diploma or certificate. The percentage of subject-matter specialists to link with researchers and to support the field extension staff varies widely, ranging from less than 8% in many developing countries to 20% or higher in most industrially developed countries. Turnover of extension personnel is high in most developing countries, suggesting the need for more professional and career development opportunities and improved conditions of service. There was wide agreement that improving the quality of extension personnel through formal education and in-service training activities is essential to conducting effective extension programs.

Financial support to agricultural extension varies widely, ranging from as little as 0.1-0.2% of agricultural gross domestic product (AGDP) in some countries to as much as 6% of AGDP in a few, very small countries. Worldwide, it is estimated that about 0.5% of AGDP is invested in extension. Allocation of financial resources to extension appears to be related both to the size of country and to government policy. The consultation noted that although developing countries generally allocate a higher proportion of government resources to the agricultural sector and they also commit a higher percentage of these agricultural resources to extension, they still do not achieve the same level and quality of extension coverage found in the industrially developed countries. More empirical research is needed to determine an adequate level of support for extension at different levels of development; the consultation, however, tentatively recommended that developing countries should invest between 1-2% of AGDP in extension. There was wide agreement that extension directors should carefully allocate and manage their scarce financial resources to achieve maximum program impact.

Only about 50% of extension organizations worldwide have some type of monitoring and evaluation capacity. Monitoring is an integral and inseparable part of the management process; evaluation is a longer-term activity that assesses overall system performance and impact. The consultation concluded that both capacities are essential to achieve short- and long-term system improvement and that representatives of all client groups should be directly involved in reviewing the results of these monitoring and evaluation activities.

Donor support for agricultural extension is estimated to average around US$250 million annually. Most funding is provided through extension components in large agricultural development projects. This type of support allows incremental improvement in some part of the extension system or in some target areas or regions. The World Bank is the only source of credit for major extension projects, which reflects their view that a well-supported and effective extension service is a good economic investment. The consultation concluded that even though agricultural extension is a national responsibility, current donor support for extension is generally inadequate and sometimes inappropriate for the problems to be solved. Also, there was wide concern that some donors emphasize technology transfer, rather than pursuing a more balanced approach to extension that also includes human resource development.

There was unanimity among the participants that agricultural extension still fulfills its historical goals of relating education to the needs of human life and the application of science to practical affairs. The challenge in the decades ahead is to make extension services more widely available to the vast majority of resource poor farmers in the developing countries.

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* Currently available from the FAO under the title, B. E. Swanson (ed.) 1991, *Report of the Global Consultation on Agricultural Extension.*

Harsh Critic Reassesses U.S. Knowledge Systems

comments from Jim Hightower

(Editor's Note: Recent Texas Commissioner of Agriculture, Jim Hightower, is still remembered by agricultural extension and research workers as the author of ***Hard Tomatoes, Hard Times*** *18 years ago. Many considered it a polemic against the agricultural knowledge systems of the U.S. land-grant universities, with alleged abandonment of the original intended focus on service to the commonest, small, low-resource farmers. He has kindly consented to answer three questions posed by INTERPAKS INTERCHANGE. They are as follows, with his answers within quotations marks.)*

1. If agriculture of the future is to be increasingly the creature of technology, what do you see as the future of public technology transfer systems?
2. Has present-day agricultural extension learned any of the lessons you hoped for in **Hard Tomatoes, Hard Times?**
3. In any case, what is yet to be learned?

"In response to your questions, I would begin by saying that I'm not convinced that the future of agriculture will necessarily be as the 'creature of technology' as you phrased it. Certainly many forms of high tech from computerization to biotechnology are finding their way into agriculture. However, there is a growing interest in low input sustainable agriculture and increasing desire on the part of farmers across the country to farm in more environmentally beneficial ways. Often achieving the goal of ecologically sound farming relies on reviving old knowledge about crop rotations, the value of combined crop and livestock production systems and so forth.

"Therefore the demands on the public technology transfer system, including the agricultural extension services, are going to increase tremendously. Farmers will need neutral, unbiased assessment of new, often very specialized, technologies, and at the same time they will need generalists who can assist in developing comprehensive, integrated farming systems that depend on lessons learned decades ago as well as new knowledge.

"The jury is still out on whether the extension system will respond quickly to these changes. Its agenda is still much influenced by the agricultural chemical industry. However, around the country public input and farmer demands are starting to change the shape of the agenda. In Iowa and Minnesota for example, citizen and farmer groups have worked to establish research programs at the land grant universities in sustainable agriculture. At Texas A&M and Iowa State, centers have been established to examine the broader sociological and economic impacts of biotechnology. On the down side, once a leader in biological control research, the University of California system has been closing down biological control programs in order to set up biotechnology programs that have a greater likelihood of generating 'for-profit' products.

"It is crucial to the nation's research effort as a whole, as well as to agriculture in particular, that public university research not become a wholly owned (but publicly funded) subsidiary of the corporation. Unbiased assessments of new technologies, free exchange of information and equal access to new discoveries are too important to the future of agriculture to barter away to the highest bidding corporate sponsor. This is the lesson that we seem to keep having to relearn.

"Thank you for the opportunity to address these issues."

Devil's Dictionary

"Agricultural Extension Service: An office of the USDA (U.S. Department of Agriculture) that teaches farmers how to produce a surplus on the land USDA does not pay them not to grow on." — Dick Armey, Texas Congressman.

Third World Future: Tigers or Turkeys?

If the development tigers of East Asia—South Korea, Taiwan, Singapore and Hong Kong—have gone "from helpless paupers...to industrial dynamos" in two decades, aren't they models for all Third World countries? An affirmative answer has been widely assumed, even in the World Bank and the International Monetary Fund; but the fallacy of that conclusion is now adequately documented by experience. So writes Michael Massing in the *Washington Post*, December 23, 1990.

The admonition of the "haves" to the "have nots" — "Why not like us?" — has lost its credibility. The time has come to turn from the industrialization model to "a new approach to the countryside," where the vast majority live and where "the real potential for development lies."

Since the 1960s, the "least developed countries" have grown from 11 to more than 40, while only the four East Asian "tigers" have been able to pull themselves up and out. In the 1980s, even the "one-time powerhouses" of Brazil and Argentina "have turned anemic." Why? Why?

The tigers' success lies in one word: exports. They had to look outward and they had a dependable labor force, with a work ethic and low wages. Foreign investors were attracted by tax breaks and the export products were soon competing in the then expanding world markets, with ensuing phenomenal growth rates.

These four were *first*, with unique unrepeatable advantages, in contrast to the sharp competition of cheap labor now in Cuba, Eastern Europe, and everywhere else in the Third World.

Taking the clue from the four tigers, the international donors and development experts prescribed for everybody else more and more exports and more and more emulation of the market-oriented economies. This included a package of "structural adjustments," with all the theoretical hallmarks of capitalism. But, as author Massing laments: "Few of the countries undertaking structural adjustment have turned into tigers. Most have become turkeys." Jamaica had all the model's attractions and it applied all the packaged "adjustments," but the results have brought the previously discredited socialist government back into power. The fact of the matter is that "unbridled capitalism has fared little better than socialism in the Third World," with the professed reformed countries in Africa and Asia often bearing "squalid witness to the dark underside of capitalist development." A shocking manifestation of underdevelopment in the Third World is the fact that these millions of untapped labor amid unused resources do not even feed themselves. They import huge quantities of foodstuffs as a result of policies that push the rural sector aside.

So what is needed to develop the countryside as the basis for everything else? First needed is a recognition that the private sector should link with the public sector — that government can help as well as hinder. It did so, dramatically, in Singapore and South Korea, and has long done so in Japan. Government policy and private financial backing need to plow more resources into agriculture, expand credit, build roads, give technical assistance, raise crop prices instead of subsidies for the urban population, and give peasants land. The results would be not merely more farm production but also increased rural incomes, saving of foreign reserves now spent on imports, and expanded domestic markets for local industries, with employment for surplus rural labor.

The author thinks international donors and development experts are increasingly embracing these policies of a turned-about approach. Therefore, there is new hope. The World Bank, in its 1990 report on world poverty, recognizes agricultural expansion as "the driving force behind...broadly based, poverty-reducing growth." "The question is," concludes the author, "will the bank follow through on its own analysis?"

Female Facts

"If women's unpaid work in the household were given economic value, it would add an estimated one-third—or four trillion dollars—to the world's annual economic product."—*USAID Highlights*, Winter 1990.

Why Not Some Extension Education for Congress?

"Feedback" is a highly touted desideratum in an effective agricultural knowledge system. It helps in bridging gaps, planning, setting goals, fixing priorities, and evaluating past performance. It is also an antidote for top-down communication and decision making. Since the U.S. Congress is the ultimate decision-maker in U.S. governmental farm policy, thus effectively setting goals and priorities for the nationwide research and extension apparatus, it often could use a little feedback from the grassroots, especially from those who must implement such policies: the land-grant state universities.

This is the view of Robert L. Christensen, Professor of Agricultural Economics, University of Massachusetts, after a year as Director of the Farm Policy Project of the National Association of State Universities and Land Grant Colleges in Washington, D.C.* After closely observing the making of the 1990 Farm Bill and hearing much criticism, he was prompted to ask who speaks for the research-extension system and how future national policy regarding that system can be made with better inputs from knowledgeable and directly affected sources. He thinks the time has come for the land-grant universities and their research-extension systems to mount a greatly stepped up "program of information and education." This could be done by the national association of the land-grant universities through periodic policy forums to debate policy issues (with key Congressional participation) and a quarterly newsletter to communicate with both Congress and the land-grant community on "current issues, policy needs, and alternatives" from the perspective of the best available university-based expertise. Such expertise should also be harnessed for responding to "Congressional needs for information and analysis," either through the national association's own acquired staff or "accessed speedily (from the universities) and at minimal cost using electronic technology."

Finally, something else is needed in recognition of the significance of the name, "the *cooperative* extension service," which connotes a federal-state-county system rather than an exclusive *federal* service existing to carry out *federal* farm policy, as some Congressmen seem to assume. Therefore, a concerted effort should be made at all levels, from local to national, not only to present identified needs but also to cultivate mutual understanding with the uninformed critics.

* "On the Way to the 1990 Farm Bill: Implications for Research and Extension," *Choices*, Fourth Quarter 1990.

INTERPAKS

'Farmer First' Approach: Scientist-Farmer Reversal

A new approach to agricultural research and extension has gradually emerged from criticism of the conventional method of technology development and transfer. The concepts behind "downstream" farming systems research, "bottom-up" and "participatory" approaches, "farmer-back-to-farmer" experience, and critical writings of some biological and social scientists have congealed into the "farmer first" approach now described in **Farmer First: Farmer Innovation and Agricultural Research**, edited by Robert Chambers, Arnold Pacey, and Lori Ann Thrupp; Intermediate Technology Publications, London, 1989. While in some respects a complete reversal of the researcher-to-farmer continuum, the intention is complementary use rather than complete substitution for the old methodology.

The starting point is the fact that the benefits from technological innovation have been much greater in the industrialized and green revolution areas than in Third World agriculture. Small, low-resource farmers have been slow or unable to adopt new knowledge and technology. In the 1950s and 1960s, ignorance was blamed; in the 1970s, farm-level constraints were at fault, and the remedy was to make the farm more like the research station. In and since the 1980s, a new conception sees the problem not as the farmer or the farm, but as the technology and the priorities and processes of its generation. Besides the conventional methods of agricultural research, new ways have been found to identify priorities and to develop technologies. They originate from a growing appreciation of the validity and usefulness of indigenous knowledge, what has been learned from going directly to farmers for the reasons for non-adoption, the insights provided by farming systems research, and the increasing recognition that farmers are themselves experimenting innovators.

Thus while basic investigations in station and laboratory will always be needed, a complementary approach is also overdue. In it, "farmers are primary: it is they who come first and who identify their own priorities; and it is they who are the key actors, choosing, experimenting, and adapting in order to survive and do better." The point is not that experts have nothing to say to farmers, but rather that farmers' knowledge and practical experience have been undervalued and not harnessed properly in partnership with the experts.

Of course, farmers still need extension services, but extensionists and local people should interact, reverse the top-down communication, and produce "a 'basket' of technologies...instead of complete packages, with a range of alternatives from which farmers can choose...something more like a technology exchange." Professionals are often wrong in assuming they know farmers' wants and needs; hence research fixes on the wrong problems. One of the authors, Ronald Bunch, makes the case for small-scale experimentation among farmers, encouraging "a process by which people can develop their own agriculture," which also offers the best prospect of self-sustainability of development. As a result, such small-scale experimentation reduces the cost of adoption, spreads loan service farther with less debt and better repayment, educates program staff in their own technology and in the farmers' adaptation to local conditions, "increases villagers' dignity, (and) converts 'extensionism' into 'communication.'"

At the end, editor Robert Chambers discusses reversals and institutional change needed—reversal of roles of "scientists, extensionists, or workers in NGOs" and an "open, learning process approach...of a sort encouraged neither by the content of university curricula nor by the hierarchy and style of government bureaucracies." Likewise, the national and international research centers, following the old technology transfer model, "are still more of the problem than of the solution." But "they need not remain so" with the farmer-first approach. A pluralist strategy is best, combining different individual inclinations and different organizational potentials and putting to use special small-scale projects, non-bureaucratic NGO staffs, and the empowerment of farmers' organizations.

Where to begin? First, "where it is easier, simpler and quicker," with action rather than exhortation, and with a "basic question of what farmers would like in their basket of choices." Then follow new demands, the reverse of top-down flow. "Whether a department of agriculture, a university, an NGO or combinations of these can handle such requests can then be put to the test."

New Short Course

Extension administrators are targeted in the 1991 INTERPAKS up-dated and expanded short course, "Improving Organization and Management," September 3 to October 9, 1991. Problem-solving methodology will be used in six modules focused on common problems faced by administrators. The modules, taught by faculty members with extensive international experience, will cover analysis of systems, targeting special groups, program development, organization and management of resources, leadership skills, and computer applications. In addition, special enrichment activities are planned for week-ends in Chicago and St. Louis, plus a two-night home stay with a farm family, a three-day field trip to analyze public and private technology transfer, and a visit to the national Farm Progress Show. Further information is available from the Director of INTERPAKS, University of Illinois at Urbana-Champaign, 113 Mumford Hall, 1301 West Gregory Drive, Urbana, Illinois 61801, USA.

Decades of Antecedents For Land Grant Colleges

It is insufficiently recognized that the now-famous U.S. Land Grant College Act of 1862 had at least three decades of intellectual antecedents, with advocacy of the development and diffusion of useful agricultural knowledge, as evidenced in both academic and political circles in several states. One abortive proposal, including broad student access, practical as well as scientific education, and an embryonic extension system, was made in Governor John Bell's message to the New Hampshire legislature, November 19, 1828 (*Journal of House of Representatives*, page 16-18), as quoted below.

"I would further suggest for the consideration of the Legislature the expediency of making an adequate appropriation from the funds belonging to the State for the purchase of a tract of land, in a central part of the State, for an experimental farm and agricultural school, to be placed under the care and management of an intelligent farmer, aided by a person capable of instructing youth in all those branches of science, which are more immediately connected with agricultural pursuits.

"To this school youths of a proper age might be sent (to) be employed...in labouring with the superintendent of the practical department of the school, and in receiving instruction from the Professor in its scientific department...

"The course of instruction suggested, would subserve the double purpose of exciting an emulation to excel among the scholars in our common schools, in the hope of attaining the honour and advantage of being transferred to this higher and more important school; and in sending out from time to time, scientifical and practical farmers, thoroughly acquainted with the principles, and most approved methods of conducting every branch of agricultural business, from whose information and examples their agricultural brethren could not fail of deriving important benefits.

