Report of a Meeting

Strengthening National Agricultural Research Systems in Africa

Nairobi, Kenya

March 6 and 7, 1981

ISNAR IFARD KNCST

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.

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, complementing the activities of other assistance agencies. In addition, ISNAR has active training and information programs which cooperate 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.

ISNAR is supported by a number of members of CGIAR, which is an informal group of more than 30 donors; it includes countries, development banks, international organizations, and foundations. In 1984, funding for ISNAR's core program was provided by:

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Strengthening National Agricultural Research Systems in Africa

Report of a Meeting of Managers of Agricultural Research Systems in 18 African Countries

Nairobi, Kenya
March 6 and 7, 1981

Sponsors

- International Service for National Agricultural Research
- International Federation of Agricultural Research Systems for Development
- Kenya National Council for Science and Technology

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Foreword

High-ranking officers in agricultural research systems of 18 African countries met at Nairobi, Kenya, on March 6 and 7, 1981. They discussed many facets of National Agricultural Research Systems, emphasizing means of strengthening them.

The meeting was sponsored by the International Service for National Agricultural Research (ISNAR), the International Federation of Agricultural Research Systems for Development (IFARD), and the Kenya National Council for Science and Technology (NCST), which acted as host.

Sponsors and participants share interests, but they have distinctly different roles. All national agricultural research organization representatives are both managers of research systems and potential beneficiaries of programs that strengthen these systems. IFARD emphasizes professional needs in national agricultural research. ISNAR has an international mandate to assist in strengthening national systems and enhancing the functional links between national and international bodies concerned with agricultural research.

This document summarizes the main themes dealt with in this two-day meeting. It offers some definition of roles of both ISNAR and IFARD -- each is relatively new in its area of interest. But in the main the document reports what managers of national agricultural research systems in Africa had to say on this subject.

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IFARD: International Federation of Agricultural Research Systems for Development

W.K. Agble
Vice President for Africa

Summary of presentation and discussion[1]

IFARD developed from steps taken in 1977 at Bellagio, Italy. Its objective is to promote and strengthen national agricultural research systems that will enhance and accelerate agricultural development. Its activities include exchanging agricultural research information and experiences; promoting development and exchange of manpower; evolving guidelines that can be useful in improving national and regional agricultural research systems and programs; and formulating strategy recommendations for consideration by governments and international bodies concerned with agricultural development.

IFARD cooperates and undertakes joint ventures with other bodies that share common objectives -- such as with ISNAR in the sponsorship of the present meeting. It emphasizes regionalization of activities, with regional vice presidents to give leadership, respectively, for Africa, Latin America, and Asia. The international Board of Trustees includes five officers, President M.S. Swaminathan (India), Secretary General J.D. Drilon, Jr. (Philippines)[2], Vice Presidents W.K. Agble, Africa (Ghana), S.W. Sadikin, Asia (Indonesia), and L.C. Marcano, Latin America (Venezuela), and two members, M.R. Genel (Mexico) and I.E. Muriithi (Kenya).

IFARD was planned with modest needs for funding. Most resources come from memberships -- of individual scientists and institutions. A magazine, Cornucopia, has been issued as a medium for information exchange.

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[1] The text of Dr. Agble's presentation is Annex 1 to this report.

[2] Deceased, June 1981

ISNAR: International Service For National Agricultural Research

W.K. Gamble
Director General

Summary of presentation and discussion[1]

ISNAR was created within the CGIAR system (Consultative Group on International Agricultural Research) and began operations in September 1980. It was chartered for a five-year period, with donor support assured, to be evaluated then in terms of a mission with three main purposes: (1) to strengthen national agricultural research capabilities in developing countries; (2) to serve as a linking mechanism between international agricultural research centers (IARCs) and national agricultural research systems; and (3) to serve as an intermediary to promote bilateral cooperation in agricultural research.

Focus on systems

With its primary focus on national agricultural research systems, ISNAR will, on request of a national government, review and help in the planning and implementation of improved agricultural research programs; conduct workshops on national and regional agricultural research issues; conduct training in research management; carry out studies into elements that appear to be essential in research management; and carry out a program to provide information on research management issues.

Constraints, priorities, capabilities, technology

In its review activities, ISNAR will give special attention to the constraints on agricultural production; the status of national priorities for agriculture within the nation's development policy; the structure and capabilities of the agricultural research system; and the availability of tested, economically sound technologies for the major crops in the country's agriculture. ISNAR will review and formulate development plans in collaboration with persons within the system, not as an outsider. It will work closely with personnel of the system as development plans are carried out, including making efforts to obtain necessary resources from donors and from the national government.

