



182
ANNUAL REPORT

International Service for National Agricultural Research

ISNAR

The International Service for National Agricultural Research (ISNAR) began operating at its headquarters in The Hague, Netherlands on September 1, 1980. It was established by the Consultative Group on International Agricultural Research (CGIAR) on the basis of recommendations from an international task force, for the purpose of assisting governments of developing countries to strengthen their agricultural research. It is a non-profit autonomous agency, international in character, and non-political in management, staffing and operations. Most of its funds are provided by an informal group of approximately 30 donors: countries, development banks, international organizations and foundations, which make up CGIAR.

ISNAR is the youngest of the 13 centers in the CGIAR network, and it is the only one which focuses primarily on national agricultural research issues. It provides advice to governments, upon request, on organization, planning, manpower development, staff requirements, financial and infrastructure requirements, and related matters, thus complementing the activities of other assistance agencies. Additionally, ISNAR has an active training and communications program which cooperates with national agricultural research programs in developing countries.

ISNAR also plays an active role in assisting these national programs to establish links with both the international agricultural research centers and donors.

Citation:
International Service for National Agricultural Research.
1983. Annual Report 1982. The Hague, Netherlands.

PN-AMR-337 52
ISSN-36940

1982

ANNUAL REPORT

JULY 1983

ISNAR

International Service for National Agricultural Research
P.O. Box 93375 - 2509 AJ The Hague - Netherlands

Foreword

The program carried out by ISNAR in 1982 was planned in cooperation with national agricultural research systems, international agricultural research centers, and multilateral and bilateral donors. This second full year of program activities brought an increasing demand from national systems for ISNAR to work with them for review, analysis, and planning. The year's work gave the staff much opportunity to develop and expand the ISNAR information base on the organization, management, and performance of national agricultural research systems.

Direct work with national systems forms the central thrust of ISNAR's program. That work is closely supported and complemented by activities of the three other organizational units within ISNAR: research, training and conferences, and communications and information.

Because ISNAR is a young and developing organization, this report devotes attention to the basis for its activities as well as to reports on those activities. It is too soon for ISNAR to offer definitive findings in relation to its mandate for strengthening national agricultural research systems; however, examples are drawn from its experiences to date. A body of knowledge is emerging, and that expanding base offers guidance to managers of such systems and useful insights to others who work with them.

Many organizations were helpful to ISNAR in 1982. Special recognition is due to the Asian Vegetable Research and Development Center, Centro Internacional de Agricultura Tropical, Centro Internacional de Mejoramiento de Maiz e Trigo, and International Institute of Tropical Agriculture. Each provided staff on short-term assignments to add special expertise needed in certain ISNAR missions. There was also excellent cooperation between the Food and Agriculture Organisation, the World Bank, and ISNAR in a review of the Upper Volta agricultural research system.

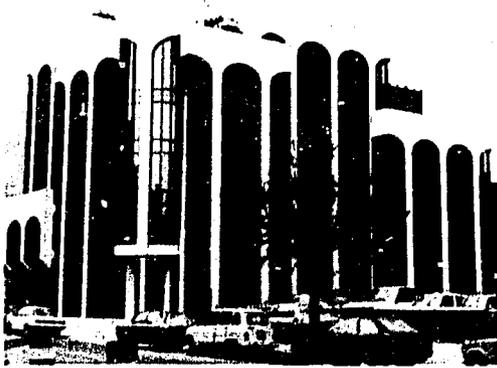
Review, analysis, and planning with national systems continues to receive major emphasis. However, a projected shift in concentration is taking place, as demand grows for ISNAR consultation and assistance to national systems in implementing changes that have been agreed upon.

On behalf of the Board of Trustees and staff of ISNAR, I am pleased to present this 1982 Annual Report.

William K. Gamble
Director General

Table of Contents

Foreword	2
1982 Staff	4
Board of Trustees	5
1982 Donors	6
The Concept of ISNAR	7
Strengthening National Agricultural Research Systems	9
Potential unfulfilled	9
Adaptive research needed	10
To strengthen the national system	11
Supported by CGIAR	11
Development of ISNAR	13
What ISNAR Has Learned	15
Working with national systems	15
Aids work of other international centers	16
Involves other institutions	16
National determination	16
Reinforced findings	17
How ISNAR Works	18
Work with national agricultural research systems	18
Research studies on organization, management, and performance	22
Training and conferences	22
Communications and information	23
Special projects	24
ISNAR In Action	25
System Review and Planning Missions	27
Developing a multidisciplinary approach	28
Creating a critical mass	29
Involving social scientists	29
Organizing to do research	30
Improving research-extension-farmer linkages	31
Communicating in national systems	33
Selecting priorities for emphasis	33
Linking national systems with IARC's and others	34
Communication of results in national systems	36
Using resources of agricultural universities	37
Shifting emphasis to smallholders	39
Competing for researchers' time	39
Training needs are great	40
Research on Organization and Management	43
Training and Conferences	43
Communications and Information	45
ISNAR In Perspective	47
1982 Participation by Staff Members	48
1982 Publications	50
1982 Consultants	52



1982 Staff

Administration

Dr. William K. Gamble, Director General
Mr. Alexander von der Osten, Executive Officer
(One-half time on administration)
Ms. Alicia Mina, Administrative Officer

Review, planning, and development of national agricultural research systems

Dr. Rudolf Contant, Senior Research Officer
Dr. Matthew Dagg, Senior Research Officer
Mr. Rene Devred, Senior Research Officer
Dr. Santiago Fonseca, Senior Research Fellow
Dr. Fred Haworth, Senior Research Officer
Dr. Z. M. Nyiira, Senior Research Fellow
Mr. Alexander von der Osten, Executive Officer
(One-half time on program)
Dr. Chris Panabokke, Senior Research Fellow
Dr. Guy Rocheteau*, Senior Research Officer
Ms. Teresa Weersma-Haworth**, Senior Research Fellow
Dr. Floyd Williams, Senior Research Officer

Research on organization and management of agricultural research systems

Mr. Peter Oram*, Senior Research Officer
(On secondment from IFPRI)

Training and conferences

Dr. Byron T. Mook, Senior Research Officer (Training)
Mr. Huntington Hobbs*, Senior Research Officer

Communications and information

Dr. K. Robert Kern, Communications Officer
Ms. R. Katherine Jones, Editor/Librarian

* Joined during 1982

** Completed appointment during 1982

Board of Trustees

Dr. Kazi M. Badruddoza
Bangladesh Agricultural Research Institute
Dacca, Bangladesh

Mr. Bo M. I. Bengtsson
Swedish Agency for Research
Cooperation with Developing Countries
Stockholm, Sweden

Dr. Gelia T. Castillo
University of the Philippines at Los Banos
Laguna, The Philippines

Mr. Luis B. Crouch
(Vice Chairman)
Santo Domingo, Dominican Republic

Dr. Robert K. Cunningham
Overseas Development Administration
London, England, U.K.

Dr. Jacques Diouf
Secretary of State
of Scientific and Technical Research
Dakar, Senegal

Dr. William K. Gamble
(Ex officio)
Director General, ISNAR
The Hague, Netherlands

Dr. Lowell S. Hardin
Purdue University
Lafayette, Indiana, U.S.A.

Dr. Jaap J. Hardon
Ministry of Agriculture
Wageningen, Netherlands

Mr. William A.C. Mathieson
(Chairman)
London, England, U.K.

Dr. Ishmael E. Muriithi
Ministry of Livestock Development
Nairobi, Kenya

Dr. Subhi A. Qasem
University of Jordan
Amman, Jordan

Dr. Vernon W. Ruttan
University of Minnesota
St. Paul, Minnesota, U.S.A.

Dr. Howard A. Steppeler
McGill University
Quebec, Canada

Dr. Werner Treitz
Federal Ministry for Economic Cooperation
Bonn, Germany

1982 Donors

Donors to the core program

Australia (Australian Development Assistance Bureau)
The Ford Foundation
Federal Republic of Germany (Bundesministerium für
Wirtschaftliche Zusammenarbeit)
France (Ministère de la Recherche et de la Technologie)
Ireland (Department of Foreign Affairs, Development
Cooperation Division)
Italy (Consiglio Nazionale delle Ricerche and the
Dipartimento per la Cooperazione allo Sviluppo)
Netherlands (Ministry for Development Cooperation)
Philippines (Ministry of Agriculture)
Spain (Instituto Nacional de Investigaciones Agrarias)
Switzerland (Swiss Development Cooperation)
United Kingdom (Overseas Development Administration)
United States (Agency for International Development)
The World Bank

Donors to special projects

The Asian Development Bank
The Ford Foundation
The German Foundation for International Development
(Deutsche Stiftung für Internationale Entwicklung)
The International Development Research Centre
United Kingdom (Overseas Development Administration)
United States (Agency for International Development)

The Concept of



The tall wheat is an indigenous variety planted in Pakistan before the Green Revolution. It lodges (falls over) with high rates of fertilization. The short-stemmed, stiff-strawed variety produces high yields with heavy fertilization.

India and Pakistan essentially doubled their national production within five years after massive introduction of the new wheat strains from Mexico in the mid-1960s. During the 1970s, world development leaders recognized the need to strengthen national agricultural research systems if the full potential of new technology was to be widely achieved.

Strengthening National Agricultural Research Systems

ISNAR's mission is strengthening national agricultural research systems. It was created to work with agricultural research systems in developing countries, helping them identify problems and work out overall plans for resolving these problems. In serving those purposes, ISNAR stresses helping the countries to improve their staffs and capabilities, and to organize efficiently and effectively to do research that supports national agricultural development.