"The advantages...would richly repay the expense in a few years by a great advancement in our agricultural knowledge, skill and improvement, and by the increased respectability and usefulness of our common schools."

Economy of Plunder

"We belong to a 'bottom-line generation.' If altruism does not spur us to restructure the present economy of plunder, then perhaps a realization of the cost that a devastated environment inflicts will."—D.L. Umali, President, National Academy of Science and Technology, the Philippines.

Agribusiness Degrees Still Short of Demand

Skilled managerial agribusiness graduates are in demand beyond the supply now being trained. How is the training process addressing the challenge? Some answers come in a recent study of agribusiness degree programs.*

Ninety-five such programs are offered in 58 colleges and universities, but great variation exists. In fact, seven identifiable types are found:

1. traditional master of science in agricultural economics
2. agribusiness programs in agricultural economics without required business college courses
3. same with required business college courses
4. joint B.S. in agriculture and M.B.A. programs
5. agribusiness M.B.A. programs with required agricultural college courses
6. same without required agricultural college courses, and
7. traditional M.B.A. programs.

As expected, 56 percent of the students are enrolled in the most flexible program, the first named above, while 23 percent are in programs which require courses in both agricultural and business colleges. In all others, the students, with the aid of advisors, elect courses in the other college—agriculture for business students and business for agriculture students.

Only 119 full-time students are enrolled in these three categories which *require* courses in both colleges—an indication of the shortfall since the USDA reports an annual need for 500 more agricultural graduates at the master's level.

Critical future needs are resources to attract and retain faculty, to offer scholarships, and to provide direct opportunity for student and faculty experience in agribusiness firms. Also needed is support from agribusiness, government, and universities for expanded offerings in "all areas basic to an understanding of agriculture, business, and management."

*Diane I. Hambley and Raymond A. Marquardt, "Status of US Agribusiness Masters Programs," *Agribusiness*, vol. 6, no. 2, 1990.

Nobel Laureate Dies

The most distinguished professor of the University of Illinois, Nobel Laureate John Bardeen, co-inventor of the transistor, which ushered in computers and the Information Age, died in February at age 82. He received a second Nobel prize for co-developing the theory of superconductivity at low temperatures. He was professor of engineering and physics from 1951 to his retirement in 1975 and continued active in his research thereafter.

Pakistan's "Distant Cousins"

The government people who dispense agricultural information and the people who receive it are "distant cousins" in Punjab, Pakistan. They come from "almost two different worlds," according to a recent evaluative study.*

The two groups, bureaucrats and their clients, even when both come from rural backgrounds, represent different social classes, the upwardly mobile versus the immobile and the educated versus uneducated. Looking at it not from the class differences but from the government services, the report writes that for needed progress in Pakistan, "the gaps within the chain of bureaucracy and between bureaucracy and its clients have to be closed."

Other findings include the sources of information used by Punjab farmers in making farm decisions: the sons most often; then wives; then other farmers (on the watercourse, neighbors, and less often "progressive" and "educated" farmers); and "official sources," where "use is low in comparison to the fellow farmers." Two other characteristics are important: "a very business oriented approach" ("calculated and unemotional" as if "a conglomerate of business executives") and common supplementary cross-checking with other sources to confirm usefulness.

*Oguz B. Mayman, *"Distant Cousins," An Evaluation of Official and Non-Official Sources of Agricultural Information*, typescript report, sponsored by the U.S. Agency for International Development, Punjab, Pakistan, September 1989 - January 1990.

Emphasis on Knowledge, Knowledge, Knowledge

New life is being pumped into the concept of "agricultural knowledge systems" just when its lifespan as a buzzword might be seen as nearing an end. Renewed and increased emphasis on "knowledge" is the key, coupled with the increased insistence that the "agricultural" part should be the top priority in the economic development of the Third World.

This trend is clear in a presentation by Dean G. Edward Schuh, Humphrey Institute of Public Affairs, University of Minnesota, who writes that the revitalization of the U.S. foreign aid program depends on a donor-recipient relation of "access to knowledge" rather than of misguided dependency. The need for access to capital still exists but it is a different kind of capital—not the old kind of government-to-government flow nor the new kind that the international capital market can now generally supply. Instead, it is human capital, with quite different requirements.

Happily, that provides the needed opportunity for a "new paradigm for our foreign aid program" based on two-way international collaboration in education and research (not one-way aid), where all parties are beneficiaries, with a broader knowledge base in all countries and an increased stock of knowledgeable people. This also calls for the development of viable supporting institutions for education and research, giving an international perspective to those at home and "increasing school attendance by low income groups in the developing countries."

Undergirding all, the need for knowledge appears in another way: to counter "a failure to understand how agriculture contributes to general economic development and...what is happening in global agriculture." That failure has produced a regrettable and "misguided" decline in attention to agricultural development in the U.S. Agency for International Development, the World Bank, and the regional development banks.

* "Revitalizing U.S. Economic Cooperation," *Looking Ahead* (National Planning Association), March 1991.

USAID University Center

The U.S. Agency for International Development has changed its organization for dealing with universities, officially recognized as assets "which can be of significant benefit to the developing world if properly encouraged and focused." A Center for University Cooperation in Development has been created "to build, promote, and strengthen mutually beneficial" relations with universities engaged in development-related programs. It will administer Title XII of the Foreign Assistance Act of 1961 and serve as the secretariat and support staff for the Board for International Food and Agricultural Research and Development and Economic Cooperation (BIFADEC). To consolidate the liaison relations, the Center is combined with the Office of Research and University Relations into a single organization within the USAID Bureau for Science and Technology, to which the Office of International Training has also been transferred for closer coordination.

The new Executive Director of the Center, with the rank of Deputy Assistant Administrator, is Ralph H. Smuckler, longtime Dean of International Studies and Programs at Michigan State University.

Correction: Change of layout in the last issue omitted identification of the author of the article, "Transforming Systems: Pakistan Outreach Case." William Seiders is 4-H/Youth Development Extension Specialist, University of Illinois Cooperative Extension Service, who has returned from a four-year assignment with the TIPAN Project in Pakistan.

"The People's Department"

When the United States Department of Agriculture (USDA) was established in 1862, President Abraham Lincoln called it "the people's department." Being that is still its challenge. Historian Wayne D. Rasmussen thinks it has succeeded so far.*

The Department's story is the story of the nation's agriculture. The reasons for being the people's department have changed. In 1862 farm people made up half the population, compared to two percent today. Then farm products made up 80 percent of total exports, compared to 18 to 20 percent today. The "people" are now the consumers (literally everybody) as well as the producers, they are rural residents partially dependent on city employment, and they are advocates of protection in health, nutrition, and environment.

Fortunately the language of the original legislation was open-ended enough to accommodate such changes. "To acquire and diffuse among the people...useful information" — there is the research-extension linkage for knowledge systems as the engines of the future. "On subjects connected with agriculture in the most general and comprehensive sense of the word" — there is the "new agriculture," not just farming.

The Department moved from crops to livestock concerns, from attempted self-sufficiency at home to encouragement of exports and aid to Japan in developing Hokkaido Island (1871), from research and education for farmers to regulatory functions for both farmers and consumers, and from simple farming to "every aspect of farming, farm and rural life, and food marketing and distribution" in the New Deal era and since.

Author Rasmussen, a distinguished agricultural historian who himself gave 50 years of service to USDA, not only concludes that the Department is indeed "the people's department" precisely because it is "the most open and responsive" but offers some observations on the future. Continued success means putting "the interest of the consumers of food, who make up 100 percent of the population, at least equal to those of the farmers, who make up 2 percent of the population, and yet see that the farmers are treated fairly." Also, continued recognition must be given the family farmer and the small one because "the family farmer is an endangered species but he still exists, while small farmers are increasing in number."

*"The People's Department: Myth or Reality?" *Agricultural History*, Spring, 1990.

Accolades for Illinois

In the extent of involvement in international education, the University of Illinois ranks among the top 10 U.S. universities, according to an index developed by the University of Arizona's Center for the Study of Higher Education and applied to 102 research institutions.

Structural Integration

Pennsylvania State University has a new way of integrating agricultural research and extension — by some restructuring. The new organization fixes research-extension coordination in the academic units of the College of Agriculture (11 departments and the School of Forest Resources), and a system of earmarked funds has been set up to support collaborative research between agricultural scientists and colleagues in the non-agricultural colleges. Two important kinds of linkages are thus created: those needed *in* the College of Agriculture and those needed *for* the College to bring together the expertise for dealing with problems going beyond the traditional disciplinary monopoly of the College.

Research-extension coordination depends on new relationships among the College's 17 units, all of which now report directly to the Dean — the 12 academic units and five regional extension units for field operations. The academic units include faculty with responsibilities for resident teaching, research, and extension education. The regional units include county extension staff within the region's portion of the state's 67 counties. Academic units thus coordinate research and extension within their jurisdiction and regional directors link their counties directly from the field back to the academic units.

Two other changes have been added: fixing of program coordination at the county level instead of retention at the state level and greater use of multicounty agents, particularly as subject-matter specialists.

The new intercollege plan of issue-based collaboration allocates earmarked research funds on the basis of peer-group review (also intercollege). Also, the integration effort uses College program planning committees to set research-extension priorities and allocate resources to them.

*Lamartine Hood, Wayne Schutjer, and Donald Evans, "Integration of Research and Extension Education," *Choices*, Third Quarter 1990.

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Helpful Ideas: Old and New

Meeting the Challenge: A Food Systems Strategy for Growth in the 1990s. Bureau of Asia, the Near East and Europe, Agency for International Development: Washington, D.C., 1990 (25 pages).

This outline of investment policy for an important world region bears all the marks of the new USAID policy of supporting "entrepreneurship as the most powerful engine" of economic growth, rather than the previous emphasis on technological change and human capital development. Hence, the new strategy centers around "open markets" with private sector cooperation, "open societies" with an anti-government bias, and agribusiness and trade development as the two top strategic priorities. Agricultural technology transfer drops to fifth place.

Inderjit Singh, **The Great Ascent: The Rural Poor in South Asia.** For the World Bank, Johns Hopkins Press: Baltimore and London, 1990 (444 pages).

With both analytical insight and specific conclusions, this evaluative review is a landmark contribution on the alleviation of poverty by agricultural development, specifically in South Asia (India, Pakistan, and Bangladesh). This region of almost a billion population, with 400 million in poverty, has begun "the great ascent," with optimism about the future; but the process may drag on into the middle of next century. Meanwhile the technological advances in agricultural production will have to be sustained: "they are absolutely necessary but by no means sufficient for the reduction of poverty." The Green Revolution, contrary to some critics, did not fail but laid the essential foundation. Without the new technologies, "the lot of the urban and rural poor in South Asia would have been far worse than it is today." Where agricultural output per capita has leveled off or declined, the conditions of the poor have worsened; where production has exceeded two percent a year, "this growth has benefitted all classes of the rural population."

Investments which should continue, as shown by experience, include irrigation, technologies, research and extension, infrastructure, rural education, and improved cropping practices. Capitalizing on the technologies is "the best bet" and should not await structural reforms as a precondition, desirable as are land redistribution, consolidation of holdings, and better tenancy security. Then complementary programs are also needed in the nonfarm sector: small stock and dairy, poultry, fisheries, agroprocessing, and rural manufacturing and service industries. Three elements are central: "growth in the longer run, guaranteed employment in the short run, and improvements in the quality of rural life." In fact, in the longest run and with the continued centrality of agriculture, "mass poverty—rural and urban—can be eradicated only by the industrial transformation of South Asia" and "by reducing the rate of population growth."

This is an impressive analysis, with plenty of backup data.

David Kaimowitz, editor, **Making the Link: Agricultural Research and Technology Transfer in Developing Countries.** Westview Press: Boulder & London, 1990 (278 pages).

Sponsored by the International Service for National Agricultural Research (ISNAR), experts here examine the key factors in the development-transfer linkage. The conclusion is not a recommended solution, good in all circumstances, but "a conceptual framework and set of hypotheses," helpful in particular circumstances. The pieces are all there—examined, defined, compared in scholarly detail—but putting them together for use is left to the practitioner, who is promised "additional lessons" from second-stage empirical case studies now in progress.

B. K. Samanta, editor, **Development Communication for Agriculture.** B. R. Publishing Corporation, Delhi, 1990 (299 pages).

Eighteen articles touch on all aspects of technology transfer in agricultural development, although the title refers only to the "communication" component. Nevertheless, this fits the editor's conviction that "a holistic/integrated approach" is an urgent need. In addition to sections on development communications and information systems, other sections cover research-extension-farmer linkages and training for technology transfer. While there is the inevitable unevenness in the put-together contributions of multiple authors, there is interest and merit in seeing both conventional and innovative concepts and practices (based on a broad literature review) through the eyes of experienced authors drawn chiefly from the developing nations.

Odin Knudsen and John Nash (with contributions by James Bovard, Bruce Gardner, and L. Alan Winters) **Redefining the Role of Government in Agriculture for the 1990s**. World Bank: Washington, D.C., 1990 (102 pages).

This typescript World Bank Discussion Paper turns out to be a candid promotion piece for GATT agreement between "the United States and the European Community...to reduce or eliminate their subsidization and protection of the agricultural sector." The free-market argument is cogent and persuasive, but "the other side" is backhandedly present chiefly because the reader is impelled to keep asking, "How could so many countries, so many parliaments, and so many voters be so obtuse so long?" At stake is the highest kind of policy. Policy is the product of politics. And politics represents vital interests, which will be heard and must be heeded. Understandably, the paper is not aimed at such political hang-ups, but they are central to any policy agreement. As stated at the end, the economic and political must be reconciled, as can best be done in "the type of negotiating forum offered by the GATT where the political costs of such reforms can be counterweighed by the substantial gains in other trade areas, such as services and intellectual property rights."

Joseph K. Campbell, **Dibble Sticks, Donkeys, and Diesels**. International Rice Research Institute: Manila, 1990 (329 pages).

From the engineer, to the non-engineer, this book is loaded with detailed information, pictures, and tables on the mechanization of crop production. Covered are topics as general as why mechanize where labor is plentiful to as specific as how to estimate the cost of field machinery, and more. Incidentally, a dibble stick is a planting tool, a mere stick technologically upgraded from blunt to conical point.

Rolf P. Lynton and Udai Pareek, **Training for Development.** Kumarian Press: West Hartford, Conn., 1990 (333 pages). Second edition of a 1967 book, still seeking training improvement because of the poor continuing correlation between expenditure and success.

International Seminar on Rural Extension Policies, June 26-30, 1989. International Agriculture Centre: Wageningen, The Netherlands, 1990 (134 pages). Synopsis of proceedings and discussion among external donors, policy makers, and field-level extension professionals, plus 10 papers from invited speakers.

Stephen J. Carr, **Technology for Small-Scale Farmers in Sub-Saharan Africa.** World Bank: Washington, D.C., 1989 (106 pages). An appeal to researchers and extensionists to focus on the external constraints, which too often make technology inapplicable even when readily available.

Katrine A. Saito and C. Jean Weidemann, **Agricultural Extension for Women Farmers in Africa.** World Bank: Washington, D.C. 1990 (57 pages). Concludes that research should focus on the tasks, enterprises, and objectives of female farmers, with their active involvement in setting research agendas and in identifying extension needs.

Gary Vocke, editor, **Trade and Development: Impact of Foreign Aid on U.S. Agriculture.** U.S. Department of Agriculture: Washington, D.C., 1990 (70 pages). Central theme: foreign aid means economic development, the only means by which developing countries can become our future markets.