Strong systems essential

National research systems are essential for rapid agricultural development. The ultimate aim of technology-developing efforts of IARCs cannot be achieved without strong national systems where the materials can be tested and adapted to circumstances of farmers; and where there is capacity to work on localized problems that IARCs cannot deal with.

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[1] The text of Dr. Gamble's presentation is Annex 2 to this report.

ISNAR views the national system broadly, involving both the needs and realistic capabilities of the producer, the extension worker, the researcher, the research manager, and the policy maker.

QUESTIONS AND RESPONSES

Participants were pleased with the creation of ISNAR. It was described as timely and desirable, particularly for Africa; it can draw attention of governments to the importance of agricultural research and extension. Both are deficient, the participants declared. A number of questions, with associated discussion, dealt with expectations and with operational philosophy of ISNAR.

- What constitutes a "request" for ISNAR to be involved in a given country?

Level of responsibility

Key factors will relate to the level of responsibility and the degree of autonomy of the person or body making the request -- whether it can shape its own system -- and, of course, the unit's significance in relation to national agricultural needs.

- What kind of commitment does ISNAR need from a requesting country?

Commitment, receptivity

Commitment may be easier to discern than to define. It has several dimensions. One is an apparant willingness to keep a consistent level of funding behind agricultural research. Another is political receptivity to the value of a strong agricultural research system. The two may be closely related. Where there is receptivity, various means are available to make the case to strengthen commitment: case studies, cost-benefit analyses, documentation on research planning and management -- all tailored to administrators and policy makers.

- Will ISNAR only advise on a national agricultural research system, or will it be involved in program operations?

A small institution

ISNAR is a small institution in terms of staff and funding. It will utilize consultants in the areas of study and advice. Only in rare cases can ISNAR take a direct responsible role in implementation. Support by other donors will be needed in most cases. ISNAR will help formulate projects and help seek the necessary resources.

- Will ISNAR attempt to help a country on the basis of existing structures, or will it impose certain <u>a priori</u> requirements?

Flexibility important

In some cases the structures will provide sufficient flexibility for meaningful ISNAR interaction. There may be situations where ISNAR must insist on change to have an environment in which its involvement appears to be justifiable.

- Can a regional research organization utilize assistance from ISNAR?

Regional cooperation

ISNAR will seek to promote regional cooperation, especially where the resource base in small countries may not be equal to the task of mounting broad national agricultural research. This is a difficult area; national issues may stand in the way of joint actions. ISNAR will explore this area with interest and hope, but it cannot yet offer e definite statement about work with regional research organizations.

- ISNAR emphasis seems to center on research. Can it help influence linkages between research and extension?

Research and extension

There is no sharp dividing line between research and extension in a nation's agricultural production. Research is not complete until resulting recommendations have been tested and adapted on the farm -- and farmers have had a chance to validate the technology. In its role extension needs solid, research-based information. The ISNAR view is that national agricultural research, by definition, includes a system that carries information both ways from farmer to researcher and from researcher back to the farmer. In many systems, an extension service is part of that linkage and, as such, ISNAR will be interested in it.

- Some persons have expressed concern about the autonomy of international agricultural research centers. ISNAR is part of the same CGIAR system. How will ISNAR relate to the IARCs?

IARCs and national systems

Stronger national agricultural research systems, a major objective for ISNAR, improve the probability that IARC results will be used effectively. One of the ISNAR functions is to help link IARCs and national systems. Both the developing country and the centers stand to gain from ISNAR's catalytic role. Neither has reason to fear ISNAR as an intervention in their relationships.

- Many countries have taken models from elsewhere to design their research system, and some models have not worked well. Can ISNAR offer blueprints to help avoid those problems?

No blueprint offered

ISNAR offers no blueprints. National systems have their own distinctive historical background and political and cultural factors. ISNAR will attempt to sort out basic requirements for a viable system, beginning with a conviction that national programs should be determined in relation to national development goals.

- Will ISNAR take initiative for certain studies? Will it compile a research management literature that may be useful to persons in a system from which no specific request has come?

ISNAR will take initiative for certain studies seeking principles, if there are principles, for organization and operation of national agricultural research systems. Studies will be done only with government approval; published results will protect the identity of individual systems studied -- or they will not be published. This literature will be shared through publications, workshops, seminars with all who have a continuing interest in agricultural research management.