ISNAR is one of 13 international agricultural research centers (IARCs) located in various parts of the world. Most of the others work primarily with certain commodities — crops or livestock that hold significant places in the diets of people in regions in which the centers are located. They seek improved germplasm and new technology. Many of the important agricultural technological breakthroughs of the past two decades have come from these centers.

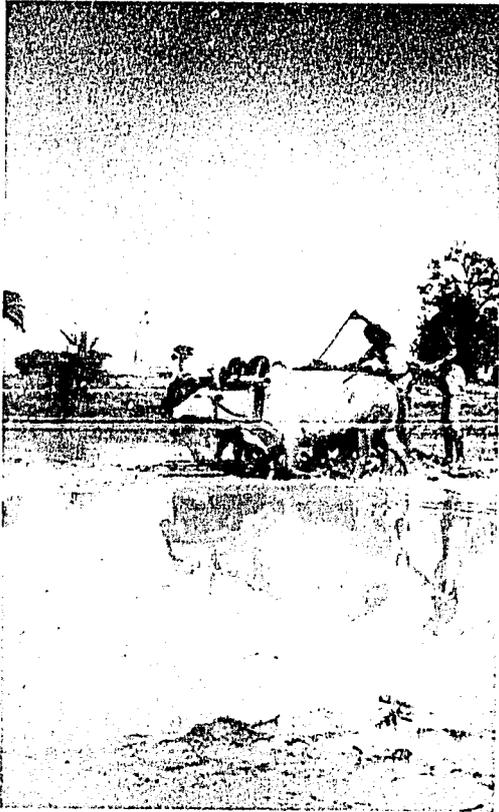
ISNAR occupies a unique place among the IARCs. It does not directly seek technological breakthroughs. It has a different — but critically important — role to play. It provides help to what was often found to be a weak link in agricultural development: a nation's own agricultural research system. ISNAR helps build stronger national systems to assure local ability to develop and to use applicable new technology in agriculture.

Potential unfulfilled

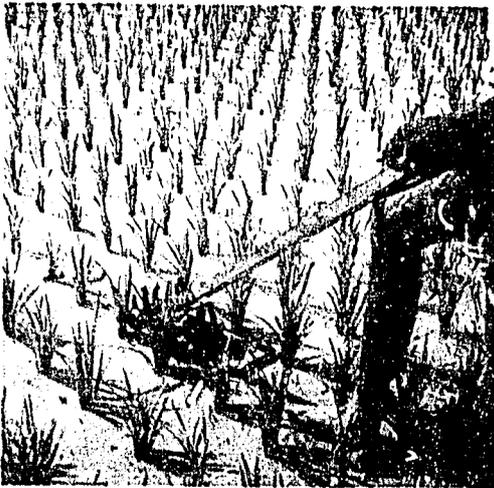
Some world development leaders noted that what was learned at the more commodity-oriented international agricultural research centers sometimes was not applied in developing countries. The full potential of the IARCs was not achieved. What was seen to be missing was the capability in some of the countries to adapt new varieties, new techniques, and new practices to local conditions. This led to recognition of the need to strengthen the national agricultural research systems in developing countries. The need came indirectly from the successes of the IARCs that helped create the Green Revolution that so markedly affected world agriculture in the late 1960s and 1970s.

The new high-yielding, short-strawed, fertilizer-responsive varieties of wheat and rice — developed at the international centers in Mexico and the Philippines — performed well and were quickly accepted in India, Pakistan, and some other countries. The improved varieties were introduced in many places, along with “packages of

Acceptance of improvements seemed to take place where a nation itself had a strong agricultural research system that (1) could test and adapt the technology and fit it to specific conditions of its own producers, and (2) could spread the knowledge and other support needed to encourage farmers to use the new technology.



Research in national systems frequently uses the same animal and human power resources available to farmers in the area. It is appropriate to test new varieties and technologies under conditions where they will have to perform.



technology.” In some places there were already trained technical people present, often from other parts of the world; they could turn to scientists at the international centers for help when they encountered problems in applying the technology. In these situations, the inputs of new technology tended to work well.

Limitations of the Green Revolution were recognized, however, when little change occurred in some other countries that seemed to have suitable ecological conditions for adopting the new varieties and new technology. What was the difference? Scientists at the IARCs and leaders from developing countries observed what they believed was at least one important factor: Acceptance of improvements seemed to take place where a nation itself had a strong agricultural research system that (1) could test and adapt the technology and fit it to specific conditions of its own producers, and (2) could spread the knowledge and other support needed to encourage farmers to use the new technology.

Adaptive research needed

The need for localized adaptive research cannot be put aside. Many factors affect performance of growing plants and animals. A new crop variety, for example, may produce high yields under one set of conditions — a given amount of rainfall and sunshine, a rich and well-drained soil, timely application of effective plant protection chemicals, and the like. Under other circumstances, it may not do well at all.

Therefore, it's necessary to field-test new varieties and technologies under conditions where they will have to perform. This calls for controlled research techniques, which yield reliable results more often than occurs with trial-and-error methods.

Another major contribution of scientists is in the genetic “engineering” of varieties or breeds that can overcome some special problem, such as a disease. The work of an IARC may, for example, produce germplasm that resists a certain disease; then the local breeder combines that quality with other good factors already in lines that fit local conditions. That pattern works widely, and it is helping overcome some of the most difficult problems facing farmers.

ISNAR's work with developing nations to strengthen their agricultural research systems helps the agricultural sector in those countries contribute more to national development. In addition to more ability to deal with national problems directly, the stronger national systems also make the work of the IARCs more effective in

increasing agricultural production and development around the world.

To strengthen the national system

Existing national agricultural research systems are as diverse as the nations they serve. They should continue to be diverse since there is diversity in resources and need in the various countries. Some countries may only require a small, very simple system that introduces, tests, and adapts the technology generated in other countries. Other countries may require large systems to meet their needs and to cope with the diversity of commodities and problems. Working to strengthen a national system means helping those who operate a unique system to obtain, organize, and manage resources for agricultural research more effectively.

It is possible to describe the functions of such a system, which include: devising research programs that will help achieve agricultural development goals of the country; recruiting and maintaining a competent staff of scientists and appropriate support staff; operating efficient research facilities; planning and carrying out research that yields technology which fits farmers' needs and situations; getting findings to those who can use them (policy-makers, extension systems, and others who advise farmers, as well as the producers themselves); and in some cases helping the system find and make better use of assistance available to it from other sources.

The ultimate goal of ISNAR activity, then, is a strong national system, one that is able – on its own – to plan, organize, and carry out research needed so the nation's agricultural sector can contribute fully to development.

Supported by CGIAR

ISNAR is a relatively new international center – it completed its first program year in 1981. As one of the 13 centers it is supported by the Consultative Group on International Agricultural Research (CGIAR). The Food and Agriculture Organisation of the United Nations, the International Bank for Reconstruction and Development (World Bank), and the United Nations Development Programme are the cosponsors of the Consultative Group. Its membership comprises in all some 45 countries,

The ultimate goal of ISNAR activity, then, is a strong system, one that is able – on its own – to plan, organize, and carry out research needed so the nation's agricultural sector can contribute fully to development.

international and regional organizations, and private foundations.

"The agricultural revolution has been started . . .

"Events of the 1960s and 1970s have placed in motion processes that make it unlikely that the revolution will not succeed. First and foremost is the almost universal recognition that science-based technology can contribute — and must be called upon to contribute — to the agricultural development process. This recognition is felt at the village and individual level . . .

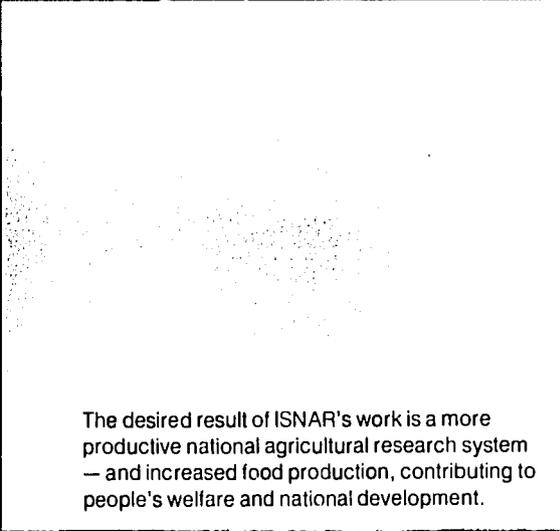
"The same recognition is felt by governments of both developing and donor nations and their international institutions. Food production continues to receive highest priority, and support for agricultural research remains strong. Economic and political stability in the developing countries will likely depend on the degree to which the developing nations focus on these priorities."

Nyle C. Brady

Development of



ISNAR's work involves helping develop people and research systems. In Papua New Guinea, an ISNAR team member visits with staff at an agricultural college. The ISNAR team and PNG officials talk with users of research in a local village to help evaluate the system.



The desired result of ISNAR's work is a more productive national agricultural research system — and increased food production, contributing to people's welfare and national development.



What ISNAR Has Learned

ISNAR plays a relatively new and unique role in the system of international agricultural research centers. Its role still is developing.

To measure ISNAR's progress is different than to measure advances at a commodity-oriented international research center. At the commodity-oriented centers, progress can be assessed in terms of the development of new varieties, new technologies, or new ways of producing higher yields. The new variety or practice can be tested against local farming conditions, and a quantitative evaluation can be made.