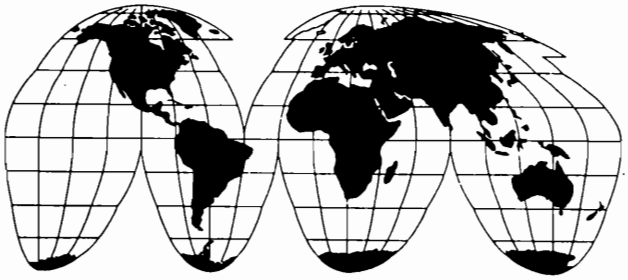
Raymond L. Ison, **Teaching Threatens Sustainable Agriculture.** International Institute for Environment and Development: London, 1990 (20 pages). Complex derivatives from the simple theme that teaching is not the same as learning.

Carl K. Eicher, **Sustainable Institutions for African Agricultural Development**. International Service for National Agricultural Research: The Hague, 1989 (38 pages). "The resource-transfer model of foreign assistance must be replaced by a human-capability/institution-building model of development," producing sustainable institutions *for* sustainable agriculture.

Economic and Social Progress in Latin America. Inter-American Development Bank: Washington, D.C., 1990 (307 pages). Valuable 1990 report on the "lost decade" of the 1980s, with country summaries, a special section on working women, and 60 pages of statistics.

David J. Webber, editor, **Biotechnology: Assessing Social Impacts and Policy Implications.** Greenwood Press: Westport, Conn., 1990 (239 pages). Considerations for policy making on biotechnology in terms of ethics, safety, and economic impact, with agriculture the initial motivating factor but submerged in broader considerations.

Frederick Williams and David V. Gibson, editors, **Technology Transfer: A Communication Perspective.** Sage Publications: Newbury Park, London, and New Delhi, 1990 (302 pages). More for business and industry but suggestive for agricultural applications.



Around the World

ILRAD Training

The International Laboratory for Research on Animal Diseases, Nairobi, Kenya, spent almost 10 percent of its budget in 1989 on the development of human resources in veterinary research and disease control in African countries. Thirty post-graduate students served as research fellows for from one to four years, working toward degrees, with all African recipients supported by ILRAD. Fourteen post-doctoral fellows were in training, three as senior research fellows from universities and research institutes who spend several months enhancing research skills and 11 post-doctoral fellows who spend two years augmenting ILRAD's research program. Shorter-term programs train specialized technicians and sponsor conferences and workshops.—*ILRAD 1989 Annual Report.*

Righting Wrong Goal

Small farmers in Asian countries would be better served if agricultural policy focused on farm household as a social unit rather than on male farmer and commodity. The latter emphasis is traditional but it often falls short on household food security and family nutrition. Rice farmers are often net purchasers of rice. When prices rise, farmers sell more and eat less, with decline in calorie intake and nutritional status. From the standpoint of household food security, subsistence-oriented villages often produce better results than the market-oriented villages.

Shift to the new emphasis would also bring into consideration and participation those who have been "culturally invisible" — women and children. — *Agricultural Information and Development Bulletin*, June 1990.

Soybean Research Network

To improve the exchange of information on utilization research, a Tropical Soybean Research Network for Latin America and the Caribbean is being planned by the Food and Agriculture Organization of the United Nations. The objectives are linkages among scientists for sharing of research results, reduction of duplication through coordination, improved access to equipment and technologies, and creation of a critical mass to hasten scientific breakthroughs. — *INTSOY Newsletter*, September 1990.

UNDP Short Courses

Six regional training courses in rural development, from three to six weeks in duration, are offered in 1991 (June 3 to November 4) by the UNDP Asia and Pacific Programme for Development Training and Communication Planning (5th Floor, Bonifacio Building, University of Life Campus, Meralco Avenue, Pasig, Metro Manila, Philippines).

IITA Director Speaks

Agricultural knowledge systems still hold the answer for whatever Africa can do in hoping for its own "green revolution," says the new Director General of the International Institute of Tropical Agriculture, Lukas Brader, in Ibadan, Nigeria. But a revolution is not the proper objective anyway; instead, "increasing the pace of evolution" is needed, with better understanding of current practices and better use of existing systems. A recent news release from IITA says "there is an absolute need for well equipped agricultural research and extension services."

Refocused Organization

The 25-year-old Association of University Directors of International Agricultural Programs has broadened its membership and objectives, with a new name: Association for International Agricultural and Rural Development. University professionals will now be joined by those from private firms, voluntary organizations, foundations, and national and international agencies. (Thomas A. McCowen, Associate Director, Office of International Agriculture, University of Illinois at Urbana-Champaign, is Secretary-Treasurer.)

Wisconsin Short Course

An eight-week course, "Development and Operation of Agricultural Extension Programs," will be presented by the University of Wisconsin-Madison, August 26 - October 18. Covered will be roles and methods of administrators, subject-matter specialists, field officers, and other staff. (Contact: International Agricultural Programs, telephone 202-245-5836).

INTERPAKS Activities

Extension in Turkey

Robert P. Bentz, Associate Director, Cooperative Extension Service and INTERPAKS Associate, and Burton E. Swanson, Director of INTERPAKS, were in Ankara, Turkey, during February 3-9 investigating a forthcoming agricultural extension and applied research project that will be funded by the World Bank. Midwest Universities Consortium for International Activities, Inc. (MUCIA) has been short-listed for this project and INTERPAKS is providing leadership for proposal development.

Japan-Illinois Exchange

INTERPAKS is helping coordinate a new exchange program between the extension services of Niigata prefecture and the State of Illinois. Kazuyo Yoshikawa, agricultural extension officer from Niigata, was in Illinois, January 20 to March 2, 1991 visiting state, regional, and county extension offices, and staying with farm families. Illinois, in turn, will send two extension agents to Niigata in September, 1991.

Swanson Activities

Burton E. Swanson, Director of INTERPAKS, has been named to a six-person international panel to carry out a five-year review of the International Service for National Agricultural Research (ISNAR) located at The Hague, Netherlands. He met with the Board of Trustees, March 18-22, and will study ISNAR's work in several countries during June 17-July 23.

Also, he attended the "International Conference on Extension Strategies to Minimize Risk in Rainfed Agriculture," which was held in New Delhi from April 6-12, 1991. He co-chaired a session on training in rainfed agriculture and presented a paper on "Strengthening Research-Extension Linkages Through the Use of Flow Systems Analysis." Following the conference, he traveled to China to complete preparation work on the extension component of a major donor funded agricultural development project.

About INTERPAKS Associates

John W. Santas, Pamela E. Woodard, Burton E. Swanson and 10 graduate students attended the annual conference of the Association of International Agricultural and Extension Education, which was held in St. Louis, March 28-30, 1991. Violet M. Malone, will represent INTERPAKS at the "International Workshop on Agricultural Knowledge Systems and the Role of Extension," sponsored by the University of Hohenheim in Germany, May 21-24, 1991.

INTERPAKS Helps UN Agencies

The Food and Agriculture Organization (FAO) of the United Nations has just published *Report of the Global Consultation on Agricultural Extension*, B. E. Swanson (ed.), which was developed under contract by INTERPAKS. This 217-page book summaries the outcome of the first international conference on agricultural extension sponsored by the FAO and includes the major analytical and donor papers that were presented. In addition, INTERPAKS has finalized work on a Program Advisory Note on Agricultural Extension for the United Nations Development Programme (UNDP). This 64-page monograph was published in March to guide UNDP field staff in making agricultural extension investments.

African Linkage

To design a possible program for a seven-year extension of the institution-building, USAID-assisted partnership with Egerton University, three representatives of the University of Illinois at Urbana-Champaign will spend two weeks in Kenya in May. They are John J. Nicholaides and Thomas A. McCowen, Director and Associate Director respectively of the Office of International Agriculture, and Eldon L. Johnson, University Vice President Emeritus and editor of INTERPAKS INTERCHANGE.

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"Education and Development": A Different World Bank View

The wall of World Bank orthodoxy about educational reform has been breached, however slightly and subtly, by a new Bank publication. It implies that even in reform for development, there is more to it than blinkered economics. Schools and shops, kids and commodities are not the same. In a new discussion paper, *Education and Development: Evidence for New Priorities*, Wadi D. Haddad, Martin Carnoy, Rosemary Rinaldi, and Omporn Regel open the door to some debate about what might be called the "economically correct" view of education as established by numerous Bank authors of the past, despite the Bank's usual caveat that they are speaking for themselves.

But before the breach is explored, the new discussion paper must be recognized for what it is: a storehouse of data from extensive bibliographic research on what donor agencies have learned in three decades about the role of education in development and, as a result of "a fresh look," a presentation of "concrete alternatives for...the changed circumstances of the 1990s." If debate is to follow, as one hopes, an excellent base line is here presented although World Bank sources are heavily used.

Deviation from the dialectic of past authors comes cautiously, almost as if by inadvertency, in three areas: (1) educational finance reform, especially at the university level, (2) reliance on the private sector, and (3) the method of presenting conclusions.

The current orthodoxy is that higher education costs should be recovered by increased tuition with the recovered costs shifted to the lower school levels, and with the damage to the poorest students alleviated by scholarships and loans. The higher tide thus raises all boats equitably, both yachts and dinghies. The new report politely points out that some critics disagree, with reason. This route to equity among students is invalidated by experience cited in Colombia (as it might have been by daily observation everywhere else); and as for equity between educational levels, "there is no evidence" that recovered university costs will be shifted to the improvement of lower school levels. Without that shift, equity will actually be reduced. The tuition-scholarship-loan remedy may be a way to finance university education, but that is not the same as equalizing educational opportunity among income levels. The report might have pointed out that this "reform" for the developing world is an unworthy export, a flawed product even at home, from industrialized nations, which must themselves admit that only half of their intention is realized — the financing of higher education, yes, but not the equalizing of educational opportunity among income levels.

"The Gleaners" Jean-Francois Millet, 1855

Planters and Painters

Agriculture has long been a favorite subject for painters like Pieter Brueghel, Jean-Francois Millet, and Camille Pissarro in Europe and Thomas Hart Benton, John Steuart Curry, and Grant Wood in America.

To the oversophisticated critics of his peasant painting, "Potato Planters," Millet wrote, "Why should the work of a potato planter or a bean planter be less interesting or less noble than any other activity?"

INTERPAKS *(International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.*

Few educators who have to live by this formula anywhere would deny that it is a matter of expediency, not equity.

Another current orthodoxy is reliance on the private sector to right whatever is wrong publicly, including subsidies to produce school competition. The new publication shows that where private education competes, "family resources" are mobilized but there is "little evidence...that public schooling becomes more efficient as a result." Nor is public schooling less efficient anyway, many studies show. In the 1970s, Brazil subsidized a private university to absorb the excess student demand and to help the poor students, but the resulting "diploma mills" did it "by 'taxing' lower-income families to take bank loans and pay tuition, while higher-income families continued to send their children to excellent public universities." Finally, "an additional and crucial issue is whether private schools can satisfy the underlying social (public) goals of public education, such as bringing students from widely varying backgrounds into a common national social experience called the public school."

On the third point, the new publication offers no debate: it is simply different in its approach. It presents no irrefutable canon prescribed for everybody, everywhere, all the time — the U.S. and Bangladesh alike. Prescription follows the evidence, not predilection; otherwise, further study is frankly called for, as noted below. Different strategies are suggested for countries in different development stages — five are targeted in the conclusion, ranging from the highly industrial to those with the lowest income.

On whether vocational education is the best approach to development, the report questions the economic value unless the approach is more selective and such schooling is directly connected with the employment situation, with the caveat that more research would also help. On school management as a "high yield resource" instead of attention to centralized models of control over curriculum and quality, we need to know more about management models effective at the school level. Certainly we need to know more about strong preparation in science and mathematics, with their "problem-solving approach to life and work." Still another key area needing more clarity lies in the realization that massive "scientific education is not enough to produce highly diffused technological changes." Witness the USSR. How can higher education and research also produce the *understanding* of technologies that need packaging for local application? Can "distance education" or other low-cost nontraditional means enhance such understanding?

Besides resuming needed debate about critical issues in education for development — issues that defy rigidity of conclusion — the authors have cogently and eloquently stated the case for such education. Increasing access to it "contributes positively to more equitable income distribution and to reducing poverty."

Task Force: "Everybody Eats," So Focus USAID Policy Reform On Agriculture, Human Capital

Another reform in U.S. foreign aid! But this one deserves more than the familiar yawn.

It is presented by a blue-ribbon task force backstopped by an advisory committee, both with impressive credentials. It calls primarily for policy change rather than organizational change. It gives future operations a new hinge: partnership, collaboration, and sharing in place of "assistance" and "aid." Last but not least, it has prestigious sponsors—Ford and Rockefeller Foundations, the U.S. Department of Agriculture, and the U.S. Agency for International Development (USAID), all of which made grants to the Humphrey Institute for Public Affairs, University of Minnesota, as the implementing organization. The Institute's Dean, G. Edward Schuh, headed the Task Force. The project was initiated, and staff provided, by the Board for International Food and Agricultural Development and Economic Cooperation, appointed by the President.*

Perhaps the most riveting statement in the report is the axiomatic one: "Agriculture is important because everybody eats food." Therefore, it directly undergirds economic growth, with many secondary contributions. That fundamental recognition is exactly what has been neglected in the last decade of U.S. foreign assistance—"a serious mistake." Hence the time has come for a reordering of priorities: less attention to fads and rapid priority shifts and more attention to fostering "a more stable and sharply focused program." And above all, back to "human capital development, the creation of knowledge, and new production technology," administered internationally in the spirit of "a partner looking for collaborative relationships and shared benefits." The task force frankly states that its priorities "diverge significantly" from those of USAID.

Emphasis should be on long-term measures and policy reform regarding human development, market and service institutions, population, equity, access to resources and services, and sustainability. Less emphasis should go to short-term measures like cash transfers for structural adjustments and capital infrastructure, with dollars tied to U.S. procurement, and to other subsidies to private U.S. firms.

While the report concurs with USAID and the World Bank in helping the developing countries toward market economies, democratic institutions, policy reform, sustainability, and use of the private sector, it calls for a better public-private balance. In fact, basic policy errors have come from failure to distinguish between "what the private sector can and *will* do, and what the public sector *must* do (italics added)." USAID can promote more of what its rhetoric wants in the private sector by using the public sector — using it for "invest-

ments in human capital and public sector institutions." It is illusory to think that developing country access to international capital markets is the answer. Such markets do not respond favorably to fund requests for education, nutrition, health care, family planning, research and technology investments, and institutions of social service — the foundation blocks of economic growth.

To bring coherence to scientific and technological cooperation, the report recommends an alternative to the decentralized operation that simply aggregates projects coming from field missions. It is a proposed Center within USAID, comparable to the National Institutes of Health, to provide focus and make grants on a competitive, collaborative basis with matching funds from participants. Grants would be available for collaborative research, educational programs, and personnel exchanges among educational and research institutions both in the U.S. and abroad, maximizing access to knowledge and the sharing of it.

Other recommendations include an institute for private voluntary cooperation, to coordinate and better link with private sector agencies; and a broader role for the U.S. Department of Agriculture, removing the current "ambiguities" by naming a department-wide coordinator for international programs.

Aware of the political considerations, the report emphasizes the U.S. national interest as the driving force, rather than mere benevolence, in future development cooperation. To counter the absence of a home constituency to support international cooperation, USAID is urged to put together "a new political coalition" of universities, voluntary organizations, environmental movements, and all those who recognize that national interest now requires better collaboration with the global economy.