- Would it be possible for ISNAR to give priority attention to African countries requesting assistance?

Priority for Africa

ISNAR has an international mandate, and it would be difficult to give priority to one continent. In light of the food problem and the strong interest of the international community in Africa, however, it is reasonable to predict that African countries will receive major attention.

National Agricultural Research

History and many other factors are reflected in diversity in organization and function of agricultural research systems in African nations. They vary on many measures, as is to be expected. Discussants did not advocate any one system of organization for agricultural research. But they seemed to favor systems that are semi-autonomous, based on multidisciplinary approach and focused on a central criterion: how can the best interests of farmers be served?

Integrating university research

In addition to problems of coordination where research and policy elements are found in separate institutions, there are frequent difficulties in integrating university agricultural research. While results of practical interest and value may come out of university research and training, the fundamental link to government research and development goals is often weak.

Agriculture within national policy

Delegates stressed need for each country to develop a national policy for science and technology and to place agricultural goals clearly within it. Lack of a coherent research policy characterizes most national situations at this time; few have established research priorities that correspond clearly to national development policies and priorities. In some cases policies have been established concerning agricultural research, but the national policy has not been translated into requirements and practices that would make it effective. Too often little attention has been paid to socio-economic factors, such as pricing policies. The tendency for research policies to emanate from higher or separate bureaus offers no guarantee that the problems passed on to the research system are those of real significance to farmers.

It was suggested that farmers and farmer associations, marketing groups, and the extension service could make useful contributions in the development of production policies.

National policy an internal matter

National research policies and priorities are internal matters for a country. An outside agency may give useful support to policy development, mainly through dialogue and low-key advice. A weakness in many African countries is failure to maintain a sound data base for prompt analyses and projections essential in planning.

Discussants expressed satisfaction with some changes taking place. They noted a breaking down of the tendency to define a research problem within a narrow discipline; they prefer the emerging multidisciplinary approach. Also, they reacted favorably to instances where dissemination of results is being viewed as a legitimate concern of those doing research.

Two types of problems were cited in relation to funds to support national agricultural research. One is separation of the funding and staffing decisions from the departments which have responsibility for determining research programs. Another is insufficient funding: well-designed organizations cannot achieve significant results without operating resources. Some of the responsibility for inadequate funding should be borne by the research managers who are not sufficiently informative or persuasive as they interact with policy makers and politicians.

Informative, persuasive research managers

In a number of African countries , parastatal organizations exist to deal with specific agricultural problems, often a single commodity. Coordination becomes important between such organizations, and the needs remain to define more clearly and to combine policy formulation and implementation with real needs of the target group.

Manpower Development for Agricultural Research

Three topics embrace the principal issues in manpower development for national agricultural research: training, motivation and remuneration. All were said to be problems in all of the countries represented in the seminar.

Training. Several countries now have postgraduate education to train some of their own people; they also train students from other countries. Studies abroad remain an important element in developing expertise to match the research needs of individual countries. At the B;SC; level, an increasing proportion of students come from urban backgrounds -- which puts on the agricultural teaching staff a greater need to make the training practical in terms of production practices. Persons with university training in science were mentioned as a potential source of manpower for agricultural research. It was suggested that it should not be too costly to train such persons to utilize their basic science within agricultural specializations needed.

Urban reared need training in production

Most countries report that it is typical for a student to be selected and sent abroad for specialized postgraduate training,

but upon return the person is put into another role (often administrative) with little or no utilization of the specialized education.

Too few trained technicians

The image of a baseless or inverted pyramid was cited to describe the situation regarding support staff. There are usually too few and insufficiently trained technical staff to complement and carry through the many essential analytical and field tasks in research. It was not noted that training programs of international agricultural research centers (IARCs) provide an excellent opportunity to train support staff. It is equally important, discussants said, to use those technicians properly once they have been trained!

Dearth of skilled managers

Training for managerial staff ranks high in importance. There is a current dearth of people with managerial skills available to research systems in many African countries.

Donor influence

It was suggested that donors sometimes may have too much influence on a national system by their selection of candidates to support for overseas training. However, donors generally respond positively when a national system presents a good plan. ISNAR was encouraged to play a role in helping research managers establish their priorities for training and then to help search for donor support

Goals and expectations

Disincentives

Motivation for effective performance may involve a number of factors, including training and remuneration. Effective induction is important, including clear communication of goals of the system and what is expected of the staff member. Often, where induction of young scientists is weak, the staff member merely follows personal interests or continues along lines laid down in past training. Conditions of service, apart from remuneration, affect the desire of staff to function. Many prefer to stay near the centers, where living conditions are more pleasing for self and family; yet factors that should be studied may be found only beyond the reach of services that make for easy living. Note was taken of programs known in other regions where disincentives are associated with work at headquarters and greater emoluments earned at remote sites.