ISNAR makes progress when it acquires knowledge and experience that helps it to accomplish the primary mission: strengthening national agricultural research systems. This kind of progress is measured in terms of new knowledge about ideas and concepts, a fuller understanding of how to make research services function better, and a grasp of what works and what does not. It involves developing people and systems, not producing things. While such development is more abstract, it is no less real.

Working with national systems

At the core of ISNAR's program is its commitment to understand national agricultural research systems and their performance — with the aim of working with the people in the systems to frame overall plans for improving the systems. A key part of the process is to create a continuing and developmental relationship with each country that invites its cooperation.

Most continuing relationships have begun with an invitation to ISNAR to review the country's existing system. As is described in detail in *How ISNAR Works*, a team of ISNAR staff and consultants spends several weeks studying the system and getting to know its people.

The reviews serve two purposes. They are proving to be an effective means by which ISNAR can get to know a system well and work closely with its people to set a base from which to help strengthen the system. The second purpose is to build a body of knowledge about national agricultural research systems, drawn from many and varied systems.

ISNAR has not been provided the staff, time, or other resources to work with all the developing nations on an individual basis. So, while continuing to respond to requests for help from national systems, ISNAR's staff seeks to form broad generalizations from these experiences, which then can be applied to other systems. It carries out or encourages research to determine needs of the national systems and how

At the core of ISNAR's program is its commitment to understand national agricultural research systems and their performance — with the aim of working with the people in the systems to frame overall plans for improving the systems.

The reviews serve two purposes. They are proving to be an effective means by which ISNAR can get to know a system well. The second purpose is to build a body of knowledge about national agricultural research systems.

to meet them. The lessons learned from its full range of work are shared widely through its activities in training and conferences, and communications.

Aids work of other international centers

As ISNAR helps nations develop stronger, more effective agricultural research systems, it helps enhance the ultimate effect of the work of the commodity-oriented international centers. Strong national agricultural research systems can do the fine-tuning to adapt center findings to their own national, regional, and local conditions.

ISNAR adds to this interplay by encouraging two-way communication. The national systems can extend center results by local testing and evaluation; also, they can bring to the attention of the IARCs problems which deserve further study. Moreover, results of their own research add to the fund of knowledge to which all scientists contribute. This enhances the symbiotic relationship between the international and national agricultural research systems.

Involves other institutions

Other systems also need to be involved in making the development process most effective. Research alone is not enough. ISNAR recognizes that the new technology and new information must be transferred from the scientist to the farmer-user. Also, many of the outputs of agricultural research — whether from the international centers or from original or adaptive work at the national level — need further analysis and integration into local farming systems.

Policy-makers need to know the service or infrastructure needs that either encourage or constrain the adoption of new technology. Farmers need practical recommendations, information on how to use a new technology. And the people planning, organizing, and carrying out research need contact with producers to understand their problems, to guide research work, and to make the research efforts most responsive to national needs.

These activities may involve national extension services, or private or parastatal organizations, or the research programs of agricultural universities, depending on the situation and the resources available.

National determination

A "project" approach has characterized many programs in which outside agencies have brought aid to developing countries — sometimes coming in with preplanned programs focused on narrowly defined problems, perhaps "copies" of approaches that worked well in another country.

Although sound in concept, and well-intentioned by their donors, such projects may generate less benefit than both parties want. Many reasons can be cited for this result; most

of the reasons can be offset when a national system is truly able to define its own development agenda, set its own priorities, and fit contributions of others into its own well-planned actions.

Leaders who are developing national programs need to be able to tell others what they want and need. A strong agricultural research system can give them sound, research-based advice on development potentials. Then both the country and those who aid it are benefited. Projects can then be selected that help fulfill the country's plans.

Reinforced findings

Some earlier findings, which have been reinforced as a result of ISNAR's work with national agricultural research systems, include the following:

- ① Links between policy units of government and the research system need to be strengthened to establish clearly the key role of agricultural research investment in contributing to national development.
- ② More problems found in national agricultural research systems seem to be based on human or political issues, rather than on technical matters.
- ③ Many systems do not have well-developed plans for their research programs, especially regarding needs for manpower and other factors of research productivity.
- ④ Staffing and leadership for agricultural research has not grown as fast as the demand. A trend noted earlier continues: Many systems, notably in Africa, seem to have fewer well-qualified staff members than they had a few years ago.
- ⑤ Even though most systems have fewer scientists than they need, lack of support services often requires that those few available scientists spend an undue amount of time on nonresearch activities.
- ⑥ National public service regulations, under which most developing country agricultural scientists are employed, often do not provide the salary and promotion opportunities needed to retain the best scientists in government research service.
- ⑦ Many researchers work in relative isolation, not in close contact with scientists seeking to solve similar problems.
- ⑧ In many research systems, emphasis remains on single disciplines or commodities; problems often are not approached with the possible creativity that comes from interdisciplinary work.
- ⑨ Closer contact with producers — including expanded on-farm testing — would lead to more usable research results, in many instances. Producers could give valuable aid in defining problems according to production systems, as well as put findings quickly into practical application.

Direct work with national agricultural research systems is at the core of ISNAR activities. It has developed a flexibility to respond to widely varying needs of different countries.

How ISNAR Works

ISNAR's activities can be grouped in separate and distinct areas, but they are complementary. Members of the interdisciplinary staff work as a team; all senior officers participate to some extent in all the areas. Programs in each area help sharpen and extend the growing knowledge base of national agricultural research, and all activities feed back to that base, improving the total capability of ISNAR to strengthen national agricultural research systems.

There are four main areas of activity at ISNAR. They are:

1. review, diagnosis, planning, and continuing cooperation with national agricultural research systems in developing countries;
2. research studies on organization, management, and performance of agricultural research systems;
3. training and conferences;
4. communication and information.

Work with national agricultural research systems

ISNAR had to develop a flexible range of responses due to the widely varying needs of different countries and organizations.

For instance, one country may want help only with part of its research system; in another case, the request is for review and recommendations on an entire system. ISNAR has also responded to special requests from international development banks and donor agencies, with a concurring request from the country itself, for help in evaluating the feasibility of research projects they are considering for funding.

ISNAR's response to requests is varied, but a general picture can be drawn of how it initiates a review of a national system — an area of major attention in its developmental years.

Initial response. ISNAR responds to requests for review only from officials at decision-making levels in national governments or government agencies. Such a request may be generated by representatives of donor agencies, international research centers and similar groups, or by contacts at international meetings and the like, but it must still come from the developing country system itself.

A first formal step, a request received by ISNAR, is followed by internal consultation among staff, who gather pertinent information and evaluate the situation — a senior staff member may pay a brief exploratory visit to the country. Then the director general replies formally to the request.

Typically, one or two staff members visit the country to discuss the request with government officials, to gather more information, and to assess the possibility that an ISNAR relationship could benefit that country.

With positive responses on all these points, detailed terms of reference follow and are jointly approved. They describe the focus of the review, plus timing, logistics, and other arrangements.

The review. The actual review phase involves putting together a team of highly qualified people. The group includes special expertise to assure an informed analysis of agricultural research programs and organizations involved in the specific request. The team leader is an ISNAR staff member, accompanied by other ISNAR staff and consultants.

A typical review is a comprehensive evaluation, with the ISNAR mission in the field for from three to six weeks. The group meets a wide range of scientists, administrators, extension workers, and producers. They explore such subjects as: the appropriateness of the existing research organization; relevance of the research program; use of the research products both by national development planners and farmers — given the human, natural, and financial resources available; structure and performance of institutions for carrying out a balanced research program to fit the needs of the country; and key constraints to efficient operations.

Before leaving the country, the review group meets with senior officials to discuss preliminary recommendations on ways to overcome constraints and strengthen the system, consistent with the country circumstances and resources available from within the country or through external assistance.

Review results. ISNAR teams work from a growing base of understanding of the nature of agricultural research systems in developing countries. In part that comes from their own professional experience. It is steadily enhanced by comparative studies of other research systems by the interdisciplinary ISNAR group. This is an important reason that national responses to ISNAR review teams have been positive, bridging into continuing relationships with ISNAR as the countries adapt and implement the ideas.

Recommendations from the review are typically wide-ranging and deal with creating a better framework for mobilizing and managing human, biological, and financial resources.

The review includes putting together a team of highly qualified people. The group requires special expertise to assure an informed analysis of agricultural research programs and organizations involved in the specific request.



An ISNAR team review of a national agricultural research system is a comprehensive evaluation. This Fiji review included looking at work in progress at research farms, such as the one in the upper left; discussion of college offerings, upper right; visits with farmers and extension workers; and observation of experiment test station plots.



20



Research studies on organization, management, and performance

To be an effective adviser to developing, changing research systems, ISNAR must continually sharpen its analytical capability and refine its methodology. One of the best ways to keep abreast is to apply research methods rigorously in order to learn from its own experiences.

The research section was created to assure continuing attention to this means of adding to existing knowledge of agricultural research management. Its responsibility in part is to examine ISNAR's experiences and from them to synthesize hypotheses for testing and, eventually, to develop generalizations that may be applied in other situations.

Two general approaches to research are involved:

One is informal, focused on evaluating the findings from reviews and continuing relationships with national agricultural research systems.

The second is through formal research, with the scientific method applied to the study of various factors involved in organizing, managing, and evaluating agricultural research.

In addition to both informal and formal studies on its own initiative, the ISNAR research section links with others who are contributing to this field of knowledge.