*A summary and a condensed version of *The U.S. Interest in International Development: A Basis for Building Long-Term Collaborative Relationships with Developing Countries*, June 1991, preceding full-report publication.

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Agriculture: the Make-break Strategy for Eastern Europe

Insight into agricultural reform in a socialist country is found in a first-of-its-kind study published by the World Bank: *An Agricultural Strategy for Poland*, 1990. In response to its urgent need, the Polish government appointed a joint task force involving itself, the European Community, and the World Bank. Within two months, findings were ready, with a proposed strategy and policy guidelines for agricultural reform. In addition to the 27 pages of strategy, almost 300 more are added in annexes on specific issues (including, for example, research and extension).

Agribusiness is critical in Polish agricultural development, as well as in the whole economy, and therein lies the roots of the crisis. The origins are not in a lack of farm production: indeed a glut, not a shortage, exists. Therefore, government priority action must address agribusiness efficiency. Further investment in farm production is justified only "if downstream industry and trade are...capable of handling the products more efficiently."

Other elements of the recommended strategy include increased competition through "privatization and demonopolization;" rural sector development to retain its population; generation of employment; help to the urban sector while adjusting to the new economy; technical farm-level improvements; and governmental adoption of an enabling rather than interfering role. A legacy to be overcome is "the scarcity of Polish personnel, both in the public and private sectors, trained in modern economic and financial concepts." Remedy by education and training "must be an essential activity."

On the research-extension linkage, the report says both parts are too production-oriented, inefficient, and uncoordinated. Nevertheless, "there is great need for an effective extension service" to inform farmers and to give farm-level feedback to the research establishment. For the immediate future, no production goals should be issued and extension should be redirected away from production to efficiency. Also, the extension staff should be retrained for emphasis on business aspects and farm management efficiency with use of technical help.

The prospects for successful transformation are good because the private farm sector is large in Poland (unlike other transition countries), Polish farmers are resilient traditionally, farm infrastructure is adequate, geography is good for exports, and the needed technical base exists.

While the report makes no application to neighboring countries emerging from socialism, many analogies are apparent.

Extension: Uncertain Future

Three professors at the Virginia Polytechnic Institute and State University have studied the future of extension in agricultural economics in the Southeast region of the U.S. and published a paper which "reaches no conclusion other than that the extension future is an uncertain one."* This may sound like compounding the inconclusive, but the analysis has general application beyond the field of agricultural economics.

Extension support is eroding. That is because the economy that extension serves is rapidly changing, as is the way in which the public views conventional production agriculture. The four historical rationales for extension are all being undermined: the political clout of a predominantly rural population, the perception of farmers as an economically disadvantaged group central to "the Jeffersonian agrarian ethic," the belief that community welfare depends on a vital farm sector, and the extension advantage, both in expertise and economy of scale, in producing and distributing needed information.

A fundamental structural change is also taking place: "the possible emergence of bimodal agriculture" with mega-farms in the best agricultural areas and part-time farms near employment centers—fewer of one and more of the other. The management strategies of the mega-farms will call for "wholistic managers" who integrate the production element with the financial and marketing elements for profit. The part-time farmers will seek not so much profit as balance of farm and non-farm income to stabilize family earnings in good and bad years.

These structural changes will vitally affect extension. The mega-farms will be more capable of meeting their own needs by hiring trained farm managers, using private and industrial consultants, and turning to the private sector for genetically engineered technology made commercially marketable by patent law changes. Whether these extension losses can be made up in demand from the part-time sector is, at best, uncertain. These clients will be relatively well educated and can give political power "*if* extension programming speaks to their needs," but they will no longer be seen as economically disadvantaged.

Some extension rethinking will be required. Maybe the home base should no longer be the academic departments but "a separate, multidisciplinary organizational unit(s) in the land-grant system." With a reduction in the need for information and staff numbers, regionalization of programming and expertise may better use limited resources and also better fit the possible substitution of electronic communication for face-to-face advising. Also, rethinking may be needed on the full-time specialist versus the specialist who combines for-hire consulting with teaching and research and on the role of the field agent in the new delivery system. Finally, documentation of outputs (how programs have changed decisions) and demonstration of who is benefitted will have to replace the old documentation of such inputs as meetings held or clients reached.

In other words, the "new reality" calls for reconsideration of procedures for staffing, for information dissemination, and for program targeting to special clientele.

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*David M. Kohl, Leonard A. Shabman, and Herbert H. Stoevener, "Agricultural Transition: its Implications for Agricultural Economics Extension in the Southeast," *Southern Journal of Agricultural Economics*, July 1987.

Accolades for Illinois

The new $50,000,000 Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign was named "Laboratory of the Year" by the *Research & Development* magazine in its 1990 awards competition, calling it "a world class research center" and "a cathedral of learning."

Misguidance in Africa

Research and extension have contributed (repeat, *contributed*) to the downward spiral in agricultural production in Sub-Saharan Africa. That conclusion should grab attention. It comes from the World Bank's workshop on research in that region.*

The trend must be reversed, with increasing agricultural productivity, to attain three needed goals: food security, stimulation of development in other sectors, and a higher standard of living. The chief means are better technologies, both new and adapted, accompanied by "enlightened government policies." Enlightenment here means "appropriate to farmers' capacity" and to the environment in which used. The fact is that farmers, peculiarly wise in their self-interest, have shunned many innovations and recommendations out of fear of risk or loss, unprofitability, or difficult implementation. Not surprising, because the basis of the knowledge is "nearly impossible to duplicate in the farmers' fields."

The starting point for technological change is an often-stated but still-neglected one: realization that agricultural resources in this region are "diverse and often difficult." The "peculiar ecologies" of this diversity must be recognized in any effective change; otherwise, the wrong technology priorities are followed, as amply demonstrated in the past.

Another central remedial principle is recognition that farmers make resource allocation decisions rationally even if they do not "match exactly the idealized

'economic' men and women who are visualized by some development planners." In other words, the constraints faced by farmers must be understood sympathetically.

Behind the farmers are the institutions of supposed assistance which have used poor siting of experimentation and testing (often irrelevant to poor farmers) and inadequately supported research and extension organizations both in budgets and in staff. These "institutional failures" must be remedied also.

The workshop report concludes that if these suggestions "are less than novel or exciting", that "does not make them less valid." And it might have added, "for the World Bank or anybody else."

*Suzanne Gnaegy and Jock R. Anderson, editors, *Agricultural Technology in Sub-Saharan Africa: A Workshop on Research Issues*, 1991.

Toward Gender Equality

While women have not yet attained full equality with men anywhere in the world in economic status, gender differences are declining in the industrial countries. Concern remains about the slow rate of change and the size of the gap yet to be closed. These are the conclusions of two University of Illinois researchers, Marianne Ferber and Francine D. Blau (*Working Paper No. 3447*, National Bureau of Economic Research, Inc., 1990).

In the participation ratio of women to men in the labor force, the mean worldwide is 65.3 to 100, ranging from a low of 44.7 in Ireland to a high of 87.2 in Sweden. Ideology makes a difference: 79.7 in Marxist Eastern Europe. Religion also makes a difference: higher participation in Protestant than Catholic countries and lowest in Muslim countries, where the role of women is generally home-based.

The researchers conclude that there is "a positive association between female labor force participation and economic development." However, "As long as women, but not men, have 'household responsibilities,' whether or not they are also wage earners, the goal of equality for women in the economy as well as in the home is likely to remain elusive."

Education vs. Employment

Kenya is a good example of the growing African problem of the imbalance between educational output and jobs available. In its quarter-century of independence, that nation has made phenomenal progress in educating its youth, but now "each year more than four times as many school graduates join the labor market as there are new jobs created." This "unrestrained expansion," costing almost 40 percent of the nation's recurrent budget, "is not sustainable."*

What is the solution? The author revives an old one: rural agrarian development. Land scarcity is forcing Kenyans to seek wage employment, which increases the pressure for education as a prerequisite. Hence more attention has to be given something beyond present efforts toward employment generation, "addressing the very roots" of the educational demand.

The income potential of small farmers has to be increased, and a promising way is through land redistribution, "the single most effective means of altering the survival equation facing smallholders in rural Kenya." If clues were taken from experience in South Korea and Taiwan, 1,500,000 new farms could be created by setting a land ceiling of three hectares, with an average farm size of one to one and one-half hectares. That would mean "780,000 person years of new employment." Such a policy should be combined with other rural development policies, including promotion of off-farm income, reduction of smallholder risks, and augmentation of rural credit markets.

*Rees Hughes, "Examining the Roots of Educational Demand: The Case Supporting Rural Agrarian Development," *World Development*, February/March 1991.

Transfer of Mental Capital

Transfer of knowledge and technology has played a role in national economic growth for a long time. Diffusion of this kind characterized medieval Europe — "The water wheel and wind mill, the heavy plough, the three-field system, the horseshoe and harnessing," writes Ian Inkster.* Nations did not industrialize by acting alone in modernizing their capacities. On the contrary: "Men, manuals and machines moved." "Idea merchants" moved knowledge across national boundaries — random movement of scientists and foreign visitors, publications (tenfold increase in scientific periodicals in the eighteenth century and a hundredfold increase in the nineteenth), academies and learning centers (Benjamin Franklin belonged to 20 European scientific societies), mass movements and settlements (e.g., by trade and war), and actions by the state.

The existence of technology and even of transfer mechanisms is not enough alone. It also takes human capital and the transfer of acquired skills. "Technology is not simply a collection of hardware or a set of manuals." It also takes people, skills, and experience, indigenous or migratory.

*"Mental Capital: Transfers of Knowledge and Technique in Eighteenth Century Europe," *The Journal of European Economic History*, Fall 1990.

Development Challenge: Practicing What Works

Theorists and practitioners, researchers and extensionists ought to be a little closer together after 40 years of explicitly planned development experience around the globe. What are the lessons learned and "the reliable principles" to be employed hereafter? That is the subject of the *World Development Report 1991* of the World Bank. It looks at mountains of data, backs off with objective analysis, considers pros and cons, and comes up with discussion of many specific actions recommended for the 1990s. The 290 pages are a veritable mine of information on all the factors that produce economic growth, their complicated interactions, and the resulting tentative-certainties and remaining-ambiguities.

The report has two notable characteristics. It departs from Adam Smith's confident reliance on capital accumulation, with exploration of four factors all of which are crucial. It concedes that government has a crucial role in all factors and that the public and private sectors need to be complementary and reinforcing.

The four factors are stated as what developing countries need to do: "Invest in people...Improve the climate for enterprise...Open economies to international trade and investment...Get macroeconomic policy right." Where does technology fit in — and as applied to agriculture? Technology flows from incentives, from the productive use of accumulated capital, including competitive markets, proper institutions, and supportive investments. High productivity in agriculture is recognized as "especially important for industrialization and growth". That means publicly supported research and extension, with private sector cooperation where possible; and elimination of the too-common practice of "taxing" farmers directly or indirectly by ill-advised governmental policies in pricing, trade, and exchange rates.

Seven common pitfalls in development efforts are presented: lack of a country's sense of commitment or ownership in externally-financed programs; flip-flops in reform; neglect of institution-building as a condition of ambitious change; inattention to economic instability; forgetting the vulnerable people; making partial attempts without "complementary actions"; and being unrealistic in preparing and supporting programs (not contrasting "the outcome of reform with the alternative outcome of not reforming").

The role of government is extensively explored also, with the conclusion that, rather than blind anti-government ideology, all the world's experience "calls for governments to intervene less in certain areas and more in others." In this respect as well as others, the report embraces its own extracted "clearest lesson" from global experience: "there is a premium on pragmatism and an open mind." While it views "effective government as a scarce resource," it recognizes that it remains for governments "to translate the broad lessons of development experience into policies that work." Success in this respect "is indeed the most pressing of all the challenges that now confront the human race."

Lending and Learning

In evaluating its 112 rural development projects completed between 1968 and 1981 at a cost of about $2.7 billion, the World Bank found that 63 percent were "successful" by the standard of an economic rate of return of 10 or more percent.* The average overall rate, however, was 17 percent.

The success/failure balance sheet has modified the Bank's subsequent approach to rural poverty. Integrated projects are now more simply designed, lessening the demands on local leadership and institutions. More stress is placed on institutional development, on better integration with national agencies rather than creation of independent project management units, and on encouragement of participation by project beneficiaries — all aimed at continuation of benefits beyond project completion. More attention is paid to the policy framework into which finance goes since government policies on prices, interest rates, and input supplies are frequently at variance with project objectives and immune to their hoped-for corrective leverage.

**World Development Report 1990*

Policy and Growth for 1990s

Development depends on many factors, but some of the most important are hard to document with statistical data. These include the political system (degree of openness), the economic system (market or command type), ethnic composition (degree of homogeneity), and income distribution. Available data on these are presented and analyzed by David W. Skully and Thomas L. Wollrath in *World Agricultural Situation and Outlook Report*, June 1990, U.S. Department of Agriculture.*

The figures show that "economic growth and government management of the economy are negatively related," with superior performance in the open economies. This corroborates the direct experience now realized by the many nations in the throes of liberalizing their economies, from the USSR and Eastern Europe to Asia and Africa. The figures also show a positive relationship between trade and growth; a

study of 30 developing countries shows that those with lower degrees of trade intervention grew faster than those with higher intervention. For example, in 1961 India and South Korea had approximately the same per capita income, but by 1987 South Korea with its outward-oriented policies had four times the per capita income of India with its inward-oriented policies.

Income distribution and the equity factor are dramatized in the data. This inequality is three times greater in Latin America than in what is called "dynamic East Asia" (China, Hong Kong, Singapore, South Korea, Taiwan, and Thailand). South and Southeast Asia are in the middle. African figures are limited but those available show higher inequality than the average in any other region. The greatest contrast is between Taiwan and Ecuador. In the latter, the richest fifth of the population has 40 times the income of the poorest fifth, or 10 times the disparity in Taiwan with the most favorable ratio of 4.23.

Looking at the statistics and the dramatic shifts in the USSR, China, and other examples of central planning, the authors predict more progress toward open economic systems in the 1990s because "there has been a major shift in what policymakers and their advisors believe about the effects of economic policy on growth."

*"Developing Countries: Changing Closed Systems to Open Ones."

Illinois Extension Changes

With almost static funding despite the growing importance of technological development and transfer, the Illinois Cooperative Extension Service has begun a program of "revitalization." Structurally, that means a departure from the historic county-by-county organization, with a new unit/cluster/center arrangement. Extension units (representing one or more counties, totalling around 60 percent of the present number of county offices), functioning as clusters, would be served by staff located in 18 to 22 extension centers and in the local unit offices. Advantages will be further specialization for high levels of needed information and flexibility to move into highest-priority areas. Tax referenda are now being conducted in roughly 25 percent of the counties so as to provide a larger and more stable financial basis for the field offices.

The University Board of Trustees is requesting an increase of $8,500,000 in state funding in addition to the $750,000 increment this year, which could increase the number of units to 80 from the 59 possible under current funding. In addition, more extension educators would be added both to units and centers, and there will be more state specialists on campus.

Saving Small-Scale and Black Farmers

Since Thomas Jefferson's time, "saving the farmer" has been an American concern. What that means is not as clear as it was originally. First of all, there are farmers who do not need saving, and then there are those who desperately do, if they are to be farmers at all. Needed light is thrown on the small-scale part of the problem and on what can be done about it in Emile Demissie's *Small-Scale Agriculture in America: Race, Economics, and the Future*, Westview Press, 1990. Two needed contributions are made: a clear picture of the black-farmer dimension of the problem and a set of recommended policy changes for all small-scale farmers.