Inadequate pay scales

Remuneration interrelates with other factors in manpower development: level of training, tenure in work, etc. In many instances government pay scales are inadequate to retain competent agricultural scientists in their work. Studies in one or more countries showed average time in government research to be about 2½ years; in one country this could be compared to an average of 7 years in the parastatal agricultural research organizations. The private sector, parastatals, and the universities often pay better than government, and they may attract good graduates and experienced researchers to work that does not necessarily utilize their agricultural specialty.

Funding may affect other projects

Projects with external funding in some cases provide higher remuneration for local staff. These projects may pull research workers away from important ongoing government

research programs. Foreign funds can help upgrade and strengthen a line of work while the funds are available, but when the project ends the situation is likely to revert.

Agricultural Research and Production

The ideal model linking research and production was said to involve research based on farmers' needs, an extension system that reaches farmers promptly and effeftively, producers who can utilize the information and technology and who report back to extension and research workers. The ideal is seldom found in operation in African countries.

Complex linkages

Research and extension systems are often in separate ministries which implies complex interactions. Discussants also reported cases of weak, almost non-existent links even when both were in the same ministry. In one case cited, three ministries and one commodity commission have elements of the agricultural research and production chain -- and in that case, research results reached the separate units via the strong national planning commission which passed along instructions for implementing the research.

Good relations reported

Many spots of improved research -- extension relationships were reported. In some cases, extension workers are managing field trials: special field days for extension help them understand the studies and develop expertise with the trials. Extension staff may serve on research project committees, which means they can represent farmers' production problems to the researchers. Some countries are trying to make status and salaries comparable to help bridge the gulf where one service has been considered superior to the other. In one country a "farming system" has been conceived as a way to establish mechanisms that will disseminate the results of centralized research via decentralized extension to the farmers and obtain feedback; radio, bulletins and other mass media supplement the human network. In another small country with a ratio of one extension worker to 250 farm families, researchers conduct local tests at a network of small stations; annually research and extension officers meet to examine successes and failures and to determine future research and dissemination strategies.

Campaign approach

One alternative that does deliver the desired two-way interactions is the production campaign approach. In this way, often with outside funding, the several agencies come together in a single project. The focus is on a single crop or enterprise, typically with a "package" of recommendations and a combination of personal and media interventions with farmers.

Lack of links farmer-researcher

Delegates expressed concern that often the linkage systems do not involve the farmer and researcher directly. Some cases were noted where the research agency, in the absence of an effective extension system, was involved in taking its results directly to farmers.

Different categories of farmers present different needs to the system. Three principal categories discussed were: commercial farmers (usually literate and able to absorb extension information readily); emergent farmers who are entering the commercial category; subsistence farmers (many of whom are illiterate and least able to apply information on their own). The latter category may rank high in the national priorities; but typically the task to serve them falls to the least qualified extension worker who is most poorly supported with transport and other important services, such as research materials translated into language farmers understand.

Specific mention was made of good opportunities to improve dissemination by going to and through some of the people's own organizations. These include farmers associations, women's clubs, and the schools.

Summary points

In summarizing the delegates' discussion on the linkage of research and production, the rapporteurs made these points:

- Transmission of research results to farmers is an enormous and difficult problem.
- Research derives its justification from the goal of raising the level of farm production; results must, therefore, be applicable to the real farm situation.
- Extension workers must be well informed on results of research and enabled to transmit the results.
- No efficient structures seem to have evolved in the African countries represented at the meeting. Some mechanisms for linkages are proposed: field days; diffusion by radio and other mass media; campaigns for key crops; on-farm validation prior to dissemination of research results; and more.

International Cooperation and Technical Assistance in Agricultural Research

The research managers stressed their interest in stronger cooperation through regional and subregional efforts within Africa. They endorsed as a step in that direction the ISNAR proposal to work with regional organizations, notably AAASA, to update a 1974 publication, African Agricultural Research Capabilities. They want an inventory of research and training facilities in Africa as a means of identifying areas where cooperation can be sought.

Various needs for aid

Delegates identified needs for outside technical assistance in various areas: manpower development, especially at managerial and technical support levels;

funding for postgraduate training; refresher courses for research scientists; project development assistance, including assessing real manpower needs and means of internal reallocation of manpower; specific expert assistance, some of which could be short term, and operational funds to meet such needs as equipment, fuel and transport.