Training and conferences

It takes trained manpower for a national agricultural research system to be able to formulate and carry out an effective research program. One of the major constraints found in national systems is lack of adequate, well-oriented manpower. Besides shortages of research scientists, there is a widespread need for personnel who have mastery of the skills of managing a productive research enterprise.

In its work with national systems, ISNAR gives attention to identifying research manpower needs in the system. It also concerns itself with the training requirements to strengthen the system and availability of programs where such required training may be obtained.

ISNAR teams in the field have observed a need in national systems for personnel qualified in a range of management skills. Many national leaders, in conference and less formal contacts with ISNAR, have underscored the same need. Another role of the ISNAR training section is specifically to support activities designed to upgrade managers of national agricultural research systems.

Training activity areas. Training activities are concentrated in four areas.

1. Support for in-career management training of agricultural research personnel. This involves analysis of

management training needs, support for courses which address those needs, and encouragement of new courses at appropriate institutions.

2. Help and encouragement for national systems in determining their manpower needs — scientists and support staffs — and developing training programs to meet needs. An important aspect here is encouraging national leaders and administrators to match career structures and promotion criteria to the nature of a research service.

3. Gathering from existing sources — and producing — materials on manpower planning and personnel management. These strengthen in-house expertise and are disseminated to serve national research managers.

4. Provision of opportunities for meetings of leaders of agricultural research systems. In these ISNAR conferences, research leaders, policy-makers, and donors discuss common problems and may collaborate to develop common responses to such challenges. ISNAR works closely with other organizations, such as the International Federation of Agricultural Research Systems for Development (IFARD), that have similar perspectives and objectives. It gives special encouragement to regional initiatives.

Communications and information

ISNAR's communications and information activities comprise two distinct areas: analysis of needs and means of strengthening information management within national agricultural research systems; and communications functions within ISNAR itself.

Information in national systems. National agricultural research systems need reliable information at all levels to function effectively. Research carried out in a vacuum may have little impact. Researchers need to be aware of national development priorities and of farmer's problems and opportunities. Similarly, policy-makers must know what resources are needed to support research and what impact research findings will make on development policies. Also, those who extend new technologies to farmers must understand the details of research results in order to provide information in forms that farmers can apply.

Review teams have found relatively few persons with professional training in communications and information management, along with little awareness of their importance in the research system. Thus information management is seen as an integral element in efforts to help strengthen the systems with which ISNAR works.

Information management is seen as an integral element in national agricultural research systems.

Communications in ISNAR. The communications section also performs an internal service role, handling ISNAR communications, publication, and information dissemination tasks. It produces ISNAR's own documentation plus many reports of reviews and other continuing activities with national systems, information that may be useful to many others. It also produces, publishes, and disseminates materials on agricultural research management, such as may come from ISNAR staff writings, from conferences, or from occasional commissioned manuscripts.

Special projects

In the course of its full program of work, ISNAR encounters many needs and opportunities that cannot be undertaken by its existing staff and resources. Where potential benefits and comparative advantage seem to justify it, ISNAR may seek to generate projects with special funding that reinforce or extend its ability to fulfill the mandate given it within the framework of the group of international agricultural research centers.

In Action



In the Ivory Coast, husks that cling tightly to the ear are desirable corn breeding traits. This helps protect corn during unique storage, and helps fend off insect and rodent damage.

Cattle owned by villagers are moved from point to point to take advantage of best grazing and feeding conditions. Cattle are identified. Holding points, as below, provide opportunities for genetic observation and a kind of performance testing.



As in all its reviews of national agricultural research systems, the ISNAR team reviewing the Ivory Coast system took into account the unique characteristics, needs, and conditions in its evaluation and suggestions for improvement. The review is just the beginning of its involvement with a national system.



System Review and Planning Missions

National agricultural research systems are the targets for ISNAR programs. Some are involved directly in ISNAR-to-country contact; some are reached indirectly through complementary programs of research, training, and the spread of information.

It has been found by ISNAR staff that an effective way to initiate a productive relationship with an interested national agricultural research system is to carry out a review of that system. In the process, ISNAR becomes thoroughly involved with the system, develops contacts with people in the government and research organization, learns of constraints to their progress and improvement, and develops a firm basis for making recommendations to help overcome problems.

A uniqueness of ISNAR is that its involvement with a national system does not end with a review and recommendations; that is just the beginning.

This need for continuing interest was foreseen by the framers of the ISNAR mandate. The reasoning is this: Once having established an understanding of the needs of a system and a positive relationship with national leaders — with credibility and trust on both sides — ISNAR is in a position to further develop a two-way sharing of ideas.

Through this continuing relationship, ISNAR further enhances its role in strengthening the national agricultural research systems it works with. (As one of the international research centers under CGIAR, ISNAR is positioned to help form bridges between the national systems and these outstanding sources of adaptable agricultural science and technology.)

ISNAR teams carried out initial system reviews in 1982 in Fiji, Guyana, Ivory Coast, Malawi, Papua New Guinea, and Rwanda. A small team studied and made suggestions concerning three specific elements in agricultural research identified by leaders in Pakistan. ISNAR joined with the World Bank (IBRD) and the Food and Agriculture Organisation (FAO) to carry out a research system review and recommendation mission in Upper Volta. (Two among these missions, Rwanda and Upper Volta, were financed from their IBRD loan funds within the respective countries.)

ISNAR senior staff played key roles in two missions sponsored by the Asian Development Bank among its member nations of the South Pacific: One undertook to

Several review teams recommended more attention to a multidisciplinary approach.

frame a regional research support team proposed in 1981 by an ADB team led by the ISNAR director general; the other involved preparation of projects designed to strengthen agricultural research, extension training, and communications in the Solomon Islands.

These countries represent a wide range of geographic areas and types of agricultural research systems. Recommendations and development plans varied greatly as a result. Some general patterns and similarities emerged, however; they provide lessons and guides for future efforts along all of ISNAR's program range.

Developing a multidisciplinary approach

A situation often found in national systems is the tendency for research to be carried out within a single discipline, not linked to related fields of study. Researchers often work in relative isolation and lack sufficient communication with others in the same system. The results are that some research efforts lack continuity, breadth, and integration.

Several of the review teams dealt with this situation. They recommended more attention to a multidisciplinary approach to agricultural research.

In Rwanda, for example, the team suggested new targets and methods for agricultural research — in keeping with this concept. The suggestions there can serve to illustrate the approach.

First, the team suggested decreasing the share of work which employs a single-discipline approach to improving specific commodities. It recommended more multidisciplinary attention to identify and solve tangible development problems, with research carried out by a unified team under the supervision of one — and only one — scientific service.

Second, responsibility of researchers no longer should end when they propose new, improved techniques for a given rural environment. They should also project and monitor the possible wide effects of changes they suggest.

In this interdisciplinary, integrated approach to development, aims are not merely increased crop yields; economic and social goals count as well. In many cases, rural development will trigger simultaneous changes in sectors both “upstream” and “downstream” — such as industry, transport, trade, and handicrafts.

An added consideration was pointed out by the team that began work with Pakistan: Smooth operation of multidisciplinary teams is helped when the lead scientists from each discipline have comparable status and qualifications.

Creating a critical mass

An important component of success in such a multidisciplinary approach to research is presence of a "critical mass" of researchers within the system (enough scientists representing all the key fields).

The Papua New Guinea (PNG) team found (as had been noted as a problem by an earlier review) crops research functions dispersed among several distinct disciplinary sections.

The team's recommendations included regrouping activities of several research stations, concentrating certain crop activities at each so a minimum critical mass could be achieved. For example, the major change with respect to work on sweet potatoes – an important food crop in the populous highlands region of the country – would be assembling the mix of disciplines involved in research on that crop at one main station; they presently are scattered among several locations.

Involving social scientists

Another lesson learned in working with developing country systems is the importance of more involvement of agricultural economists and other social scientists, especially to consider the economic and social implications of adoption of new techniques and farming systems. The PNG team pointed out that agricultural economics has a strong potential as an integrator in farming systems research, and so should be included in multidisciplinary efforts.

As is the case in many developing countries, PNG lacks a tradition for such work. The team members suggested that the next frontier for research economists there should be with interdisciplinary teams.

The Malawi mission found that agricultural policies in that country have major influence on which groups of farmers produce certain crops, on the prices farmers pay for various inputs, and on prices they get for their products. It was pointed out that such policies and prices need to be considered in light of their probable effects on achievement of development goals. That team recommended that the research system carry out economic and social research, developing information that would be useful to policy-makers.

At least two important roles can be cited for social scientists in agricultural research. They can assure that production research shows costs and returns to inputs, and they also can deal with analysis of effects of current and proposed price and production policies.

Another needed role for social scientists is taking shape as analytical studies of agricultural research systems go deeper. That role relates to understanding the distinctly humanistic

aspects, such as focused on in the fields of sociology and anthropology. Scientists who can shed light on the human wants, needs, and potentials for action have much to contribute to the base of knowledge from which decisions are made that concern technical factors, which in turn affect people.

Organizing to do research

Another important aspect in the success of the multidisciplinary approach in most research services involves the organizational structure, which varies from system to system. Direction frequently is fragmented and spread throughout several ministries or other administrative entities.

ISNAR's experience with research systems has shown the importance of providing a structure in which organization and management tasks are vested in certain individuals with specific responsibilities, clearly identifying the persons who lead planning and coordination efforts, who establish objectives and priorities, and who communicate information throughout the system.

Three proposed reorganization plans offer guides to different ways of improving research organization structure, in each instance taking into account the existing situation.