Historical changes in farming characteristics have more adversely affected blacks than whites in the decline in number of farms operated, decline in farm size, fraction of farm product sales, proportion who are of older age, and percent who are farm tenants. For example, "in 1987, there were 41 percent as many white farmers as there were in 1900, while there were only three percent as many black farmers as there had been in 1990." Black farmers suffered a 97 percent decline, down to less than 23,000 farms, or about one percent of the U.S. total.

The author's recommended policy changes generally apply to all small farmers, black and white, although emphasis is put on specific policy targeting to greatest need. That includes an analysis of some special black needs and a recommendation that the so-called "1890 land-grant universities" (black) be strengthened on all fronts "in the general development programs of blacks and black operated farms."

If policies need to be more specific, what should they be? Among them, development of technology for small-farm use (e.g., machinery of appropriate size and energy-efficient), improvement in management and information programs, development of alternative marketing systems (e.g., direct farmer-to-consumer and neighborhood types), liberalized and targeted programs of credit access, and a research-extension approach that is more multidisciplinary and problem-oriented with "a more aggressive outreach effort."

Undergirding it all are "needs-based rather than production-based" policies and emphasis on rural development: the whole farm-operating context, including off-farm factors and the delivery of social services. Also a possible needs-based policy akin to what is done for large operators might be a supplemental income support program by formula based on farm product sales.

So the Jeffersonian persuasion lives on in the author's conviction that to sustain the rural American way of life, "the preservation of small-scale farms should be the central feature of American agricultural policy."

"Internationalizing"

Internationalizing higher education is "the thing" currently in the U.S. — in all kinds of institutions, both private and public. The land-grant universities, with their colleges of agriculture, differ in that they have been emphasizing this dimension for more than 30 years. The initial impetus came from government-supported but university-based programs of technical assistance to developing nations. This led to faculty overseas experience, greatly increased enrollment of foreign students, and demand for foreign languages and relevant internationally-oriented courses. The University of Illinois was one of the leaders in this transformation, particularly in its College of Agriculture, which had the special expertise most needed for the literal "ground-up" development of the nations made independent in the break-up of empires after World War II.

That tradition now continues. Two pieces of evidence are the foreign student enrollment trends and the "globalization of the curriculum."

In the fall of 1990, 45 percent of the graduate agricultural enrollment came from foreign countries. That proportion was more than half in extension education, agricultural economics, agricultural engineering, forestry, horticulture, plant pathology, foods and nutrition, and family and consumer economics.

The College's Associate Dean and director of resident instruction, William L. George, says: "Today, the question is no longer 'Should we internationalize the curriculum?'. We clearly must. The question is 'How do we do it?'" An important way is through the use of enhancement-of-teaching grants, almost $20,000 in 1990-91, to faculty members for the introduction of "global perspectives" into their courses.

Democracy: Pat Prescription?

Those who have extracted the quintessential lessons from history are busy giving the world two prescriptions, one political and one economic. The political: establish democracy by giving people freedom to organize parties, to vote their choice, and thus to transfer power peacefully. The economic: as *The Economist* thinks it knows, "invest a lot in education and infrastructure, be open to trade, let the market have its way." These two interlocking generic prescriptions are now confidently being written by the most experienced doctors of knowledge/technological transfer: the aid-dispensing agencies, national and international.

But, wait, what is the origin of this medicine? It clearly did not derive from the world's six fastest-growing economies of the last 25 years, the four tigers of Asia (Hong Kong, Singapore, South Korea, and Taiwan), plus Indonesia and China. All these have been authoritarian regimes during their economic ascent. Bothered by this contradiction, *The Economist*, June 29, 1991, makes some insightful observations.

The Asian nations, except Japan, have loyalties "far stronger than any attachment to the rather abstract values of a nation or a political ideal." Those loyalties are "region, race, caste, religion and language." Also, these nations have no "tradition of checks and balances, of a half-way point between having power and being subject to it." In other words, governments around the world differ in their ability to adopt the political and economic policies prescribed. Attaining relative riches helps bring on political freedom. South Korea and Taiwan are now moving in the political direction suggested by Japan's riches first, freedom next.

In an interview, Lee Kuan Yew, Singapore's perceptive long-time strongman, expresses the conviction that an educated workforce with well-educated managers and employee experience in shop participation—"the needs of industrial society"—must come first. Even then, the outcome goes back to deep-rooted culture, which can be stronger than politics or economics because of the "values and perceptions, attitudes, reference points, a map up here, in the mind."

Was Adam Smith Wrong?

Is economic growth caused by saving (capital accumulation) or invention? Adam Smith, the classical economist, held the former. John Rae, not exactly an economic household name, held the latter. Writing more than 50 years later than Smith's *Wealth of Nations*, Rae had the perspective of the Industrial Revolution and saw the role of technical change. He completely reversed Smith, claiming, in the words of Anthony Brewer, "technical change is the primary driving force, and capital accumulation follows passively."* Technical change first, investment later; not the other way around.

The duration of capital accumulation, Rae contended, depends on investment opportunities created by invention. Even in the new North America, which Rae knew as a Canadian immigrant turned schoolteacher, growth was not seen as a response to capital scarcity but, rather, the result of "the unintermitting transfer to that continent of European arts" and "the generation of new arts."

Many "contemporary" ideas are older than we think. And many issues remain unsettled.

*"Economic Growth and Technical Change: John Rae's Critique of Adam Smith," *History of Political Economy*, Spring 1991.

Helpful Ideas: Old and New

Willem C. Beets, **Raising and Sustaining Productivity of Smallholder Farming Systems in the Tropics.** AGBÉ Publishing: Alkmaar, Holland, 1990 (738 pages).

It would be a prodigious undertaking to present in one book knowledge of all the dominant farming systems of the developing world and to explicate "the need and potential for raising their productivity through various development interventions." That is what this book attempts, based on eight years of preparation and 22 years of the author's fieldwork. Its monumental proportions are an antidote for "extreme professional specialization." It provides the alternative of "a coherent conceptual framework" by building around farming systems (seven of them) dominant in the tropics and how to improve them on a sustainable basis. It covers the interactions of a host of factors, from the physical to the social, the internal to the external, and the current status to future possibilities. Its intended audience is equally comprehensive: from students to policy makers, researchers to extensionists, and top to bottom public officials.

Five opening chapters set the scene and define the problems through a highly organized presentation of knowledge gleaned from the relevant literature, with voluminous diagrams, charts, statistics, maps, and photographs. Aware of his different audiences and his handbook conception, the author also has convenient pointers throughout on what is most relevant for different categories of readers.

The last three chapters are concerned with how to improve the farming systems identified. Twenty-three "interventions" are discussed in detail (in almost 200 pages), including crop husbandry and patterns, fertilizer programs, irrigation, mechanization, new varieties, harvesting to processing improvements, human resource development, land reform, privatization, and more.

If anything else should be sought, some readers might have liked attention to livestock as well as crops, particularly in special relation to small farmers, and greater attention to the research-extension dimension, here treated only as it relates to the *whole* farming system and with the conclusion that the linked effort is too segmented, unbalanced, and poorly organized.

Throughout, the author does not disguise his own preference and judgments. He advocates development within existing systems instead of using "western-style," keeping at a minimum imported inputs like fertilizers and borrowed technology; emphasizing self-reliance and self-sufficiency; taking a long-run sustainability approach instead of the short-run; provision of a technical base first but awareness that henceforth more attention must be given the political, economic, and institutional factors; and at every stage consideration of the centrality of the farmer, and, in the tropics, especially the small farmer.

(Available from the publisher, P.O. Box 9125, 1800 GC, Alkmaar, Holland: hard bound, US $85, paper US $39.)

Bernhard Glaeser, editor, **The Green Revolution Revisited: Critique and Alternatives.** Allen & Unwin: London, 1987 (206 pages).

Looking at the Green Revolution, this multi-authored book is "a radical reappraisal of its objectives and evaluation criteria." It intends to redirect rather than negate the great potential of agricultural research. The "environmental disruption" will have to be addressed "because the geneticists were not even asked to consider the environmental aspects in their cost-benefit analysis." The demand as well as the supply side must be acted on in labor absorbing ways to enable more people "to earn access to food while working to product it." Less resource absorbing production functions should be developed, "less energy-intensive and...more energy efficient." For environmental sustainability and higher yields on a continuous basis, the "present predatory resource-use patterns" must be given up.

Jock R. Anderson, Robert W. Herdt, and Grant M. Scobie, **Science and Food: The CGIAR and Its Partners.** World Bank: Washington, D.C., 1991 (134 pages).

This is the report card on the CGIAR and its related international agricultural research centers — on how well they "have affected food production and the welfare of the poor". The grades are good, moderated by caution and modesty as perhaps befits a self-evaluation. Objectivity was sought by an advisory committee of "eminent scientists from all parts of the world" and by case studies under expert authorship. This kind of business does not lend itself to precision, as the report confesses in conclusion, but few if any of the positive generalizations about success are likely to be challenged. They related to the effect on national research systems (with their capacity to absorb research results and to modify them for local adoption) and to the often allegedly neglected poor farmers, poor customers, and women. Although the report says

programs "must ultimately be judged by the results in farmers' fields", its index cites nine pages for treatment of "extension services" and five for "technological innovation" (with two pages overlapping).

The main thrust of the report is that the successes of the international centers will be continued, although perhaps with less spectacular gains unless the new biotechnology takes command.

John Howell, editor, **Training and Visit Extension in Practice.** Overseas Development Institute: London, 1988 (107 pages).

This synthesis in six papers gives balanced presentation of the impact and significance of the T&V System. Impact studies are reported on four African and Asian countries, with an introduction and a cogent chapter of conclusions by the editor. Immediate concerns about costs and financing are less important than "the growing interest" in the research-extension linkage and the organization of support systems of subject-matter specialists.

Anne O. Krueger, Maurice Schiff, and Alberto Valdes, editors, **The Political Economy of Agricultural Pricing Policy.** 5 volumes. Johns Hopkins University Press: Baltimore, 1991. These volumes summarize the results of a Bank project "designed to fill the gap in the literature by assessing the effects of both direct and indirect intervention in agricultural prices over a long period in eighteen representative developing countries." Instead of merely filling a "gap," this may now be the definitive work on the familiar economic problem of direct or indirect "taxing" of agriculture.

Teresa Curran, **The Theory and Practice of Agricultural Policy.** World Bank: Washington, D.C., 1990 (36 pages). Policy making and implementation are at the heart of development; policy reform needs to take into account the often-neglected non-economic factors (i.e., the practical and political).

Agricultural Biotechnology: The Next "Green Revolution"? World Bank: Washington, D.C., 1991 (51 pages). Discussion of how international donors and agricultural research centers, both national and international, can make sure that poor developing countries share in the great potential benefits of biotechnology.

Joel Mokyr, **The Lever of Riches: Technological Creativity and Economic Progress.** Oxford University Press: New York, 1990 (349 pages).

This book is, in its own words, "another attempt to struggle with this issue of issues" — the causes of economic growth. It concentrates on "technological creativity" as "one of the most potent forces in history." There are other factors in economic growth, as here analyzed, but they are regarded as complementary. Why some economies are creative and some not is not answered in any or all of the massive relevant literature. And when all is analyzed, we have "an unexplained component that defies explanation in purely economic terms." Chance is a factor also, as well as inspiration and individual contributions.

The book opens with the relevant theories, presents the historic technological contributions from classical antiquity to recent times, makes analyses and comparisons, and ends with the extracted "dynamics of technological change." Will this historical progress someday stagnate and end? Evidence is to the contrary. In a competitive world, it is a question of which nation will carry "the torch of creativity."

Avishay Braverman, J. Luis Guasch, Monika Huppi, and Lorenz Pohlmeier, **Promoting Rural Cooperatives in Developing Countries: The Case of Sub-Saharan Africa.** World Bank: Washington, D.C., 1991 (48 pages). A typescript discussion paper portraying potential and ills of cooperatives and recommending badly needed remedies.

Martin Greeley, **Postharvest Technologies: Implications for Food Policy Analysis.** World Bank: Washington, D.C., 1991 (81 pages). Using Bangladesh for the case study, this analysis shows that suitable threshing and milling techniques can improve productivity and equity but that female labor displacement raises need for alternative policies.

Donald R. Winkler, **Higher Education in Latin America: Issues of Efficiency and Equity.** World Bank: Washington, D.C. 1990 (148 pages). Excellent assessment with back-up data; dilemma of tenfold enrollment increase in 1960-85 period but with diminished quality and incommensurate public support; remedial policy choices offered but along Bank's usual economic lines of cost recovery, overconfidence in the equity of increased tuition with scholarships as a safety net, and more reliance on the private education sector.

Around the World

Tunisians Cut Population

Tunisia's family planning program has become a model for African and Arab countries. It has reduced the nation's population growth rate to less than 1.9 percent, just over three children per woman compared to more than seven 30 years ago. While abortion is legal (and religiously tolerated under Islam in the first trimester) emphasis is on contraceptive services through 48 clinics with mobile units. Marriages are illegal for men under 20 and women under 18. The social context is also important. A progressive policy toward women includes guaranteed equal status since 1958 and equal access to education. The head of the program says success has resulted from an underlying philosophy that the effort is not so much about birth control as about helping women, and not so much about population policy as about helping families. — Howard LaFranchi, *Christian Science Monitor*, May 31, 1991.

A New Religion

New Zealand's *AgriSearch*, June 1990, quotes Hugh Mackay, Chairman of Mackay Research, Australia, who describes environmentalism as "the new religion" with "a new framework of values, a new set of standards, a new list of rights and wrongs, a new sense of common purpose — something to believe in at last."

Workshop in Israel

A workshop on curriculum development and evaluation for agricultural schools and institutions will be held, November 25 to December 16, at the Hebrew University of Jerusalem, Rehovot. Conducted in English by the Faculty of Agriculture, the main topics will include types of agricultural education, school farms, and all aspects of curriculum: elements and their use, development (with computer assistance), reform, and evaluation.

Canadian Chill

As in the World Bank and many aid agencies in the industrial countries, the Canadian International Development Agency is embracing the trendy idea that the future lies in privatization. Two branches have been combined to augment their support of non-governmental organizations and their encouragement of Canadian firms to embark on joint ventures in developing countries. Is that where increasing funds will go? The *North-South News*, Spring 1991, reports: "What happens within the combined...branch will show the way winds are blowing. An early gust is chilling certain agencies..."

Oberly Award

The 1991 Oberly Award for Bibliography in the Agricultural Sciences has been given Michael J. Balick and Hans T. Beck for their *Useful Palms of the World: A Synoptic Bibliography*, Columbia University Press, as an aid to research in economic botany. Also for this award from the Association of College and Research Libraries of the American Library Association, honorable mention has been given Evelyn Mathias-Mundy and Constance M. McCorkle for their *Ethnoveterinary Medicine: An Annotated Bibliography*, "a pioneer information source."

Progress Against Poverty

The good news from India is that 80,000,000 people have moved above the poverty line in the decade from 1977-78 to 1987-88. That leaves 29 percent below the poverty line instead of 48 percent a decade ago. Among the reasons are a six percent growth in real GNP while population grew two percent, anti-poverty programs, a decline in the proportion dependent on agriculture (70 percent), increased remittances to relations from migrants to towns and overseas, more education, and liberalization of the economy. —*The Economist*, March 30, 1991.

The Other Half—

The somewhat more numerous "other half" of the world's population — 56 percent, that is — live in 46 economies with an average per capita income of $330. The good news reported by the *World Bank Atlas 1990* is that half the world's population, living in 30 economies, showed growth rate increases of more than 3 percent a year in the 1980s.