Few groomed as managers

Many research managers were promoted to their posts on the basis of achievements in research; few were groomed for the managerial post. They can be strengthened through management training. Different types of training were discussed. Some management training institutes operate now in Africa (Ghana and Kenya were noted), and they may be able to introduce courses that would be applicable. Seminars and conferences, on a regional or wider basis, were also suggested.

Seminars for policy makers

Other international assistance was discussed for technical support staff. The IARC training programs were cited specifically -- where their mandate provides what an African nation needs. Some top policy makers might be encouraged to understand agricultural research potential and needs through international seminars or conferences -- especially when visits are arranged to research facilities and fields. Research scientists need refreshers, also. A short attachment to an appropriate international center may be an excellent opportunity for adding to skills, for building self-confidence as a scientist, and for making personal acquaintances with others in the field.

More donor support for research

African countries continue to need donor support for research and development projects. Sources of funds and terms for their availability should be studied carefully to assure that the recipient country's interest is paramount.

Research is often long term and involves risk; is research an appropriate use of interest-bearing loans? Delegates said a study of that question would be helpful to them in determining where best to put investment capital. It was noted that the larger share of donor funds tend to go for development projects, with a smaller portion for research. It was suggested that a higher share should go to research.

African experts or expatriates

While there is merit in the use of African experts across national boundaries, there are also negative factors: managers in one country may not feel they should release one of their experts for work in another country; jealousies may arise regarding relative pay and status between national staff and the non-national Africans. (This is more likely to occur, it was thought, than when the expert is from an overseas country; the African expert may not be accepted or his advice attended to as readily as that of an outsider.)

Problems were voiced also concerning the use of expatriate experts. A major factor is that an outside donor may have problems recruiting truly top experts at home but is reluctant to take nationals from another country. One tends to get fresh PhDs or people about to retire; mid-career people who could do the most good are hard to find and may stay only a year or two, it was said.

Need often comes down to funds

Delegates expressed regret that ISNAR had not been established as a grant-giving body. Often, they declared, the need comes down to funds -- that's what is needed to move a program. It was reiterated that ISNAR will participate with national program leaders; where they support a given project in relation to the strengthening of the agricultural research capacity, ISNAR will help seek funds on behalf of the project.

Role of ISNAR in Strengthening National Agricultural Research

The three main purposes of ISNAR were supported by the African research leaders: strengthening national systems; linking international and national systems; and making available useful information related to management in agricultural research. Their specific suggestions emphasized three main areas (many of the observations have been set out earlier in the major discussion sections):

ISNAR to study national systems

Research Systems: Discussants endorsed the plan of ISNAR to make penetrating studies of national systems, giving attention (1) to the bases on which governments make policy decisions affecting agricultural research and set priorities for it, and (2) to seeking key elements that contribute to success in a national agricultural research system. They want ISNAR to heighten awareness in government of the potential benefits of agricultural research. And for their own operations, the delegates want help from ISNAR on how to identify and go about mobilizing the resources they need.

Help with priorities and manpower needs

Manpower and training: Since research effectiveness relies much on capable researchers and good managers, manpower development drew much attention. ISNAR assistance is desired in study of the relevance of training to a national system's needs, dealing with managerial, scientific and support staff, along with help in setting the priority for training among other demands on limited resources. The managers believe ISNAR can help a country determine its real manpower needs for agricultural research, also with respect to what can be done by reallocation within a system.

Their specific wants, where ISNAR was considered able to fill a needed role, include finding or developing training opportunities: training for technical support staff (what training and where is it available?); and training for research managers, especially in planning (ISNAR could work with others in structuring such training and in developing associated case studies). Participants were anxious to see ISNAR help in assuring suitable training facilities and opportunities in Africa.

Utilizing International Assistance: ISNAR was asked to give some study to the ways that outside agencies want to make their contributions to agricultural development, especially to examine the subject by criteria of compatibility with interests of the recipient country. Delegates wanted study also that would make it easier for them to identify potential sources of different kinds of services and to work effectively to get needed assistance. They expressed specific desire for assistance in training personnel in project preparation.

Examine compatability of interests

Discussants believed ISNAR can help identify a wide range of sources of assistance. They noted the potential help of well-developed agricultural institutions in Asia, Latin America and Africa, in addition to those in Europe and North America.