The PNG team recommended specific changes to improve that country's crops research system. It agreed with a recommendation made by another group, that there be a director for the crop research division, with specific organization and management duties: giving technical leadership to the heads of disciplinary sections, transmitting directives in appropriate technical terms to the research staff, and presenting to the planning authorities a balanced view of research needs and possible contributions from research.

A deputy director would be added to head a small research programming unit. The unit's tasks would include developing a consultative system to determine research project priorities and maintaining a flow of information within the system.

Officers in charge at the main research stations should have considerable administrative and financial authority. With the reorganization, each main research station would have a multidisciplinary team for its assigned crop or specific group of crops – with each team led by a scientist responsible to the director of research for the progress of research in that crop throughout the country.

The ISNAR team that reviewed Rwanda also recommended some reorganization of that national system to improve coordination of the agricultural programs conducted by research institutions of the country. With officials there, it developed a plan that would increase the

staff of the Rwandan Institute of Agricultural Sciences and aid it in meeting needs set out in the reorientation of agricultural research, including more responsibility in national research planning and coordination.

The team also recommended establishing a national system for science planning — not by adding new, specialized decision-making bodies, rather by assigning specific, targeted responsibilities to the groups which are now involved.

The Ivory Coast review team found that introduction of a research programming system and some structural changes already have improved considerably the functioning of the system.

This team recommended continuing that evolutionary process, consolidating the structure, and eventually integrating the large number of institutions into one national research institute. In cooperation with their Ivorian colleagues, the team worked out a comprehensive plan for the future structure of the system to yield further improvement in research programming, better utilization of a number of central services for all institutions, plus certain economies of scale.

Improving research-extension-farmer linkages

One of the most consistent recommendations of the ISNAR teams concerned upgrading and further development of the relationship between research and extension organizations — to take findings to producer-users and to get information back about problems that need the attention of researchers.

ISNAR teams have found in many developing countries that extension workers without close links to research pass on improvised technical messages; and some research is carried out in isolation, building up technical solutions — some of which are unusable or unused. Research systems that cannot transmit findings to the extension service and to farmers make little practical contribution. Extension work that is not sustained by results obtained through research has little value, and even may be detrimental.

Relations between research and extension are varied. Therefore, recommendations of ISNAR teams must be adjusted to fit the situation.

The extension service in Fiji, for example, is a national function, administered in the field at the level of divisions. Some research activity at stations is oriented to the division in which they are located, and extension workers are in frequent touch; some other activity is nationally oriented with relatively little programmed contact with workers in the divisions or extension.

At the national level, both the research and extension service are under assistant directors of agriculture, both



New techniques and technologies developed by national agricultural research systems do little good unless they are carried to the farmer. This usually involves the extension service.

Here, an extension agent in Upper Volta teaches men how to plow their fields using a new metal plow.

Research systems that cannot transmit findings to the extension service and to farmers have little practical value. Extension work that is not sustained by results obtained through research has little value, and even may be detrimental.

responsible to the director of agriculture. One recommendation of the ISNAR review team to Fiji was that the research and extension services develop more joint planning and programming to strengthen the performance of both groups.

The organizational relationship differs notably in Papua New Guinea. The research system there is national, involving personnel trained in science at the graduate or postgraduate level (a majority are expatriates). The extension service is a responsibility of the provinces, where most extension workers are nondegree local graduates of agricultural technical schools.

The Ivory Coast review team found research/extension linkages weak at the policy level. This was seen to be partly due to the fragmentation of development efforts, which fall under the responsibilities of different ministers — of agriculture, food crops, livestock, forestry, and water. At the working level, linkages between research and the country's crop-specific extension services were seen to range from excellent to nonexistent.

Team recommendations in this situation were aimed at strengthening those areas of the research system which do not now contribute to the development process, due mainly to shortage of resources and lack of productive output. Team members felt a strengthened research system that produces meaningful results will be readily accepted as a partner with extension.

ISNAR teams sometimes make suggestions for dealing with relatively small operational problems, as well as with big issues. Solutions to some of these problems are important to the country system, too.

For example, research and extension leaders in Malawi have used annual meetings as opportunities to discuss joint problems and strategies. However, the meetings have become so large that effective communication is difficult. The ISNAR team suggested two alternatives.

One would have the research leaders for each major farm enterprise spend two or three days at each of the country's seven agricultural development districts (ADDs) each year. The ADD hosts could arrange for visits to local research stations, on-farm trial sites, and similar situations; the research leaders could see farm-level problems and conditions for each enterprise. This combined exposure of researchers across enterprises also would heighten their awareness of farm-level conditions.

The other opportunity to facilitate effective communication between research and extension staffs could be through involving both in annual commodity refresher courses.

Communicating in national systems

The communications and information function constitutes an important part of the linkages involved in national systems. In its review of the crops research system in Papua New Guinea, the ISNAR team found four types of communications to be important there – or in any national agricultural research service.

- Communication with potential users – to understand production to assure that realistic problems are brought under study and to get research findings to farmer-users. The team to PNG recommended that research teams take stronger steps to initiate or to broaden interaction with provincial extension officers, who are in the ideal position for a two-way flow of information between researchers and producers. Much of the information there, as in many developing countries, moves by personal contact.
- Communication with world sources of agricultural science – to help researchers stay up-to-date. Library resources need to be available, especially to the staff at outlying research stations. In small national systems, where often there is only one specialist in a given field, interaction with other specialists is difficult to achieve. The PNG team offered a suggestion to help reduce the effect of isolation of a researcher from others: A consultative relationship could be established with a leading outside institution, which would provide digests of current scientific findings relevant to PNG and, when justified, hold conferences and in-service training for appropriate persons.
- Communication within the organization and system – to assure effective and efficient operations. Many means of communication are involved here, especially the inter-personal ones. The team that visited PNG was favorably impressed by a regular agriculture department newsletter issued to share administrative information among that large staff. The approach could be adopted in other systems, perhaps with primary emphasis on keeping the researchers in close program and administrative contact.
- Communication with policy-makers – to assure that significant research findings and opportunities get attention at the policy level. The team felt this generally should be seen as a high-priority task of the most senior officer of the research system, supported by the agricultural policy economist and communications specialists.

Selecting priorities for emphasis

Most developing countries cannot afford the staff to do all of the research work on all of the commodities they would

Communication with policy-makers stands as a high-priority task of the most senior officer in the research system.

Difficult tradeoffs are faced in allocating scarce research resources between alternative programs.

like. So part of the research decision-making process becomes that of selecting the priority crops or products.

Some newly independent countries in the tropics have inherited a past emphasis on plantation crops, especially for export. Increased attention is now being given to food crops and livestock, typically as grown by small landholders. Persuasive cases can be argued for research to serve both needs. And there may be difficult tradeoffs involved in allocating scarce research resources between competing alternatives.

The Guyana country mission dealt with this kind of situation by laying out alternative courses of policy, based on its analysis. Then it offered some considerations to help the government make decisions about resources devoted to a given commodity. Among those considerations were:

- Current economic importance of the commodity to the country. For Guyana, sugar and rice clearly stand at the top of most lists based on this criterion.
- Projected economic and social benefits. For Guyana, strong candidates for inclusion in this list were integrated livestock pastures, fisheries, and forestry.
- The prospect of good markets. Guyana farmers were seen to be like farmers generally; they will not produce commodities for which they cannot expect a reasonable return. Typically they want to be assured that a market exists, and they want information about input-supply requirements and costs, labor requirements, and market prices.
- The probability of making progress on research within available resources. The ability to assess this probability is an integral part of agricultural research management in Guyana — or any country.
- Availability of results from research programs outside the country. As an example, in Guyana benefit can be drawn from work on rice being done at the International Rice Research Institute (IRRI), on cassava and rice at the International Center for Tropical Agriculture (CIAT), and on cowpeas at the International Institute of Tropical Agriculture (IITA). The local challenge is to design programs which make full use of such knowledge available from international sources.

Linking national systems with IARCs and others

One of ISNAR's mandated roles is to help link the national research systems with international agricultural research centers (IARCs) and other sources of adaptable research output. Several ISNAR country missions found opportunities to help make those links.

Malawi's research managers, it was noted by that ISNAR team, are attempting to cover a wide range of research areas and related services; they have few personnel and limited

facilities and money resources. Although gaining a lot now from links with IARCs, the research system could be exploiting this opportunity more fully. A suggested step toward deepening the relationship called for initiating coordinated commodity research programs for the major smallholder enterprises, linking with extension, and focusing major resources and research efforts on them.

With such a concentration of attention, the team believed, short-term visits by research program leaders to the appropriate international centers could keep them up-to-date on the wide range of information, cooperative relations, and materials available through the centers. Longer term training at the centers could make the researchers still more effective. The team recommended that funds be made available as a part of each national coordinated program to make more use of help available at the relevant centers.

The government of Rwanda capitalized on the opportunity to involve several IARCs as a follow-up to work by an ISNAR team. It asked that results and recommendations be shared in the form of a seminar on agricultural research in Rwanda. It was planned that several IARCs would be included in that early-1983 event (at least CIAT, CIMMYT, CIP, IBPGR, ICRISAT, IITA, and ILCA as well as ISNAR). The seminar should strengthen the contacts of these IARCs and other international institutions with a wide range of Rwandan research service and other government leaders.