INTERPAKS Activities

INTERPAKS Short Course

Nineteen representatives of developing countries participated in the INTERPAKS short course for extension administrators, "Improving Organization and Management," September 4 to October 9. The participants were Hector Ballesteros, Ecuador; Hossien Mohamed Abdallah, Helmy Mohamed Farrag, Eid Fahmei Mahmoud Hassanean, and Mustafa A. Mohamed, Egypt; Almu Boyi and Joseph Akintunde Ogundele, Nigeria; S. S. Bains and Hanumaiah Thimmegowda, India; Fawzia Sulaiman, Indonesia; Francis W. M'Buka, Malawi; Sajjad Hussain Bhatti and Nazir Ahmed Memon, Pakistan; Tchambakou Ayassor, Togo; Nagi Abu-Hatim, Yemen; David P. Chipatiso, Ernest T. Danda, Ben Madondo, and James Maswaya, Zimbabwe. Co-directors were Robert P. Bentz, Associate Director, Illinois Cooperative Extension Service, and Burton E. Swanson, Director of INTERPAKS, who will lead a similar course next year. Information: write or call INTERPAKS.

Leadership Award to Swanson

In April, Burton E. Swanson, Director of INTERPAKS, received the Outstanding Leadership Award from the Association of International Agricultural and Extension Education. During the year, his activities for the Food and Agricultural Organization have included editing the *Report of the Global Consultation on Agricultural Extension*, helping compile the *International Directory of Agricultural Extension Organizations*, and preparing a strategy paper on agricultural extension. He has also prepared a policy-oriented paper, *Programme Advisory Note on Agricultural Extension*, for the United Nations Development Programme.

He was in China three times on a team preparing the agricultural extension component of a World Bank-funded project. In April, he presented a paper and played an active role in the International Conference on Extension Strategies for Minimizing Risk in Rainfed Agriculture; and in March and June-July, served as a member of an international panel conducting a five-year review of the International Service for National Agricultural Research, The Hague.

Japanese Review

INTERPAKS Associate Paul Hixon and Ruth Hambleton, Illinois Cooperative Extension Service, spent three weeks studying the extension system in Niigata prefecture as part of the Niigata-Illinois extension exchange agreement.

OIA Director's Activities

John J. Nicholaides III, Director, Office of International Agriculture, was a team member in Poland, July 14-17, to plan future projects between the Polish Ministry of Agriculture and the University of Illinois, the Illinois Department of Agriculture, and Doane International. In the latter part of June, he and Dennis R. Campion, head, Animal Sciences, reviewed research operations of the Institute Superior de Agricultura in the Dominican Republic, under the auspices of the Midwest Universities Consortium for International Activities. In August and September, two trips were made as the U.S representative on a review team for the International Board for Soil Resources and Management — to Togo, Ivory Coast, and Thailand.

Visitors

Recent visitors include Joseph Seepersad, Lecturer in Agricultural Extension, University of the West Indies; and Roberto Vincente Cobbe, Agricultural Communications Specialist, National Research Center for Vegetable Crops, Brazil.

Bentley Connections

Orville G. Bentley, Senior Adviser, Office of International Agriculture and INTERPAKS Associate, is co-chairman of the Venezuela-U.S. Commission on Agriculture, which last met in Venezuela February 20 - March 2. He is also a member of the Joint High Level Advisory Panel for the Japan - U.S. Science and Technology Agreement, which last met in Hakone, Japan, April 17 and 18.

INTERPAKS INTERCHANGE

University of Illinois at Urbana-Champaign Vol. 9, No. 1, 1992

INTERPAKS in Transition

Change in the Journal

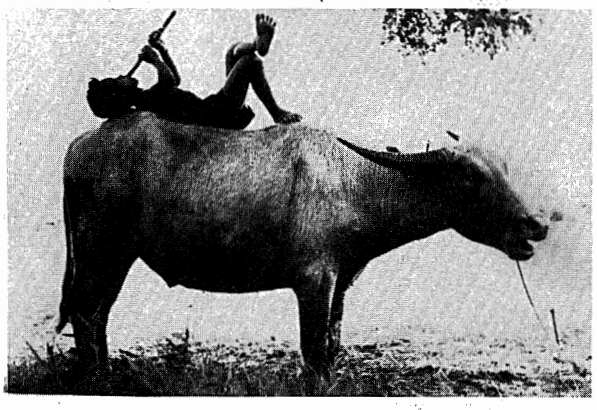
We would like to announce that Dr. Eldon L. Johnson, Vice President Emeritus of the University of Illinois, Senior INTERPAKS Advisor, and editor of the *INTERPAKS Interchange* since its inception, has asked to step down as editor. Therefore, this will be the last issue with the present name and format. Dr. Johnson will continue to be involved in future INTERPAKS activities, but on a less formal basis.

All of us who have been directly associated with INTERPAKS for the past decade extend heartfelt thanks and appreciation to Dr. Johnson for his thoughtful and thought-provoking editorial leadership of this primary INTERPAKS publication. The wit and wisdom of Eldon Johnson have been clearly evident in each issue of the *Interchange*; his insight and talents, as reflected by his writing and by his selection of articles for this important publication, will be sorely missed. We suspect that the more than 2,700 readers of the *Interchange* would join us in wishing Eldon well and expressing thanks.

As Dr. Johnson relinquishes his editorial responsibilities for the *Interchange*, we would like to advise you that the funding which has supported the direct costs of this publication has come to an end. Title XII Program Support Grant (PSG) funds have been used the past several years to produce and publish the *Interchange*, but all PSG funding is being terminated by the U.S. Agency for International Development (USAID) in June of 1992. As a result, these Title XII-funded activities will be phased out this year.

We have received many letters and positive comments over the eight and one-half years of publishing the *Interchange*. It is evident that it has made a significant contribution in informing policy makers, administrators, practitioners, and scholars around the world about development issues in general and about the central role of extension in the agricultural development process. The *Interchange* has served as an effective forum and network to keep our many colleagues in developing countries apprised of new developments in international extension and related fields.

In this regard, we are pleased to report that Dr. Robert P. Bentz, formerly Associate Director of the Illinois Cooperative Extension Service, joined INTERPAKS as Senior Advisor effective April 1. He has served as an INTERPAKS Associate since the inception of INTERPAKS. He served as Chair of the INTERPAKS Advisory Committee for the past two years and serves as co-director of the INTERPAKS "Extension Organization and Management" short



Country Music

"Country music" means much more than the multi-million U.S. dollar recordings of an exaggerated rustication of rural sentiment, slang, and song. What about the age-old piping of shepherds in the hills, the peasant dancing rhythms, and the rich folk music? And on up the scale to Beethoven's *Pastoral* symphony? Rural life has always had its place in all the arts.

The above photo, originally called "Rural Rhythm," the most popular of all we have ever used, is rerun here with some nostalgia. It previously appeared in the July issue, 1987.

INTERPAKS *(International Program for Agricultural Knowledge Systems) is an interdisciplinary program within the Office of International Agriculture, College of Agriculture, University of Illinois at Urbana-Champaign. Its purpose is to support agricultural development and more effective use of technology by improving educational systems and processes.*

course. We are delighted to have Dr. Bentz join INTERPAKS on a part-time basis.

In his new assignment, Dr. Bentz will be exploring ways that INTERPAKS can continue to contribute to international exchange between extension organizations around the world, as well as to help "internationalize" extension programs in the U.S. We anticipate that these activities will result in continued and regular contact with present recipients of the *Interchange*. We will keep you informed as these plans become firm.

Change in the Program

INTERPAKS is celebrating its 10th year of service. Recently, the INTERPAKS Advisory Committee laid plans for the second decade of INTERPAKS operations. The goal was to determine how this interdisciplinary program could best contribute to international extension in the future. The committee noted that national extension organizations in developing countries continue to have major responsibility for technology transfer and human resource development in rural areas. However, it is anticipated that donor funding of extension projects may decline somewhat in the 1990s. Therefore, the committee recommended that INTERPAKS should direct more of its on-going effort to educational services that are designed to strengthen agricultural institutions in developing countries, as opposed to more direct methods of technical assistance.

In light of this recommendation, INTERPAKS plans to continue organizing and actively pursuing educational and related programs in the field of international extension, technology transfer, and human resource development. In so doing, we expect that our activities will become more closely aligned with the academic mission of the University. In particular, the committee recommended that INTERPAKS should give more attention to organizing short courses and to strengthening the international dimension of our academic degree programs, particularly those at the graduate level. This refocusing of INTERPAKS activities may result in a closer affiliation with the Department of Agricultural Communications and Education, a new academic unit that was officially approved by the University Senate on April 6, 1992.

John J. Nicholaides III
Director, International Agriculture
Associate Dean of Agriculture
Assistant Vice Chancellor for Research

Burton E. Swanson
Professor and Director
INTERPAKS

For Sustainable Agriculture: Farmers Devise Own Solution

The reconciliation between agricultural production and environmental protection will have to be made by farmers, not by others like doomsayers, consumers, or governments. In doing so, the farmer will need the help of others, however, through effective new coalitions. That is a growing view well articulated by John Allwright, past president of Australia's National Farmers' Federation, and now vice president of the International Federation of Agricultural Producers (IFAP).*

Experience with Australia's land degradation problem and a new way of securing the resource base for future production is instructive everywhere. Farmers and conservationists have joined forces. The result is Landcare, "a farmer-owned model of self-help...in determining land use policy and shaping rural development." Farmers must formally incorporate to apply for government help to cover costs of meeting, group communication, and a small demonstration project; otherwise, Landcare groups can remain independent of government, with many generating their own resources. About 1,000 such groups now exist, with from 20 to 30 percent of Australia's farmers directly involved, plus others who participate unofficially. A quarter of these are women. The idea is to reverse the old practice of putting research at the top, with top-down flow of advice and direction to farmers.

When organized, what do Landcare groups most need? Extension help, more on a group basis — information about resource management, demonstration activities on new and different farming practices, and farmer feedback on needs for knowledge and technology. Government does help fund the provision of information and the training of providers.

Landcare depends heavily on organization — first of farmers themselves and then of coalitions with farmers at the center. Empowered farmers make significant impact on advisory bodies to high-tech research, on suggestions for correction of government policies, and on monitoring impact and appropriateness of public spending. They provide "an alternative power base for growers" at the community level and in cooperation with other non-governmental bodies, often town-based, like service clubs. In coalition with the country's "green" organizations, Landcare gives government "a good example to show how its policies and programs on farm production can run alongside the conservation of resources."

The National Farmers' Federation thinks this model should be one of Australia's contributions to the United Nations Conference on Environment and Development in Brazil this year.

*Presentation to IFAP Conference, "The Environment and Sustainable Growth: The Key Role of Farmers," Reykjavik, Iceland, October 16-18, 1991.

Is Privatization the Answer?

To address the current issue of privatization of public extension, INTERPAKS Interchange has invited four authors to assess developments in countries with the greatest experience. Proost and Röling cover their own country, The Netherlands. Drawing upon their sabbatical study, Bloome assesses New Zealand and Tasmania and Harter looks at the United Kingdom.

'Going Dutch' in Extension

Jet Proost and Niels Röling
Department of Extension Science
Wageningen Agricultural University

In 1990, the Dutch government completed the reorganization of its agricultural extension system. From 1993, farmers will have to pay an increasing share of the extension services until a share of 50% in the total costs is reached in 2003. Then farmers and government will be 'going Dutch' in extension.

The privatization of extension, which has been in the works since 1986, is part of a large-scale reorganization. This major operation had several reasons, the most important of which are to cut down government expenses and to get rid of an embarrassment: a public service with the increasingly inconsistent task of promoting farmers' interests and introducing increasingly stringent environmental policies at the same time. A desired consequence of privatization was the expected increase of the influence of farmers in the extension organization.

The following structure has now emerged:

1. a privatized extension service, 'DLV', a foundation with a board of which the seats are equally divided between the farmers' organizations and the government;
2. government 'Provincial Offices for Agricultural Affairs,' which are to translate government policy to the provincial level;
3. government 'Information and Knowledge Centers' (IKC), liaison offices which are to link the privatized and other (e.g., cooperative and private) extension services, on the one hand, and
4. the research institutes, experiment stations and regional experimental farms on the other. The experiment stations and experimental farms are financed for 50% by the farmers through various levies and other mechanisms. Farmers sit on the boards of both.

The privatization of the extension service had three important points of departure which we shall discuss in turn:

1. better distribution and clearer definition of tasks;
2. a modernization of the organizational structure and working methods;
3. adaptation of extension to developments in the knowledge and information system (agricultural research and education were already in the process of reorganization and privatization). At the same time, the extension services of cooperatives, suppliers and commercial consultants were rapidly expanding.

The Netherlands, with its dense population and small farms, is second best after the U.S. in terms of agricultural exports by value. This means very high productivity, importation of animal feeds grown on an area twice the size of the Netherlands' arable land, a very high use of inputs, and, as a combined result of these factors, an untenable assault on the environment (acid rain, surface water atrophiation, nitrate concentration in drinking water, toxic wastes from agrochemicals, hormone traces, etc.). The increasing public pressures have now resulted in stringent policies and regulations restricting agricultural production. It was clear that a public extension service could not survive in the circumstances. The privatized DLV focuses on supporting farmers' decision-making in technical and economic matters, while the 'Provincial Offices for Agricultural Affairs' work toward acceptance of government policies. One problem at present is that during the gradual shift of DLV toward a truly privatized service, government still uses it as a policy instrument, which makes it difficult to establish a clear and new image.

Before the reorganization, extension workers used to work from their private addresses. Now they work in teams from the office, with time schedules and control on their presence and activities. Especially for the elder agents, this is difficult to accept. Extension agents used to work for their own group of farmers, but now farmers will be served by the member of the team who has the best expertise required for the specific advice asked for.

It needs a certain period of time to get adapted to the new situation. During this transition period cultural differences showed up. In the more conservative regions of the country, farmers refuse to phone to the office and instead contact the extension agents directly at their house in the evening. Others turn to advisers such as the salesmen of the cooperatives they are familiar with.

Time and information will mean money. A more commercial attitude is required, which may create tensions between extension workers and their 'clients'. DLV is working on the development of a package of services that can be sold to the farmers, and seems to face a dilemma: either to offer a broad spectrum of services, or to specialize. On the one hand, specializa-

tion might be the best option in order to compete with private advisors. For each sector, products have to be selected that can win on the market. On the other hand, the introduction of a more sustainable agriculture seems to be inconsistent with such a 'packaging' of information.

The agricultural knowledge and information system in the Netherlands has always been characterized by an openness of information flows between actors. There have always been strong linkages among research, extension and education, not in the least stimulated by government support. The process of privatization and commercialization may result in a less open or even fragmented knowledge and information system. For instance, clients pay for research and therefore buy the exclusive rights to publication of the results. Farmers who used to share information during study-group meetings may become more reluctant in doing so when they have paid for this information. Farmers will be reluctant to pay for extension based on research for which they have paid their share already.

At this moment, it is difficult to say what the outcome of the privatization will be on the farmers' level. For some services, government finance will be continued, like extension products on subjects with a common interest (e.g., environmental issues). These services will be available for farmers free of charge. For other services, the user has to pay, which may create a difference between those who can afford the best advisor they can get and others who have to do with less. Anyway, it is expected that farmers will be more selective in looking for advice and that they will be more motivated to use the information they have 'bought'.