Help to identify sources

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International Federation of Agricultural Research Systems for Development (IFARD)

W. K. Agble,
Vice President for Africa

The International Federation of Agricultural Research Systems for Development is an international body that is professional in nature. Its membership is drawn from national agricultural research systems, including individual scientists, officials, and non-profit and governmental research organizations of developing countries. IFARD was founded in 1977 following discussions mainly among directors of national agricultural research systems, who had met in a conference in Bellagio, Italy.

The principal objective of IFARD is to enhance and accelerate agricultural development by promoting and strengthening national agricultural research systems and their programs through pursuit of the following activities:

1. exchanging agricultural research experiences and information in order to promote the growth of knowledge and competence of agricultural research systems of developing countries;
2. promoting activities for the development and exchange of manpower that would strengthen agricultural research systems;
3. evolving continuing guidelines for providing, coordinating and/or supporting services for improving national/regional agricultural research systems and programs; and
4. formulating strategy recommendations for consideration by governments and international bodies concerned with agricultural development.

Shares objectives

IFARD in some respects shares common objectives with other groups. The co-sponsorship of this meeting with ISNAR is an example. We hope the two bodies will continue to cooperate and undertake joint ventures. The setting provided here by our other co-sponsor, the Kenya National Council for Science and Technology, exemplifies the objective of competent research institutions established to lead and promote national development efforts.

Board, officers

Several groups may be identified among the bodies that function within IFARD. Membership at large comprises the General Assembly. The International Board of Trustees includes: President, Dr. M. S. Swaminathan, India; Secretary-General Dr. J. D. Drilon, Jr., Philippines; Vice President for Asia, Dr. S. W. Sadikin, Indonesia; Vice President for Latin America, Dr. L. C. Marcano, Venezuela; Vice President for Africa, Dr. W. K. Agble, Ghana; Dr. M. R. Genel, Mexico, and Dr. I. E. Muriithi, Kenya. Regional Governing Councils are formed to guide programs and activities within regions, where it is anticipated that major IFARD attention will be focused.

Various activities

IFARD activities have included: adoption of the Bellagio declaration; meetings of the international Board of Trustees in Mexico City, 1978, and New Delhi, 1979; participation in the Golden Jubilee Symposium of the Indian Council of Agricultural Research and the IFARD Global Convention on Agricultural Research and Education Systems for Development, both in New Delhi in September 1979; adoption of the New Delhi Declaration, 1979; preparation of Cornucopia, a magazine for information exchange; plus other consultations for international meetings, including this one and similar seminars this month in San Jose, Costa Rica, and Los Banos, Philippines.

Support for IFARD meetings and activities have come from the Ford and Rockefeller foundations and from the International Agricultural Development Service, as well as from ISNAR. Regional offices have no funds at the moment, which limits their activities.

Two recent meetings in Africa have been in line with IFARD purposes, the CGIAR review meeting and the present seminar. Nonetheless, efforts will continue to promote a meeting of the African Regional Council in the future.

Annex 2

International Service for National Agricultural Research (ISNAR)

W. K. Gamble,
Director General, ISNAR

A great deal of information on the problems of agriculture in Africa has been presented from a variety of sources in recent years. The problem of low agricultural production in Africa is serious, and the need for improvement is urgent; agricultural production in almost every country lags behind projected food requirements. As one looks back at national efforts in several countries to organize and carry out programs to rapidly increase food production, there are few examples of success, even with massive inputs into food production campaigns.

Why low food output?

What are the reasons for this low output of food crops? Is the technology available in Africa and is its delivery to the farmer the only thing lacking?

I do not believe this to be the case. Several major food production campaigns in Africa have had little success where they have proceeded on the assumption that appropriate technology was available. I hasten to add that I have no ready answer to the complex issues involved in the reasons for low production, but I do note that I have seen little evidence of a readily available improved agricultural technology that has been tested and found relevant under farmers' field conditions.

It is my hope that together we can analyze the problem and determine a strategy which we can pursue together to bring about a

Look at these questions

noticeable improvement in agricultural output in the near future. In order to bring this analysis I suggest we need to look at the following questions:

1. What are the constraints on agricultural production in the country you represent?
2. What are the priority issues in agricultural production that must be addressed -- human, biological, policy and structure
   a. by whom?
   b. in what time frame?
   c. with what resources?
3. What is the status of a research and development plan and strategy for agriculture in each country which documents the above points?
4. Are the goals of agriculture well stated and widely understood in your country, both for its own development and in relation to national government?
5. To what degree is there an improved technology for the major crops that have been tested under farmers conditions and been found relevant and economically viable under existing policy and pricing structures?