The Papua New Guinea team also saw opportunities to tie in IARC benefits. Even with the changes in structure as suggested, the modest research system there cannot provide as much attention as needed for all crops in the country. This makes all the more important the monitoring of research on those crops elsewhere in the world; such opportunities can then be exploited. The team pointed out that this monitoring requires a minimum corps of experienced research specialists who can interpret new findings in light of PNG conditions. A partnership with IARCs can help gain the potential benefits.

The Fiji mission offers an example where ISNAR involvement led to renewal of contacts between an international center and a national research staff member. A Fiji rice researcher had participated in a training program nearly a decade earlier at IRRI, but had little recent contact with the institute. It was arranged for the Fijian scientist to spend two weeks at IRRI, with a visit to another national agricultural center where successful rice research is underway. In addition to renewing contacts with other scientists doing research on the crop, he had opportunity to

Contacts are encouraged between national and international research groups.



Population pressure puts an added burden on the agricultural research system in some developing countries. People start cultivating the more fragile soils which are more prone to erosion, and this puts pressure on the ecosystem.



As population pressures push people to the fringes of the better soil areas and onto less productive land, the forestry cover of those soils is endangered. More land is cleared for agriculture, and more wood is used for fuel. This brings additional challenges to national research and development planning.

catch up with recent research advances in several aspects of rice production. He plans to begin local adaptive work on several promising leads for rice improvement in Fiji.

Communication of results in national systems

Information management – communications in the broad sense – was found to be an area in need of further development in many national research systems. There are relatively few positions for staff members with communications/information specialization and relatively few persons professionally trained for the ones that do exist. Where some attention has been given, it usually has centered on services to share findings with other researchers. Few systems have made significant efforts to transfer their findings to those who can use practical research results, including the extension services.

Weaknesses are typical in links of researchers to farm producers (to define problems accurately) and links of researchers to policy-makers (to find the place for research priorities in the agricultural development aims of the country). Even in small systems, communication problems among units separated by geography or by discipline may be constraints on effective operation of the research system.

In Papua New Guinea, where the extension system is provincial and research is national, the ISNAR team gave special attention to the communication linkage. It suggested that each proposed research team include a person called a “dissemination leader,” whose work would center on maintaining two-way communication, especially with the extension service. This staffing would help assure the concern of the researchers for practical results that extension workers can carry to farmers. It would underscore the proposition that a research job is not finished until results are applied.

In Fiji, as in some others of similar size, the research system has no staff specialized in information, so the amount and qualities of ministry-wide resources are important to communication of research results. Team recommendations for information support in the Fiji system thus referred to the ministry-wide information services and means to strengthen them. In looking into sources of trained, experienced persons in agricultural communications, the team soon discovered that this area is not well-represented in training institutions in the region. Even with efforts to develop training in the region, some expatriates will be needed to provide the professional underpinning for improved communications needed by the research systems.

Using resources of agricultural universities

Universities represent important agricultural research resources — or potential resources — in many developing countries. Their current involvement with national research systems varies widely. Two examples:

The Pakistan review team pointed out that the agricultural universities of that country have a valuable pool of trained agricultural research talent. It could contribute much more if brought into the mainstream of national agricultural development. The team suggested one approach that has worked in some situations: relating agricultural universities closely to agricultural authorities, perhaps channeling research support resources through agricultural ministries.

Another approach involves establishing agricultural improvement as part of the university's responsibility, encouraging the talented university faculty to recognize the importance of agricultural research to production of food and fiber. Thus agricultural development in the university's region could be seen as a focus for its research, instructional, and extension programs.

Two colleges in Malawi have the opportunity to add to the agricultural research talent serving that nation. The ISNAR team noted that one college, Bunda, now carries responsibility for two important national agricultural research programs. Other able faculty members there, and at Chancellor College, could also be involved in priority research. The college staffs are growing in number and capability, and thus constitute a resource of increasing potential.

That team also recommended providing resources to involve staff and postgraduate students directly in the mainstream of agricultural research. As postgraduate training in agriculture develops in Malawi, this kind of staff and student involvement in research can be increased to the advantage of the research system and perhaps to the students as well.

*Agricultural universities
have valuable pools of
trained research scientists.*



As the number of oxen increases, the weight of the cart must be reduced. The oxen must be trained to pull the cart, and the cart must be adapted to the terrain. In some areas, the oxen are used to pull a cart that is used to transport heavy loads. In other areas, the oxen are used to pull a cart that is used to transport heavy loads.



Shifting emphasis to smallholders

Several developing countries are shifting emphasis in their research programs from plantation or industrial crops to commodities and farming systems of greater interest to smallholders. The results of this change have been mixed so far.

Typically, research funding for some crops of strong export interest is separated from funding for other crops. Papua New Guinea provides an example. Research, marketing, and other service functions for some plantation-type cash crops there are provided through industry boards, funded by taxes on sales of those crops. Where the boards carry out research functions, it means less competition for scarce government research funds. Many smallholders grow these same crops, and in aggregate may contribute a majority share of total production.

PNG national policy stresses the development of rural areas and the importance of agriculture in generating rural income; so greater emphasis is placed on economically and socially attractive crop production technologies for smallholders. Research on farming systems to serve smallholders thus becomes a larger claimant on research funds, whether allocated by government or industry boards.

Smallholders in PNG bring challenging research needs. The majority live in traditional communities, operating complex and intensive intercropped farming systems. Typically, there is little marketed surplus. When there is a surplus, marketing problems stand in the way: Perishable goods must be handled over difficult terrain that is poorly served by transport facilities. Such difficulties are part of the reason that relatively little research attention has gone to the subsistence sector in the past.

Competing for researchers' time

ISNAR missions have found manpower problems in almost every instance. Competition for the time of researchers is one of the important problems involved. Findings of two country missions illustrate two common time problems.

In Guyana, the team found a reasonable total supply of scientific manpower at senior levels. Although few persons in active research positions hold qualifications at the Ph.D. level, some have good postgraduate training, proven research ability, and several years of research experience. The spread over the different scientific fields also is good.

The impact of such able personnel may be limited, however. Many of those who are best qualified are in administrative or managerial positions, where they are not directly carrying out research activities. Promotion from the lower levels to comparatively senior positions is rapid; staff members may not remain in research posts or production



In several developing countries, agricultural researchers are giving more attention to needs of smallholders. The Pakistani smallholder is proud of his new wheat, the Malawi farmer signals his increased corn yield.





Research on sugar cane and some other plantation-type cash crops typically is provided through industry boards, funded by taxes on sales of those crops. Where this is the situation, there is less competition for scarce government research funds.

long enough to make contributions and to gain experience from working with senior colleagues and with one another. An active training program at the middle levels to provide a supply of well-qualified staff for the senior posts was one step suggested by that team.

A lack of suitably trained and experienced support staff for the research service is another manpower problem. When there is not a capable support staff, research scientists must spend time on routine, nonresearch tasks. The Papua New Guinea team urged a priority on use of resources to develop research support staff that can add to the productivity of the research scientists.

Variations on this theme were common in other countries.

Training needs are great

Two recommendations which perhaps were the most common in the manpower area were for (1) an increase in the number of researchers and (2) more and better training for those researchers.

Manpower development was found to be clearly the first problem of the Ivory Coast research system. While existing research units were judged by the ISNAR group to be first class in qualitative terms and were producing impressive, internationally recognized results, the number of both scientists and technicians was seen to fall below the requirements of the nation's highly diversified production system. A related problem is that fewer than 20% of the scientific staff are Ivorians. The national training system output is not enough to place qualified Ivorians in the research posts. Another need is for higher-degree training in-country; without it, all trainees are sent abroad.

The ISNAR team recommended establishing a graduate training program within the existing structure, designed to increase both the quantity and quality of staff, to promote interaction between research and training, and to lower the long-run cost of training. This recommendation was accepted, but some time will be needed for its implementation.

An ISNAR team's recommendation on manpower development and training was accepted as a priority area by Kenya's National Council on Science and Technology. Positive reaction to the recommendation was followed by a prompt request for a manpower and training study by ISNAR. The study was undertaken, and a report was submitted and favorably received by the Government of Kenya.

The combined area of manpower and training was one of the major issues emerging in the review of the agricultural

research system in Papua New Guinea. The team's recommendations represent an approach to dealing with a typical problem.

The review team proposed a plan by which graduate national staff could be recruited and trained to serve, with reasonable productivity maintained in the system. The initial plan would be staged over 13 years, during which 50 nationals would receive postgraduate training and progressively replace expatriate staff. This would maintain long-term stability, with national scientists taking increasing roles in the system.

The recommendation implies strengthening PNG educational institutions, creating a large scholarship program, and making some adjustments in rules dealing with public service personnel.

The Rwanda mission also developed a long-range plan. It recommended a 10-year program of recruitment and training at the Rwandan Institute of Agricultural Sciences. Its aims would be to qualify Rwandan nationals to fill scientific and research management posts, to identify and prepare personnel with skills and aptitudes to match the needs of development-oriented research in Rwanda, and to provide training for scientists and technicians already in post.



Rice harvesting in Indonesia frequently is done by hand. Indonesia was one of the first countries in which ISNAR conducted a system review. ISNAR has a continuing relationship with the research service of that nation.



ISNAR's communications officer discusses with consultants a collaborative project to study ways in which research information is communicated in South Pacific countries. The aim is to learn how to improve linkages between research, extension or other delivery mechanisms, and farmer-users in traditional societies.



Research on Organization and Management

Among the many questions facing people working to strengthen national agricultural research services are those involved in how the products of research are transferred to farmers and other users. Frequently, developing countries do not have well-established, effective extension services nor media that reach a high proportion of people in rural areas.