The changes in the Dutch agricultural knowledge and information system cannot be seen separated from the changes in the agricultural system itself. Farmers are confronted with new demands and restrictions which limit their possibilities to make independent decisions. New norms are introduced as to the type of technology that should be used and in what way. Regulations at national and European levels fix quotas and prices. The consumer asks for products of high quality at a moderate price and produced without exhausting natural resources. In order to survive in business, farmers have to be active in generating and exchanging information. Privatization of the governmental services has provoked all sorts of initiatives of farmers' organizing their own extension at their conditions.

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New Zealand and Tasmania

Peter Bloome
Assistant Director
Illinois Cooperative Extension Service

In Australia and New Zealand, extension is largely an advisory service, primarily involves agriculture, and is attached to Ministries of Agriculture in the various states, which also have responsibility for research and regulation. Defining extension as advisory services emphasizes the private benefits of extension activities and, when government budgets are stressed, can easily lead to the conclusion that extension's private sector clients should pay for its services. Educational and human development impacts are easily overlooked. Extension's almost exclusive association with agriculture reinforces the notion that it is owned by agriculture rather than by the public.

These factors have led to attempts to divide advisory services into public and private benefit categories with the implication that private benefit activities should recover costs through user fees. Additionally, attempts have been made to divide the extension function itself between public and private providers. Private extension, in this concept, involves those in the private sector who also deliver advisory services to agriculture and is seen as an alternative to public extension.

The Australian state of Tasmania has the longest experience with fee-for-service extension activity in the world, having introduced fee-based advisory services in 1982. The Labour government in New Zealand went several steps further in 1985 when it required the advisory services of the Ministry of Agriculture and Fisheries (MAF) to become commercial as the first step to privatization. The final step will be taken on July 1, 1992, when MAF Consultancy Services will become a State Owned Enterprise (SOE) with the government as the initial sole shareholder.

Fee-based extension has been an unhappy experience in Tasmania. Implementation of the cost recovery policy fell on top of a major restructuring that required field staff to assume roles of greater technical specialization. Many field staff were still attempting to gain confidence in their new roles when they were required to charge farmers for their contacts.

The new policy has not caused the department staff to be monopolized by one class of farmer, as some had feared. Nor has it attracted new clientele. However, 90% of client farmers have reduced the frequency of contact with the advisory services. They also have changed the manner of contact, with most now being by telephone.

As one of its important roles, extension facilitates the transfer of information between farmers. Reduced contact between departmental staff and farmers and the changed nature of that contact have greatly re-

duced the effectiveness of the service. There is general understanding and acceptance of the need for extension to charge for publications, plant and animal diagnostic services, computer programs, conferences and workshops. Charges for the interactions between farmers and extension officers are another matter. Assigning charges to these personal interactions restricts the access of departmental staff to one of their essential sources of information and impedes the free flow of information in the agricultural knowledge system. Departmental staff can quickly lose touch with farmer thought and innovation.

In concentrating on developing a more commercial relationship with its agricultural clientele, the Tasmanian Department of Primary Industry, Fisheries and Energy became less an agent of the public. It is less able to carry out its responsibility to challenge the rural community on important issues, such as the environmental impacts of production systems, and is weakened as a force for positive change in rural Tasmania.

The fee-based service policy in Tasmania has failed to generate significant cost recovery. Fees remain at less than 5% of total departmental budget.

The introduction of commercialized advisory services in New Zealand has left few recognizable parts of the earlier service. Clientele and staff numbers have fallen by more than 50%; by 80% in some regions. All personnel of the new organization are commercially oriented.

In addition to individual farm and business clients, the service is marketing its capabilities as a national system to commodity groups and the agricultural input and processing industries. Government is also being cultivated as an important client. The organization hopes to win government contracts to (1) provide strategic information about agriculture to government and (2) supply public benefit information to agriculture. The organization's small client base and commercial nature reduce its credibility for these roles.

When extension is both publicly and privately funded, there is some question about whether it can really serve the public interest. In addition, there are public benefits to extension that cannot be commercialized. The New Zealand experience demonstrates that private extension (private sector delivery of advisory services) cannot completely replace public extension.

Among its several roles, extension acts as an agent of the public in working out the public's interests with agriculture. Agents of the public, who possess agricultural expertise, challenge and work with the industry to bring about change that is in the public interest, yet sensitive to the needs of agriculture. The private sector cannot carry this responsibility; the alternative is regulation. In New Zealand, regional government councils now have the responsibility of addressing the environmental impacts of agriculture. It could well be that public extension is a less intrusive and more efficient mean of resolving public/private interest issues.

Commercialization in Britain

Don Harter
Extension Professor of Agriculture
University of Idaho

The suggestion that those who enjoy the benefits of advice should make a direct contribution toward its cost sent shock waves through ADAS (Agricultural Development and Advisory Service) in late 1984. Among the evidence collected at the time were reports of developments with the commercialization of advisory services in other countries, including Tasmania and Scandinavia. Their experiences were mixed and it was clear that there would be more to the achievement of commercial success than merely attaching fees to the traditional range of ADAS services.

The movement toward commercialization was stimulated by the Conservative Party's 1979 victory and the election of Margaret Thatcher as prime minister. Included in the economic experiment called Thatcherism was the goal of turning public monopolies into trim market-responsive operations. Few would disagree that this process has been traumatic and painful. The commercialization of ADAS from 1984 through 1992 has been no exception.

Market research carried out by an independent, specialist research company in 1985 canvassed the views of a thousand farmers and growers in England and Wales. They were asked how they would react to the introduction of fees for ADAS services. They were also invited to comment on the current strengths and weaknesses of ADAS and on the extent to which they were already buying advice from other sources. At the time, independent crop consultants and veterinary practitioners were shown to be well established providers of the fee-earning advice but no single provider dominated the market. Results indicated that overall, as might have been expected, ADAS was well regarded by the farming industry, with impartiality and its research background considered key features. Respondents strongly associated the Service with advice on new developments and on business management but less strongly with product knowledge which was provided by the private sector. Important weaknesses were a tendency to avoid giving positive advice, a lack of understanding of the farmer's circumstances (perhaps a desire to tell rather than listen), and a propensity to move personnel too frequently.

At the time of introduction of fees for services for 1987, it was decided there would be no wholesale restructuring of the Service. A marketing plan was devised whereby ADAS capabilities were presented to discreet market segments. It focused on farm management and socio-economic advice aimed at a 'whole farm' approach. A special projects capability also was identified, wherein ADAS knowledge and skills could be exploited for the benefit of clients both within and

outside the agricultural sector. This combination of market-potential knowledge, a marketing plan, and training to develop the new skills and change attitudes set the framework for priced services to be introduced in March 1987. Putting the plan into action highlighted other factors leading to successful commercialization.

In 1992, the move of ADAS to Executive Agency status will enable it to operate under a wider range of commercial conventions. These include the development of an internal market for services, improved human resource policies, enhanced internal and external communications and quality control systems. There is now an operational infrastructure based on a team approach which is more in tune with the market place.

Notwithstanding the difficult starting position, the growth of ADAS business since 1987 has been most encouraging. As the Service strives toward a target of covering 50 percent of its operating costs by 1993-94, attention is concentrated on the search for profitable business and the opportunities for reducing costs. In an agency where staff costs are the major element, the utilization of consultants' time on work which has been paid for is a critical concern. A target of at least 160 days sold per consultant is an aim still to be achieved.

The British results are an important consideration for financing agricultural advisory services everywhere. Among those Western countries having a developed agriculture, a clear trend exists toward partial to full financing from client fees and contracts. Prior to 1987, the British extension system was similar to the U.S. model. Now, however, with the system funded by client fees, the British are looking at educational needs in a different way. The main goal of ADAS, prior to 1987, was to foster a competitive agricultural industry by transferring educational information and by promoting the adoption of sound business and marketing practices. Today, the main goal of ADAS is to be the leading *consultancy* to farmers and agribusinesses in Britain by working with clients through the provision of quality services.

If similar commercialization were to occur in the U.S., there are some very fundamental aspects about the extension system — aspects very important to the development of our agriculture — that would be lost. It could not possibly offer the diverse educational programs it offers now to clients representing a wide range of socio-economic levels. Although some programs offered through the U.S. Cooperative Extension System could conceivably be privatized, it no longer would be an agency responsive to the public interest as a whole but would become driven by the interests of those clients able to pay the bills.

Engines of Progress

"The desire to understand the world and the desire to reform it are the two great engines of progress."— Bertrand Russell

New Challenge in Agricultural Training

A. H. Bunting
University of Reading

This note reviews some of the important links between knowledge and the changing development environment.*

"Training" here means all organized learning activities that are intended to increase the number, and the technical or professional quality, of people who can strengthen the knowledge base for sustainable development in agriculture and in the rural space, or who can use knowledge to support such development.

I make no formal distinction between education and training. It is a poor sort of training that does not increase information and concepts as well as techniques and skills, and a poor sort of education that does not enable people to do practical things in the real world.

The words "development in agriculture and in the rural space" convey for me the material and physical ideas of increasing output and profit, from an increasingly wide range of economic activities, carried on in rural areas equipped with roads and other physical services, markets, distribution points, and settlements, and in which education, health and other social services are supported by the profits on the process of development as a whole, both rural and non-rural.

The development debate is not, as I read it, about the historic nature of development in the past. It is about what different people think it ought to be in the present and future, and about how to achieve their chosen outcomes. The debate arises because the interests of the different participants — rural people of different kinds, urban people, also of different kinds, political parties, governments, aid donors, and observers and bystanders of many kinds — are often different, and even in conflict.

Weakness in the knowledge base is far from the only factor which restricts development. Development is promoted or restricted by seven principal groups of factors: effective demand; output delivery systems; resources including knowledge which are available to increase output or make it more profitable; more profitable technical methods of production; policies and practices of governments; foreign relations including indebtedness and access to markets; and the knowledge system. Important as training is, it does not stand alone. The knowledge system, including research and extension as well as training, can have no effect if the other parts of the development system are in an unfavorable state.

Knowledge consists of information, concepts, techniques, and skills. These are stored, increased and improved, developed for use, disseminated, and applied in knowledge systems. The components and

participants in the knowledge system include universities and other institutions for education, research and training, libraries, teachers, trainers, advisers and extension workers, and all others who disseminate information and influence opinion. Above all they include the rural people themselves, who not only possess substantial quantities of relevant knowledge but also increase and adapt it themselves by trial and by experience. Training and education are an essential part of the dissemination component of the knowledge system. Weaknesses in the knowledge system inevitably lead to weaknesses in training and education. These weaknesses commonly arise in two respects — the structure of the system and the content.

In most nations the official agricultural knowledge systems are usually separate from the agencies responsible for development; and they are also structurally fragmented. The official research agencies and the universities are often isolated from each other and from the developmental and executive departments of government. In Britain, research on agriculture and food is the business of the Department of Education and Science; in Nigeria and Ghana, the Ministries of Science and Technology; in Sudan, a parastatal agency. Neither research agencies nor universities necessarily have any formal responsibility for advice or service to government, to consumers and users of rural products, or even to rural producers.

In many nations (the main exceptions are the United States and India) the official knowledge system is not demand-led by specific developmental needs: instead it is supply-driven by the perceptions of the research workers themselves. The main divisions of the knowledge system are often concerned with individual commodities, or with disciplines, rather than with development in particular geographical regions. One consequence is that few official knowledge systems are directly concerned with the real situations or the knowledge of rural people. Training provided in such a system is not likely to contribute productively to development.

The broad field of knowledge required to support increases in rural output, and the social and economic advance of rural people, can be classified under ten essential sets of activities or tasks: policy and planning; environment and renewable natural resources; people, including population growth; protoplasm, including genetic resources and the improvement of plants and animals; production and production systems; protection against pests, diseases, competitors and predators; power; products and post-harvest topics; external inputs; and the management and monitoring of performance. Many of these essential activities and tasks are excluded from many official agricultural knowledge systems. Both the strengths, and some serious weaknesses, of the knowledge system are derived from its increasingly international character. The sole sources of formal agricultural science and economics in the world are in the now-developed nations, with temperate climates, of the North and West. Though much of their content can, in principle, be applied anywhere, the ways in which they are applied must depend on the local circumstances. Yet virtually all training related to biological production, everywhere, is based on the standard Western body of agricultural knowledge.

The consequence is that the minds of many students in the developing nations come to contain two compartments. One holds what the student knows about rural life and production from upbringing, experience and cultural tradition. The other holds what has been so diligently and successfully learned from respected teachers, texts, research papers and monographs. In most minds, the two compartments are separated by a glass wall, which seems to become increasingly opaque with time. I believe that this division in the mind is dangerous as well as wasteful and inefficient. The contradiction, between what is known and what has been learned, is a most important source of weakness, not only in training, but in the knowledge systems of developing nations in general. The most important task of the trainer is to help the student to shatter the glass wall, and so to apply what he has learned to what he knows.

Attitudes to the training of farmers, the world over, are also usually based on Western models. These, in their crudest form, as well as in some modern and well-advertised refinements, assume implicitly that the research worker, Big Brother, knows best. We see him, enclosed in a box marked R, firing off his products, the so-called "new technology", through an arrow at the extension worker in another box marked E. E., in turn, fires what is no doubt an adapted version through an arrow at the expectant and grateful farmer in a third box marked F. Nowadays the first two boxes may contain two warring protagonists, the Punch and Judy of the natural and social sciences. The model is usually decorated with rococo feed-back loops and other curlicues, and sanctified by FSR and OFR, or even OFR with a FS perspective. But in fact, the essential conception is what it has always been, ever since extension was invented more than a century ago. All too often, the model does not work. Where the prospect offered by extension is not attractive, or too risky, no amount of extension will induce rural people to devote scarce resources to it or accept the consequential risks. This model works best where rural people perceive something new that seems likely to be to their advantage, and wish to learn how to do it.

Training is not needed by nationals of developing countries alone: foreigners who hope to work in developing countries need training also, in professional topics and in languages. Many governments of developed nations now offer relevant training for such people.

Another important initiative is offered by the International Course on Development-oriented Research in

Agriculture, ICRA, which is supported by the European members, including the United Kingdom, of the Consultative Group on International Agricultural Research (CGIAR). This course of just over seven months is for young qualified research professionals, from developed and developing nations. They start with three months of training and preparation, either in English at Wageningen in the Netherlands, or in French at Montpellier in Southern France. Then follow three months in a rural district of a developing country, in which small mixed teams, guided by a tutor, study the systems of rural life and production and derive, from their studies, suggestions for development and for research to support it. The results are finally presented and discussed both in the host country and with wider audiences at Montpellier or Wageningen.

A very substantial volume of training is provided by the thirteen agricultural research centers and institutions funded through the CGIAR. Much of their work is concerned with relevant technical, social or economic topics and is conducted in developing nations in collaboration with teaching and research institutions, using concepts and methods which are at the front line of world knowledge. The centers also offer very valuable mid-career sabbatical or refresher opportunities for experienced research workers from developing nations, sometimes the first outside opportunities such people have had since the end of their academic training. Even more important is the continuing contact the centers maintain with former participants in training, who use their continuing associations to become, and to remain, members of the world-wide invisible college of agricultural and scientific knowledge which offers so much for the future progress of mankind.

*A shortened version of a presentation to the 17th International Course on Vocational Education and Teaching in Agriculture, Centre International d'Etudes Agricoles, Agricultural Institute of Grangeneuve, Posieux, Switzerland, September 3, 1990.

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Agricultural Development: Government, Ally or Enemy?

Government-bashing has become a favorite sport in some circles, including agricultural development. Such proclivities are bolstered by the recent collapse of those regimes in which government was most dominant and the private sector least developed — the USSR and Eastern Europe. But do we now have a clear, conclusive answer on the appropriate role of the state, or just a "new urgency" in the debate?