It is important that we look at these issues together and that the information relative to the questions come from you. External sources can help in documentation, analysis, planning and implementation of programs, but they can only help if there is accurate relevant information for decision making and if there is a strong national commitment to an action program.

As we proceed in our discussions we should remember that agriculture does not stand alone; it must be put in the context of national development.

In the report on African Agricultural Research Capabilities[1/] in 1974 it was stated:

> "The Committee recommends that all efforts be made to bring natural and social scientists to work closely together in conducting research that will help national decision makers predict the consequences of alternative courses of action in determining priorities in agricultural development."
>
> "The Committee points to three broad problem areas as key ones urgently in need of solution in Africa:
>
> 1. Improving standards of nutrition and raising the level of food production to satisfy rapidly increasing market demands (i.e., to improve standards of living while providing a constant more rapid flow of raw materials for national industries, substitutes for agricultural imports and crops for export);
> 2. Helping alleviate the uneven development that takes place between farm and non-farm sectors of rapidly growing economies of African nations; and

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1/ African Agricultural Research Capabilities. National Academy of Science, Washington, D.C. 1974, pp 186-187.

3. Ensuring that agricultural research contributes properly to a sound national agricultural policy and that agricultural policy itself plays its appropriate role in national and international science policy."

These are only a few of the recommendations made in this report on African Agricultural Research Capabilities. However, they are relevant to my earlier comments on production needs and fitting agriculture into national development policy.

Positive impact on production

If together we expect to make a significant positive impact on agricultural production, we need to fully understand the existing research base. The study by the National Academy of Sciences had a distinguished group of African scientists with which it collaborated on the study, the information base brought together for the report in 1974 is still the best available data source on the subject. In the conclusions of the report there was a recommendation that the information be updated after five years. More than this period has passed, and I believe it would be timely and appropriate to update the report. Therefore, I propose that this task be given high priority. It could be undertaken by ISNAR under joint sponsorship and in cooperation with the Association for the Advancement of Agricultural Sciences in Africa (AAASA), the African Association of Faculties of Agriculture (AAFA) and the International Federation of Agricultural Research Systems for Development (IFARD). If this proposal is of interest to you, perhaps we can discuss it at some time during this meeting. I see it as an important part of the information base we require as we plan for agricultural research and development in the near future. If you determine that the subject is important and of high priority, ISNAR would be prepared to provide the start-up funding and organization for the study, join with you in seeking additional resources, and ISNAR would assure publication and distribution of the results of the study in a format similar to the 1974 report.

Research framework

Let me return to agricultural research in the framework of strengthening national agricultural research systems specifically to my point on non-availability of relevant packages of improved technology. In Asia the "Green Revolution" resulted from a package of technology consisting of improved crop varieties that were highly responsive to fertilizer inputs and controlled water. A package of technology in the Africa situation will probably look different.

One would expect significant inputs from plant breeding, but there will be considerable other variability because of problems of timely availability of fertilizers, insecticides and other inputs. Also, the infrastructure in terms of transportation and marketing may be less well advanced in some countries as compared with others in Africa or with Asia. A further complication, as you well know, is the diversified cropping or farming systems in Africa. Farming systems research is difficult because of the complexity of factors and often its close relationship to strong cultural traditions. This research is not just the technology of individual crops or equipment, it involves interaction of crops in intercropping, relay croppping and fallow conditions.

Farming systems research

A very good sign is that national governments, research institutes, researchers and donor agencies are increasingly turning their attention to farming systems research and recognizing its importance in Africa.

As we look at agricultural research in Africa, and here, I am speaking primarily of Sub-Saharan Africa, we need to sharpen our focus and priorities. The approach taken in the past several years appears to have given few positive results in terms of real production output.

Not just lack of resources

It is my observation, and this appears to be borne out by others, that the relatively poor showing of agriculture in Africa is not just a result of lack of human and financial resources. There are countries in Africa with these resources (Nigeria for example) which have shown little evidence of increased agricultural output.

We need to analyze and understand the reason for such cases. Has the research in these countries been appropriate in relation to the problems? If so, why has it not been adopted or not brought positive results? Are policy issues blocking the implementation of the research results? Some persons blame farmers for not accepting "improved technology", but I am not among this group. Throughout Asia, Latin America and Africa, wherever I have worked or travelled, I have found farmers readily accept improved agricultural technology if consistent significant economic benefits can be demonstrated to them from adopting the new practices or improved genetic material. What is required, in my opinion, is a research system which identifies the critical constraints that truly limit production at the farm level, or in policy or infrastructures, and then to be highly responsive with priorities that can be met within available human and financial resources.