Research on the transfer of technical developments is important – it is basic to learning how to improve the linkage between research, extension service or other delivery mechanisms, and the farmer-user. It needs to be a two-way communication process: from researchers to the farmer-users and from the farmer-users back to the research service.

In 1982, ISNAR developed a collaborative project with the East-West Center (located in Hawaii, U.S.A.) to study the way in which research information is processed and transferred in certain South Pacific countries.

During much of 1982, the staff at ISNAR was involved in continuing discussions and studying results of system review missions, seeking to learn from its own experiences. Out of these discussions came five topics which will be studied in the future:

1. The nature and effectiveness of planning procedures and mechanisms for allocating resources, including the political commitment to support research.
2. Identification of the key components of success in research through comparative analysis of existing research systems – whether in developed or developing countries – and their historical evolution.
3. How to retain and motivate trained staff for productive research.
4. Improvement of local and farm-level research.
5. Approaches, mechanisms, findings, and policy implications of efforts to monitor and evaluate national agricultural research systems.

Results of this research should shed light on critical areas of uncertainty that affect the efficient organization and management of national systems.

Training and Conferences

Trained manpower is a primary need, and a widespread constraint, in national agricultural research systems. Training and conferences activities related to manpower resources had a high priority at ISNAR during 1982. Three levels were pursued simultaneously through different activities.

The first was analysis of needs of the systems. ISNAR helped plan and organize two conferences on research programming in the latter half of the year, cooperating with the International Federation of Agricultural Research Systems for Development (IFARD). Both brought together national research leaders of two regions of the world. One, for the Asian region, was held in Indonesia – supported financially by the German Foundation for International Development, GTZ, and hosted by the Indonesian Agency for Agricultural Research and Development. The other was held in Spain, for the Latin American and Caribbean region. The Inter-American Institute of Cooperation for Agriculture (IICA) contributed significantly, and financial aid was provided by the Government of Spain.

These conferences continued ISNAR's dialogue with senior officers in developing country research systems. They also provided opportunities for research managers to share experiences, contributing to a base for regional networking on research management and fostering cooperation.

The definition of training needs was pursued further when ISNAR and the Economic Development Institute of the World Bank met for four days with persons from national research systems, international donor agencies, and management training institutions. During the seminar at ISNAR headquarters, participants discussed research management as a field, what training in this field should involve, who should receive it, and how to do the training.

The second level of activity involved curriculum development and preparation of training materials. During 1982, ISNAR planned, obtained funding for, and began work on a special training project for Africa. Under a consortium of donors – the Cooperative Development for Africa (CDA) – the project is funded by the Overseas Development Administration (ODA) of the United Kingdom and the United States Agency for International Development (USAID).

The initial phase of the project will be a close look at management issues in three African countries, to learn what parts of the research systems need attention, what kinds of training are needed, and who should receive it. This will be followed by preparation of materials and then actual training courses.

CIMMYT and ISNAR, with support from the United Nations Development Programme, continued cooperation in a materials-preparation project begun in 1981. This effort, which will continue until 1984, is concentrated on the preparation of cases to be used in training courses. The cases deal with means of overcoming management constraints which ISNAR has identified in its work with national agricultural research systems.

Also in 1982, planning was continued on a program to work intensively with a few institutions in their training activities over the next three years. Some larger research systems have an in-house capability to conduct training programs; smaller systems must rely on management training institutes and universities. ISNAR will work closely with each of these types to encourage curricula that deal with research management problems.

The third level of activity involved participation in actual courses. The first such course, on management of agricultural research, was held at the International Institute of Tropical Agriculture (IITA), in Nigeria. ISNAR and IITA cooperated to conduct a two-week course on research management for some 60 staff and national trainees enrolled there in other IITA training courses.

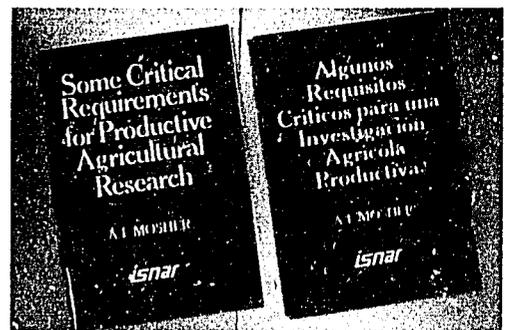
Communications and Information

The first annual report of ISNAR was published in June, 1982. The 60-page report presented the year's activities in ISNAR's four major program areas; it also recorded the chronology of events that led to the creation and activation of the organization.

Reports of ISNAR review missions make up a notable contribution to information available on the organization and management of agricultural research at the national level. With approval of national officials who invited the review, ISNAR makes its final reports available to others. The subject system may use its report extensively to involve others in considering and implementing recommendations; donors currently supporting work in the country – or contemplating support – also find them useful; and an increasing number of persons interested in research management request the reports. A typical report is about 140 pages of analysis, recommendations, and supporting information.

Reports of two late 1981 conferences of research management interest were published in 1982, and proceedings of two 1982 conferences were in process by the end of the year.

In other steps to share literature on national agricultural research systems, ISNAR undertook translations of two pamphlets by Dr. A. T. Mosher, which are regarded well in their original English: Spanish and French versions of *Critical Requirements for Productive Agricultural Research* (published in 1982 by ISNAR), and a French edition of *Three Ways to Spur Agricultural Development* (published in 1981 by the International Agricultural Development Service). A manuscript on planning in a national research system, by Dr. I. Arnon, was in process at the end of the



English and Spanish editions of a booklet on research management, by Dr. A. T. Mosher, extended ISNAR's contributions to literature for agricultural research managers. A French edition follows.

year. Manuscripts on other aspects of agricultural research management were under development by ISNAR officers.

The list of ISNAR's 1982 publications in this report contains information concerning availability and how interested persons may obtain copies.

With appointment of a senior staff person with responsibility for the library as well as editing, activity increased in gathering materials relevant to ISNAR's mission. Working collections of information are being developed in the following areas: international agricultural research centers, donor countries and organizations, agriculture in developing countries, documentation of ISNAR relations with certain national agricultural research systems, and literature on selected aspects of agricultural research management.

In Perspective

*Conferences and meetings
related to national
agricultural research.*

1982 Participation by Staff Members

January 14 (Washington, D.C., U.S.A.); June 7-8 (The Hague, Netherlands); and July 7-9 (Washington, D.C.). Meetings of Search Committee for Executive Secretary, Consultative Group on International Agricultural Research. Dr. W. K. Gamble.

February 17-18. Meeting of Cooperative Development for Africa (CDA), Technical Committee on Agricultural Research. Paris, France. Dr. Rudolf Contant, official observer, and Dr. Floyd Williams.

April 15-16. Meeting of Committee on Africa Rural Social Science Program. The Hague, Netherlands. Dr. W. K. Gamble.

May 10-13. Workshop for Senior Agricultural and Rural Development Officers, Ibadan, Nigeria. Sponsored by the Africa Bureau of the United States Agency for International Development. Presentation on activities of ISNAR by Dr. T. Ajibola Taylor.

May 12. Meeting of Board for International Course on Research in Agriculture. Wageningen, Netherlands. Dr. W. K. Gamble.

May 27-28. Informal meeting of bilateral and multilateral donors concerned with agricultural research in Africa. Sponsored by World Bank. Paris, France. Paper by Dr. W. K. Gamble: Design of appropriate national agricultural research systems.

June 14-17. Impact of Agricultural Research. Sponsored by United States Agency for International Development, Leesburg, Virginia, U.S.A. Paper by Dr. Floyd Williams: Consortia of donors for national research system development.

June 30-July 2. Advisory Committee Meeting, Africa Rural Social Science Study. Nairobi, Kenya. Dr. W. K. Gamble.

August 9-13. Workshop on Development Support Communications Training in ASEAN Countries. Sponsored by SEARCA, University of the Philippines, Los Baños, and IRRI. Los Baños, P.I. Dr. K. Robert Kern, invited observer.

August 25-28. International Course on Research in Agriculture. Sponsored by International Agricultural Centre, Wageningen, Netherlands. ISNAR guest lecturers: Dr. Matthew Dagg, research planning; Dr. Byron T. Mook, personnel and training; Dr. Z. M. Nyiira, research management; and Dr. K. Robert Kern, communications.

October 27-29. Second Extraordinary Meeting of the Inter-American Group on Agriculture. Sponsored by IICA. San Jose, Costa Rica. Mr. Alexander von der Osten, invited observer.

November 22. Meeting of Cooperative Development for Africa (CDA), Technical Committee on Agricultural Research. Paris, France. Dr. Rudolf Contant, official observer.

March 2. Observations on communications in national agricultural research systems in the Pacific. Seminar at the East-West Center Communications Institute, Honolulu, Hawaii, U.S.A. Dr. K. Robert Kern.

July 15. Communications in national agricultural research systems: A review of early observations. Seminar at the Department of Journalism and Mass Communications, Iowa State University, Ames, Iowa, U.S.A. Dr. K. Robert Kern.

July 28. Planning research programs. Seminar at the University of East Anglia, England, U.K. Dr. Matthew Dagg.

August 4. The role of agricultural research in developing countries. Paper presented to the Fijian Institute of Agricultural Sciences. Suva, Fiji. Dr. W. K. Gamble.

October 24. Improving the global system of support for national agricultural research in developing countries. Introductory paper to Asian Conference on Agricultural Research for Development: Potentials and Challenges. Jakarta, Indonesia. Dr. W. K. Gamble.