Useful illumination on this tension between government and development is provided in *Agriculture and the State*, edited by C. Peter Timmer (Cornell University Press, 1991). Twelve chapters, including three by the editor, look at growth, employment, and poverty in the developing countries in relation to government. Exploration of all angles leads to the conclusion that government must be conceded an important role, although generalizations are dangerous and answers have to be location-specific. Useful insights can be carried from one society to another but the end result should be a mix of public and private, balanced to fit the particular setting.

Government has potential facilitative or development-generating roles in such areas as physical infrastructure, education, research, extension, cooperatives, land use, and environment. It can have and has had a role, even successful, as an entrepreneur; but the consensus among the authors is that government can contribute, not by acting directly on agriculture but by creating "the technical, human, and institutional infrastructure conducive to sustainable agricultural development." There are no perfect systems, only appropriate combinations between the extremes.

In the developing countries, ruling elites, often tend to seek perpetuation of power, even "sustaining their supporters and buying off the oppositions," rather than providing benefits or seeking acceptability through development and equity. Such power at the center, with entrenched policy-making bureaucracies, is extremely ill-suited to the needs of agriculture, "the most decentralized of industries." However, the alternative to central planning is not the total abandonment of government as a potential ally. Rather, as the authors write: "The function of the state mainly consists in creating conditions under which agriculture can thrive...Key areas for intervention need to be determined, and it is to be expected that they will vary considerably from country to country, although *increased use of modern technology is almost certain to be a crucial ingredient (italics added)*."

An unaddressed issue may be how to link all this operationally with the reality that government itself will ultimately determine the role of government in agricultural development.

Helpful Ideas: Old and New

William M. Rivera and Daniel J. Gustafson, editors, **Agricultural Extension: Worldwide Institutional Evolution and Forces for Change.** Elsevier Science Publishers: Amsterdam, 1991 (312 pages).

Many familiar names (26 in 22 chapters) here contribute to an impressive volume with a monumental mission — to analyze the recent evolution of public sector agricultural extension worldwide, to present new concepts and strategies from diverse perspectives, and to outline "what will come next." This is a welcome contribution amidst governmental cut-backs in public extension, the touting of privatization, the impact of new technologies from mass media to biotechnology, and the contrast between the clarity of the need for knowledge systems and the muddled view of the future.

The four sections begin ominously but accurately with "An Era of Uncertainty and Change." Editor Rivera tells how extension worldwide has reached a "critical turning point," to "the very viability of public extension." Such extension is currently colored and shaped by three developments: attacks upon it ("disturbing"), controversy about the merits of different system models ("unsettling"), and the lessons learned ("encouraging"). Hence, "the next step must involve preparation to respond creatively to the attacks..., negotiate intelligently the controversies..., and continue to absorb the lessons..." Other chapters give valuable insights into the controversy about cost-recovery, privatization, and structural changes, with examples from Latin America, New Zealand, and Europe. In a final example drawn from restructuring in the U.S. system, Frederick H. Buttel presents a sometimes discouraging, sometimes optimistic picture every U.S. extensionist should read to see how, in the end, there are "many constructive roles in this new milieu of the land-grant system."

The second section, "Making New Connections," looks at linkage opportunities: public-private, research-extension, research priorities-farmer problems, and others.

Another section on "New Concepts and Strategies" explores agricultural knowledge information systems, new communications technologies, extension for marketing, and Editor Rivera's idea of sustainable agriculture as a unifying, rather than divisive, concept for extension.

The final section, "Perspectives of New Directions," covers extension's future, role, and responsibility. Charles H. Antholt looks to the next century, suggesting strengthened institutions for technology generation, with transfer through extension controlled by beneficiaries; advancement of farm facilities by all means, beyond mere transmission of messages; enhancement of the competence of agents; reducing of extension costs, sometimes even by downsizing staff into a leaner service; and integration of institutional resources for the synergism of the education-research-extension trilogy.

Looking into the future, the two editors conclude that "policy makers must consider the entire agricultural extension complex when planning to allocate funds for the public sector." That is, consider all the extension providers, both public and private. Somewhat surprisingly, the private-provider sector is seen as already important enough to call for some means of systematic public-private coordination, and for the public sector to assume that role while re-examining "its other roles and responsibilities." This is seen as a way of "ensuring accountability of the extension complex as a whole." Perhaps this conclusion is not as definitive as it sounds, in view of a closing statement that "the impact of multi-institutional extension activities requires thinking through the role of public sector extension."

The only negative that can be said about his excellent book is that the publisher's price may send intended readers to their libraries. ($133.50 — available from the publisher, P.O. Box 882, Madison Square Station, New York, NY 10159 or P.O. Box 1930, 1000 BX Amsterdam, The Netherlands.)

Abbas M. Kesseba, editor, **Technology Systems for Small Farmers: Issues and Options.** Westview Press: Boulder, Colorado, 1989 (229 pages).

Multi-authored essays, published in cooperation with the International Fund for Agricultural Development, supportive of IFDA's investment shift in agricultural research "away from a top-down mechanistic and task-oriented exercise towards a demand-driven problem-solving approach directly related to the needs of the rural poor and their environment."

The Role of Universities in National Agricultural Research Systems. Food and Agriculture Organization: Rome, 1991 (16 pages).

A typescript report of highlights of an expert consultation, with recommendations to universities, governments, international organizations, and international research centers.

John Isbister, **Promises Not Kept**. Kumarian Press: West Hartford, Conn., 1991 (240 pages).

This would be an excellent textbook or collateral reading for a college core course dealing with social change in the Third World. In fact, that is exactly the intention here realized. An introduction sets the stage for the central theme: the developing countries have been and are being betrayed, with the original promises of independence and modernization not kept. Thereafter, broad-sweeping chapters deal with poverty, economic development, imperialism, nationalism and revolution, north-south relations, and future prospects. A cogent, useful background chapter presents the major explanations of underdevelopment. The chief promises betrayed were those made by nationalism and the leaders in the rich countries (betrayal both inside and out). In economic development, the most harmful effect came from the Third World neglect of agriculture and unwise enchantment with the model of industrialization and urbanization.

The presentation is unhesitatingly judgmental, with greatest emphasis on poverty and powerlessness in a "world of obscene inequality." In fact, "poor people are poor because they are powerless." This theme determines the final not-so-optimistic conclusion: the rich countries should redirect their foreign policies "into alignment and partnership with the aspirations of the poor."

Wayne D. Rasmussen, **Taking the University to the People: Seventy-five Years of Cooperative Extension**. Iowa State University Press: Ames, 1989 (300 pages).

Cooperative Extension workers who are agonizing over the future — the changing mission, structure, and funding — should begin with this book. No institution has a future divorced from its past. The relevant history is presented here by an eminently qualified agricultural historian. At the conclusion, he goes beyond the past to "Beginning the Next Seventy-five Years," a chapter of acute insight into the options for the future. The "cooperative" part — federal, state, local — is the most distinguishing characteristic. Diminishing federal support is alarming because, without it, the threat of weakness or disappearance of extension would hit hardest in those states where most needed. Will the necessary changes be made? To his "resounding 'Yes!'" he urges adherence to "certain fundamental principles" developed in the last 75 years: "helping people help themselves, identifying and meeting needs of the people served, developing new methods of education, undertaking programs based upon research, making needs known to research institutions," and maintaining federal-state-local cooperation.

Lisa A. Schwartz and Jacob Kampen, **Agricultural Extension in East Africa**. World Bank: Washington, D.C., 1992 (59 pages).

The regional coverage of this "technical paper" does not keep it from being useful in many other regions and contexts. It assesses and recommends. It is targeted, tightly organized, and readily grasped through economy of language. Key issues to be resolved and limiting factors are stated up front, followed by six elaborating sections. It concludes: "extension in Africa must evolve into a mobilizing force for change rather than being a supervisory arm of the government," and "institutional creativity is needed to make extension systems in Africa more demand-driven, decentralized, and linked to research, universities, and agribusiness." Also: although "complete privatization of national extension systems is not desirable...creative and appropriate ways of combining private and public extension should indeed be sought."

Indra K. Vasil, editor, **Biotechnology: Science, Education and Commercialization**. Elsevier Science Publishing Co., Inc.: New York, 1990 (309 pages).

This symposium-derived collection of multiple-authored papers includes a section on education and training issues in attracting and retaining the new type personnel required for proper development and application of biotechnology.

Vegetable Production Training Manual. Asian Vegetable Research and Development Center: Taipei, Taiwan, 1990 (447 pages).

An exhaustive manual for the improvement of vegetable production in the tropics with high income for small producers and added employment for the landless and food-processing workers.

J. G. W. Jones and P. R. Street, editors, **Systems Theory Applied to Agriculture and the Food Chain**. Elsevier Applied Science: London and New York, 1991 (365 pages).

Thirteen chapters on systems theory, with three on technology transfer — university preparation, extension education, and applications of farming systems research.

Around the World

ILRAD Extension by Training

The international research agencies say, "We have no extension; that's a *national* function." Quite right, but strong programs of technology transfer are carried out collaboratively—through training, conferences, consultations, and information sharing. *ILRAD 1990*, annual report of the International Laboratory for Research on Animal Diseases, Nairobi, Kenya, tells us that in the last decade, more than 50 post-doctoral research fellows and 100 candidates for higher degrees have completed their research alongside ILRAD scientists. In addition, more than 400 scientists and technicians have received individual or course training. In the last five years, 333 individuals from 46 countries (27 African and 19 others) have shared workshops, seminars, and conferences on ILRAD's latest research results. In the same period, such results have been disseminated in over 700 scientific papers as well as through weekly and quarterly newsletters, an annual *ILRAD Highlights*, and an annual report.

World Bank Agenda 1990s

Before leaving the presidency of the World Bank, Barber B. Conable outlined the Bank's priority thrusts for the 1990s in opening the Tenth Agricultural Symposium, January 9-10, 1990.* He called for a "focused agenda" on five "critical elements:"

1. further assistance in Asia, where most of the world's absolute poor still live despite gains in the 1980s
2. further assistance to the indebted countries, especially in Latin America, where agriculture must carry a disproportionate burden
3. trying to reverse "the economic slide" in Sub-Saharan Africa
4. new aid to Eastern Europe's market economies in the conviction agricultural progress will be faster than industrial, and
5. awareness of a proper balance between development and environmental protection.

These are also seen as linked to the Bank's continued emphasis on women as "an ever-larger element" in the agricultural sector.

*Dennis Holden, Peter Hazell, and Anthony Pritchard, editors, *Risk in Agriculture*, World Bank, 1991.

Changes in New Zealand

Agricultural research, development, and transfer in New Zealand will be restructured from July 1, 1992, with the establishment of 10 Crown Research Institutes. Three will be devoted to agriculture: pastoral agriculture, horticultural products, and field crops products. In the future, all taxpayer-funded research and development will be done by these "research companies" rather than by government departments, such as the Ministry of Agriculture and Fisheries.

A key issue in this restructuring has been the best way of putting research findings to use through technology transfer. That the answer is still evolving rather than fully found in current privatization efforts is shown by questions explored in what will now be the last issue of *AgriSearch*, heretofore New Zealand's agricultural research review. That issue of October 1991 asks, "What is extension and where does it fit within the range of activities known as technology transfer?"

Malaria Again, Yet, What?

Malaria is a major killer of life and a major barrier to development. *Innovations*, a new quarterly of USAID's Research and Development Bureau, winter 1992 issue, reports on malaria research, as follows:

1. the disease is "outstripping efforts to control it"
2. drug-resistant strains are increasing
3. insecticides are failing to control resistant mosquito species
4. USAID's research for an effective vaccine, sometimes scorned, is now confidently continuing after 15 years
5. for its further involvement, USAID has sought directions from the Institute of Medicine (IOM)
6. next steps are to implement the priority IOM recommendations, help countries refocus their prevention/control efforts and, meanwhile, continue the development of a vaccine.

Development at Home

Glib comparisons among countries, dividing them into "developed" and "developing," disguise the significant fact that grossly underdeveloped areas exist in all countries. Evidence: in the U.S., its Department of Agriculture reports that nearly one out of 10 persons (23,600,000) depend on government for aid in paying for groceries. Eighty percent of the recipients of food stamps are families with children.

INTERPAKS Activities

Mission to Costa Rica

John J. Nicholaides, Director, Office of International Agriculture, was in Costa Rica April 26-May 8, including service as team leader to help in planning for the future of the Central American Regional Agricultural School for the Humid Tropics.

INTERPAKS Course Again

Based on years of experience in training extension administrators, INTERPAKS will offer an expanded short course from August 25 to October 1, 1992. Organized around six modules, it will cover common administrative problems in extension, using problem-solving methods, case studies, participant experiences, and special field trips. Course co-directors are Burton E. Swanson, INTERPAKS Director, and Robert P. Bentz, former Associate Director of the Illinois Cooperative Extension Service.

Nineteen participants from 10 countries were enrolled last year; a limit of 20 has been set for 1992.

For more information: Director of INTERPAKS.

New Senior Advisor

In its new Senior Advisor, INTERPAKS has acquired the talent and practical experience of Robert P. Bentz upon his retirement from years of service as Associate Director of the Illinois Cooperative Extension Service.

Bentley, Johnson in Rome

Senior staff members of the Office of International Agriculture and INTERPAKS, Orville G. Bentley and Eldon L. Johnson, participated in the Food and Agriculture Organization's expert consultation in Rome, December 16-20. Looking to the next century, the subject was "Strategy Options for Agricultural Higher Education."

Egerton-Illinois Linkage

John J. Nicholaides III and Thomas A. McCowen, Director and Associate Director, Office of International Agriculture, were in Kenya in February to complete arrangements for an extension of the partnership between Egerton University and the University of Illinois at Urbana-Champaign as part of USAID's program for Egerton faculty training in the U.S. and strengthening of teaching, research, and extension.

INTERPAKS in China

Burton E. Swanson and Robert P. Bentz, INTERPAKS Director and Senior Advisor respectively, were in Beijing, China, during March to complete details for the agricultural extension component of a major project funded by the World Bank. Swanson will later assist with details for strengthening extension services in nine Chinese provinces.

No Contact, "No Problem!"

The 240 farmers in a Punjab, Pakistan study are "vigorous information-seekers" but their habits are not flattering to the government extension services.* Only 30 percent received visits from extension officials within the last 12 months (i.e., 70 percent did not), while 28 and 72 percent were in the respective yes and no columns on whether they had made personal visits to get information from such officials. Why? Of those who replied, 71 percent said they had no "need" and were getting help from "fellow farmers." Private sources were also preferred for farm credits and market information. Had they *ever* received beneficial information from line agency officials at their level? Sixty percent said "No." And what should be done about it? Not quite half, 43 percent, had no suggestion. The author concludes that this "indicates how indeed weary the farmers are of repeatedly being asked," with "very little change afterwards."

It should be noted that this farmer sample deals only with those operating in four sub-projects of Command Water Management Projects in Punjab, with focus on farmers as information-seekers, not on government agencies as information-suppliers. Therefore, the T&V system is not singled out; in fact, only a few of the farmers had access to it. Those who did were "very happy," particularly with the increased yields.

But for the line agencies in general, the author quotes from his similar experience in Nepal, summarized in a farmer's straight-faced comment: "We have no communication problem here. Officials don't talk to us and we don't talk to officials. No problem."

*Oguz B. Nayman, *"Seekers of Light:" Information-Seeking Habits of Farmers: An Exploratory Survey*, 105-page typescript report, Punjab, Pakistan, March-July 1988.