Responsive research system

In a number of cases external assistance may be required. Donor agencies appear to be ready to provide support, both human and financial, where there is evidence of a well-developed plan, organization and policy for a research/delivery system that will, if implemented, meet the challenge to overcome lagging agricultural production. I believe I correctly interpret that many of the donor agencies are becoming increasingly reluctant to fund ad hoc projects, but instead wish to see a well-developed plan and then to determine how donor resources can best fit into and support the successful implementation of the plan. The planning for a national research system is something in which many of you have been engaged, to which you have given much thought. It will be useful in our discussion if we can identify the key elements and structure of a plan which takes into account the real situation in your respective countries. Let me note what I believe to be the key elements and resources for a highly productive national agricultural research system. I will list only the major headings. We can modify them and fill in details in our discussion if you concur to the importance of the issue.

The key elements

In planning for a national agricultural research system [1/] there must be:

1/ Here I wish to recognize the contributions of Dr. Floyd Williams, U.S.A.I.D., Washington, D.C., to structuring the elements for planning of national agricultural research systems which he has shared with me

1. an understanding of the existing system, its strengths and weaknesses, the linkage among the several agencies serving the agricultural sector and the interface between farmers, the extension service and research;

2. an understanding of how the agricultural sector fits into the national development goals;

3. a means for regular evaluation of the implementation of the plan and modification as may be required in light of experience;

4. a means to quickly achieve visible positive results in a crop or other visible means by which the administrators and the public can see achievements.

In order for any plan to work there must be:

1. from government at a high level, a strong commitment to the plan and its objectives and to the provision of the required resources;

2. a strategy to move research along the desired path, with a full recognition of the cultural, social and political context in which it is to function;

3. a clear statement of interaction to take place among the various agencies or institutions or people who are engaged in different parts of the system;

4. a well-developed time frame for implementation of the plan with staff and financial requirements well documented for specific time periods in the plan;

5. a well-documented budget for recurrent costs to assure funding for all essential cost items -- not just for staff costs, as has been the base in many country situations;

6. adequate provision for essential infrastructure costs and for the infrastructure to be in place in keeping with staff and research needs;

   Please note I have indicated essential as a key point, and I wish to emphasize that the infrastructure should be in keeping with needs, which may not be the same as wishes.

7. a well thought-out schedule for staff training and development in keeping with needs;

8. an ordering of priorities and implementation of research on a basis of well-established and well-founded priorities;

9. an evaluation procedure which will keep the plan current;

10. a procedure for communication to all parties concerned and an understanding of the objectives of the plan and of its operation;

You will undoubtedly have additional points and modifications to suggest. I welcome your comments and hope we can discuss the issues in order to arrive at workable solutions.

Plan for external support

I have emphasized the importance of well-articulated plans for agricultural research/development. I reemphasize their importance related to your possible interest in obtaining external resources in support of your national agricultural research systems. There is a strong interest in the donor community to support the strengthening of national agricultural systems, but the potential donors wish to see well-designed, realistic plans for national agricultural research systems, plans that are well-documented with essential data on constraints, policy, human resource requirements, time frame, infrastructure requirements, training requirements, organization and clear evidence of the openness of the system from the producer to the extension worker to the research staff to the policy makers and back.

ISNAR purpose

Finally, in closing, let me say a brief word about ISNAR. I will quote from ISNAR's Constitution since it clearly expresses what I wish to say:

1. The purpose of ISNAR is to help strengthen national agricultural research capabilities in developing countries. This includes assistance in identifying research problems and in formulating research strategies and policies, assistance in building up an adequate institutional infrastructure and other research facilities, as well as in promoting specific national or regional research programs. The ultimate goal is to enable developing countries to plan, organize, manage and execute research more effectively from their own human, national and financial resources.

2. ISNAR will serve as a linkage mechanism between the International Agricultural Research Centres of the CGIAR system and national agricultural research institutions.

3. ISNAR will serve as intermediary between interested partners in order to promote bilateral cooperation in the field of agricultural research.

ISNAR is at its formative stage, planning its program and defining its scope of work. It has established a framework of activities, but it still must test them against real field problems to determine what modifications are needed to serve national programs best. Therefore, we welcome this opportunity to meet with you, to discuss with you and to learn from you during these days together and in the months and years ahead.