Papers or presentations.

Reports of ISNAR activities.

1982 Publications

- Guyana: The Agricultural Research System. March 1982.
Report of the ISNAR review mission to Guyana.
- Annual Report '81. June 1982. First annual report of ISNAR.
Program and Budget for 1983. June 1982.
- The Crops Research System in Papua New Guinea. June
1982. Report of the ISNAR review mission to Papua New
Guinea.
- La Recherche Agronomique en Cote D'Ivoire. October 1982.
Report of the ISNAR review mission to Ivory Coast.
- La Recherche Agro-Technologique en Cote D'Ivoire.
October 1982. Report of the ISNAR review mission to
Ivory Coast.
- Le Systeme National de Recherche Agricole au Rwanda.
December 1982. Report of the ISNAR review mission to
Rwanda.
- Solomon Islands Agricultural Research, Extension, and
Support Facilities Project. December 1982. Report of an
ISNAR project preparation mission for the Asian
Development Bank.
- A Review of the Agricultural Research System of Malawi.
August 1982. Report of the ISNAR review mission to
Malawi.
- Fiji: Review of the Research Division. September 1982.
Report of the ISNAR review mission to Fiji.
- Strengthening Agricultural Research for National
Development in the South Pacific (in press). Project
proposal prepared in association with the Asian
Development Bank.
- Haute-Volta: La Recherche Agronomique et Zootechnique
(in press). Report of the joint review mission to Upper
Volta by World Bank, Food and Agriculture
Organisation of the United Nations, and ISNAR.
- Agricultural Research Manpower in Kenya (in press).
Report of a study of resources and projected needs for
manpower in agricultural research in Kenya, conducted
at the request of the National Council on Science and
Technology.

Agricultural Research in Pakistan (provisional title – in press). Report of a review mission.

The Role of Rural Social Sciences in Africa. May 1982. A conference held at Bellagio, Italy in November 1981 with support of the Ford Foundation and the International Development Research Centre, Canada.

The Role of International Associations in Strengthening National Agricultural Research. May 1982. A conference held at Bellagio, Italy in December 1981 in cooperation with IADS and IFARD, with the report published jointly by ISNAR and IADS.

Agricultural Research for Development: Potentials and Challenges for Asia (in press). Report of a conference sponsored jointly with the German Foundation for International Development and IFARD, held at Jakarta, Indonesia, October 24-29, 1982.

Training Needs for Agricultural Research Managers in Developing Countries (provisional title – in press). Report of a colloquium sponsored by the Educational Development Institute of the World Bank and ISNAR, held at The Hague, Netherlands, September 13-17, 1982.

Agricultural Research Management in Latin America (provisional title – in press). Report of a conference sponsored jointly with the Government of Spain and IFARD, held at Madrid, Spain, September 27-30, 1982.

Mosher, A. T. Critical Requirements for Productive Agricultural Research. May 1982.

Mosher, A. T. Algunos Requisitos Críticos para una Investigación Agrícola Productiva. September 1982.

Mosher, A. T. A French translation of the above work is in press.

Mosher, A. T. Trois Moyens Pour Stimuler La Croissance Agricole (in press). A translation to French of a work of Dr. Mosher, Three Ways to Spur Agricultural Growth (published in 1981 by the International Agricultural Development Service).

Conference reports.

Literature on research management.

1982 Consultants

Dr. J. R. Anderson University of New England Armidale, Australia	Member of review mission to Papua New Guinea
Dr. Isaac Arnon Independent consultant Israel	Member of review mission to Ivory Coast Preparation of case studies for training
Dr. Arie Beenhakker University of Florida Tampa, FL, U.S.A.	Member of review mission to Ivory Coast
Dr. Paul Bennell University of Sussex Brighton, U.K.	Member of manpower development project team for Kenya
Dr. N'Guetta Bosso Ministère de la Recherche Scientifique Abidjan, Ivory Coast	Member of review mission to Upper Volta
Mr. William Brookson Independent consultant Bampton, U.K.	Member of review mission to Fiji Member of project preparation mission to Solomon Islands
Dr. Joseph Casas Economie Rurale, INRA Montpellier, France	Member of review mission to Ivory Coast
Dr. Joseph Chang Independent consultant Augusta, GA, U.S.A.	Consultant for preparation for seminar in Rwanda
Dr. Edward Clay University of Sussex Brighton, U.K.	Coordinator of program for Rural Social Sciences in Africa
Dr. R. W. Cummings, Sr. Independent consultant Raleigh, NC, U.S.A.	Member of review mission to Pakistan
Dr. Kurt Egger Universitat Heidelberg Heidelberg, West Germany	Member of review mission to Rwanda
Mr. Roberto Egli World Bank Washington, DC, U.S.A.	Member of review mission to Rwanda

Dr. Edward Felton Wake Forest University Winston-Salem, NC, U.S.A.	Consultant for preparation and participation in training program with IITA, Nigeria
Dr. Abdel Ghaffar University of Khartoum Khartoum, Sudan	Participant in study for Rural Social Sciences in Africa Program
Dr. Elon Gilbert Independent consultant Bloomington, IN, U.S.A.	Member of review mission to Malawi
Dr. William P. Gormbley The Ford Foundation New York, NY, U.S.A.	Consultant on management policies and procedures
Dr. D. J. Griffith University of Reading Reading, U.K.	Member of project preparation mission to Solomon Islands
Mr. Jan Eric Haakansson IITA Ibadan, Nigeria	Consultant on accounting procedures
Dr. Lowell S. Hardin Purdue University Lafayette, IN, U.S.A.	Consultant in establishing liaison with North American institutions on research management and evaluation
Ms. Patricia Hill University of Wisconsin Madison, WI, U.S.A.	Consultant on development of library record system and staff training on word processing
Mr. Richard M. Jones CSIRO Queensland, Australia	Member of review mission to Fiji
Dr. A. B. Joshi Independent consultant Maharashtra, India	Consultant on report of review mission to Indonesia
Dr. J. S. Kanwar ICRISAT Hyderabad, India	Member of review mission to Pakistan
Dr. Mustapha Lasram INRAT Tunis, Tunisia	Member of review mission to Rwanda
Dr. Francis Lebeau Independent consultant Crystal Springs, MS, U.S.A.	Member of review mission to Upper Volta

Dr. Robert Luse
Independent consultant
Berkeley, CA, U.S.A.

Member of review mission to Guyana

Dr. Juan Carlos Martinez
CIMMYT
Mexico City, Mexico

Member of review mission to Ivory Coast

Dr. Luis Marcano
FUSAGRI
Caracas, Venezuela

Consultant for organizational support to
IFARD in Latin America

Mr. John B. McKenzie
Cranfield Institute of
Technology
Bedford, U.K.

Participant in management training course
at IITA and in preparation of management
cases for training

Dr. Ralph Melville
Independent consultant
Kent, U.K.

Member of review mission to Malawi

Dr. Milton Morris
Independent consultant
Gainesville, FL, U.S.A.

Editor and translator for documents
associated with REDINAA

Dr. A. T. Mosher
Independent consultant
Ithaca, NY, U.S.A.

Author of publication on Critical
Requirements for Productive Agricultural
Research

Dr. Barry Nestel
Independent consultant
Surrey, U.K.

Consultant on follow-up of mission report
to AARD, Indonesia; program leader for
two research management workshops

Mr. Jack H. Owen
University of Maryland
College Park, MD, U.S.A.

Writer in preparation of slide set on the
system of international agricultural
research centers

Dr. William J. A. Payne
Independent consultant
London, U.K.

Reviewer of research publication as part
of review mission to Fiji; member of
project preparation mission to South
Pacific

Dr. Jacques Pegatienan
University of Abidjan
Abidjan, Ivory Coast

Participant in Rural Social Sciences in
Africa Program study

Dr. E. P. Riezebos
Agricultural Economics
Research Institute
Wageningen, Netherlands

Member of project preparation mission
to Solomon Islands

Dr. Gaston Rimlinger Rice University Houston, TX, U.S.A.	Consultant in Rural Social Sciences in Africa Program
Dr. Guy Rocheteau ORSTOM Fort-de-France, Martinique	Member of review mission to Ivory Coast
Dr. Steve Shih-Min Lin AVRDC Tainan, Taiwan	Member of review mission to Papua New Guinea
Dr. James Spain CIAT Cali, Colombia	Member of review mission to Guyana
Dr. William Steele Independent consultant Bedford, U.K.	Member of project preparation mission to Solomon Islands
Dr. Burton Swanson University of Illinois Urbana, IL, U.S.A.	Member of manpower development project team for Kenya
Dr. T. Ajibola Taylor University of Ife Ibadan, Nigeria	Member of review mission to Papua New Guinea and consultant on follow-up to mission report to Kenya
Mr. Hal R. Taylor Independent consultant Falls Church, VA, U.S.A.	Editor-writer assisting in preparation of communications materials
Mr. Peter Thorpe Royal Tropical Institute Amsterdam, Netherlands	Consultant on development of library system
Dr. Jerry A. Warren University of New Hampshire Durham, NH, U.S.A.	Leader of seminar on providing statistical and computing support for national agricultural research
Dr. George Wellington Independent consultant Brooktondale, NY, U.S.A.	Member of review mission to Malawi
Dr. Frank Wiedijk Independent consultant Wageningen, Netherlands	Consultant for bibliography on agricultural research management
Dr. George Wilson IITA Ibadan, Nigeria	Member of review mission to Papua New Guinea