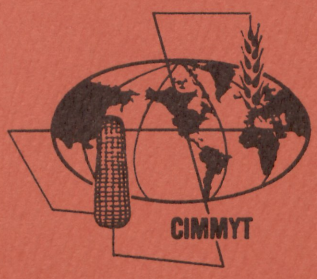
Issues in Organization and Management of Research with a Farming Systems Perspective Aimed at Technology Generation

Proceedings of a Workshop



isnar

Centro Internacional de Mejoramiento de Maíz y Trigo

International Service for National Agricultural Research

The International Maize and Wheat Improvement Center (CIMMYT) is an internationally funded, nonprofit scientific research and training organization. Headquartered in Mexico, CIMMYT is engaged in a worldwide research program for maize, wheat, triticale and barley, with emphasis on food production in developing countries. CIMMYT is one of 13 nonprofit international agricultural research and training centers supported by the Consultative Group for International Agricultural Research (CGIAR).

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 only center within the CGIAR network 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.

CIMMYT and ISNAR are supported by a number of members of CGIAR, which is sponsored by the Food and Agriculture Organization (FAO) of the United Nations, the International Bank for Reconstruction and Development (World Bank), and the United Nations Development Programme (UNDP), and which is an informal group of more than 30 donors; it includes countries, development banks, international organizations and foundations.

Citation:

Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), and International Service for National Agricultural Research (ISNAR).
Proceedings of a Workshop. Issues in Organization and Management of Research with a Farming Systems Perspective Aimed at Technology Generation. 1984. Edited by M. Joseph Chang. The Hague, Netherlands.

Issues in Organization and Management of Research with a Farming Systems Perspective Aimed at Technology Generation

Proceedings of a Workshop
The Hague, Netherlands
September 27-30
1983

Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT)
Apdo. Postal 6-641
06600 Mexico, D.F.

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

3.8 Framework for Organization and Management of Agricultural Research with a Farming Systems Perspective

M. Dagg
Senior Research Officer, ISNAR

This paper is intended as a bridging exercise between the plenary sessions on country case studies and separate discussion groups on aspects of organization and management The views expressed are not necessarily those of ISNAR.

Introduction

Most countries have a national agricultural research system – for better or worse. Few have given much thought as to how to incorporate "farming systems research" into the established system. One of our main tasks is to see if there are some basic elements of organization and management that can be adapted to particular systems so as to bring a better farming systems perspective into the process of technology generation. What evolutionary modifications can be made to the existing system so that the distinctive contribution of farming systems perspective can be brought to bear to improve the research system? Or is revolutionary change needed?

ISNAR has had to face a similar issue more generally: what basic elements of organization and management are needed to enable all aspects and methodologies of agricultural research to make their distinctive contributions efficiently and harmoniously in the national system? Many of the research methodologies are better known and recognized than those in farming systems research and, therefore, more readily incorporated, but the essence of the problem is similar.

To provide some common basis for an approach that would be relevant to systems of such disparate countries as the Solomon Islands and Indonesia, ISNAR has had to develop some general concepts of what should be the role and nature of a national agricultural research system in developing countries. These might help as a framework for our subsequent discussion. In particular, some functions of a national agricultural research system seem to be essential, no matter the size of the country or the strength of the research service. The mechanisms for carrying out these functions will vary considerably from country to country depending on the conditions of the countries.

Bringing a Farming Systems Perspective into the Functions of a National Agricultural Research System

Assuming that the main role of a national agricultural research system is to support national agricultural development in planning and production, there appear to be three main duties (the third group, the research community, usually receives adequate attention and it is not included in the diagram):

* To make available to the government, in an appropriately interpreted form, key elements of information on which effective agricultural policies and reliable development plans can be based.

* To make available to the producers, through appropriate channels, detailed management, biological, and economic information on which they can base their crop and livestock production patterns. Such information must be based on adaptive research at the producers' level of management.

* To develop and maintain a group of well-trained, competent scientists in active research positions, capable of sustaining and interpreting national and international scientific advances for the benefit of national development.

These three main duties also define the three main groups of clients for the research system: the policy makers, planners, and development agencies; the primary producers; and the researchers – on the world scene, colleagues and peers, and the researcher himself. One important task of research management is to achieve an appropriate balance of research effort

among these clients, and there must be effective instruments to bring this about.

A farming systems perspective in the research system will clearly have a great contribution to make in what sort of information is channeled to the producer, especially to smaller, unsophisticated farmers. However, research resources are allocated by government, and it may not be interested in smaller farmers. It is up to the research service to ensure that the government has good information on which to base its policies.

Cycle of Functions

Starting with the major clients to be served, the main research functions can be represented simplistically (Figure 1), in a cycle that begins with the needs of the clients and ends in feeding information back to the clients.

Identify research priorities

The cycle starts and finishes with the major national clients of the research system, the policy makers, planners, and development agencies, and the primary producers. Their prime needs for information and better technology determine the key research priorities.

Not all needs can be dealt with, and hard choices must be made. There is need for a forum in which different interests can be presented. It is important that a sound "farming system perspective" be brought to bear at this point in the research planning process to ensure that criteria particularly appropriate to the requirements of producers are included, and that their genuine interests are skillfully interpreted and reflected in defining priorities for research and institutional development. At this point, major decisions are made on the strategic allocation of resources for research, leading to a plan for research, and this is fundamentally a "top-down" process stemming from national goals and objectives.

Develop research program

The formulation of the research program is a very different process, and a different organization is required to carry out this function. It is essentially a bottom-up process. The national agricultural research program comes from the aggregation of commodity, departmental, and station programs, which come from approved suggestions of individual researchers for experiments or studies. It is important that researchers be well aware of the priorities in the research plan, but the emergent research program will depend particularly on the technical knowledge, creativity, and motivation of the researchers trained in various disciplines. The research program is also derived from balancing the needs for better information and technology with the personnel and facilities available (or likely to be available) and the potential for success in supplying and applying the needed information or technology. This process clearly needs a mechanism for interdisciplinary review – as near as possible to the grass-roots level of program formulation so that a broad value system can be applied to proposal, approval, and selection of projects.

If a farming systems research perspective is to influence the generation of new technology, it is at this grass-roots point of program formulation that it must make itself felt, and the organization must be accommodating enough to permit this impact: for instance, at a formally constituted interdisciplinary body to conduct a review of research proposals at an early stage, scientists from a farming systems research group can act as scientifically well-informed proxies for the producers, and bring to bear a value judgment at a stage in research preparation when it is still easy to make changes. It is relatively easy for management (if it wishes) to give such a body power to exercise some control, for example, formal approval by a majority before transmission of a proposal. The meetings of such a body are also useful for the interchange of relevant research findings and the basis for argument and justification for programs (and policies) at higher levels. In some circumstances, it might be valuable to include extension staff, or it may be better to have separate sessions on trials in which they have direct involvement.

Assess and develop manpower

A third function of the research system is to ensure that there are appropriate personnel to devise and carry out the research program. This is a large and complex operation involving recruitment of a suitable balance of staff in different disciplines, appropriate staff development programs, and the provision of a research environment to encourage research efforts and retain well-trained staff – including a scheme of service which adequately rewards research performance. The introduction of new methodologies involving unfamiliar disciplines, or new uses of old disciplines, gives rise to trouble in recruitment because it is not widely apparent what contribution the methodology can make. It takes some time before the approach is common enough for recognition as a relevant "discipline" to qualify its exponents for appropriate rewards.

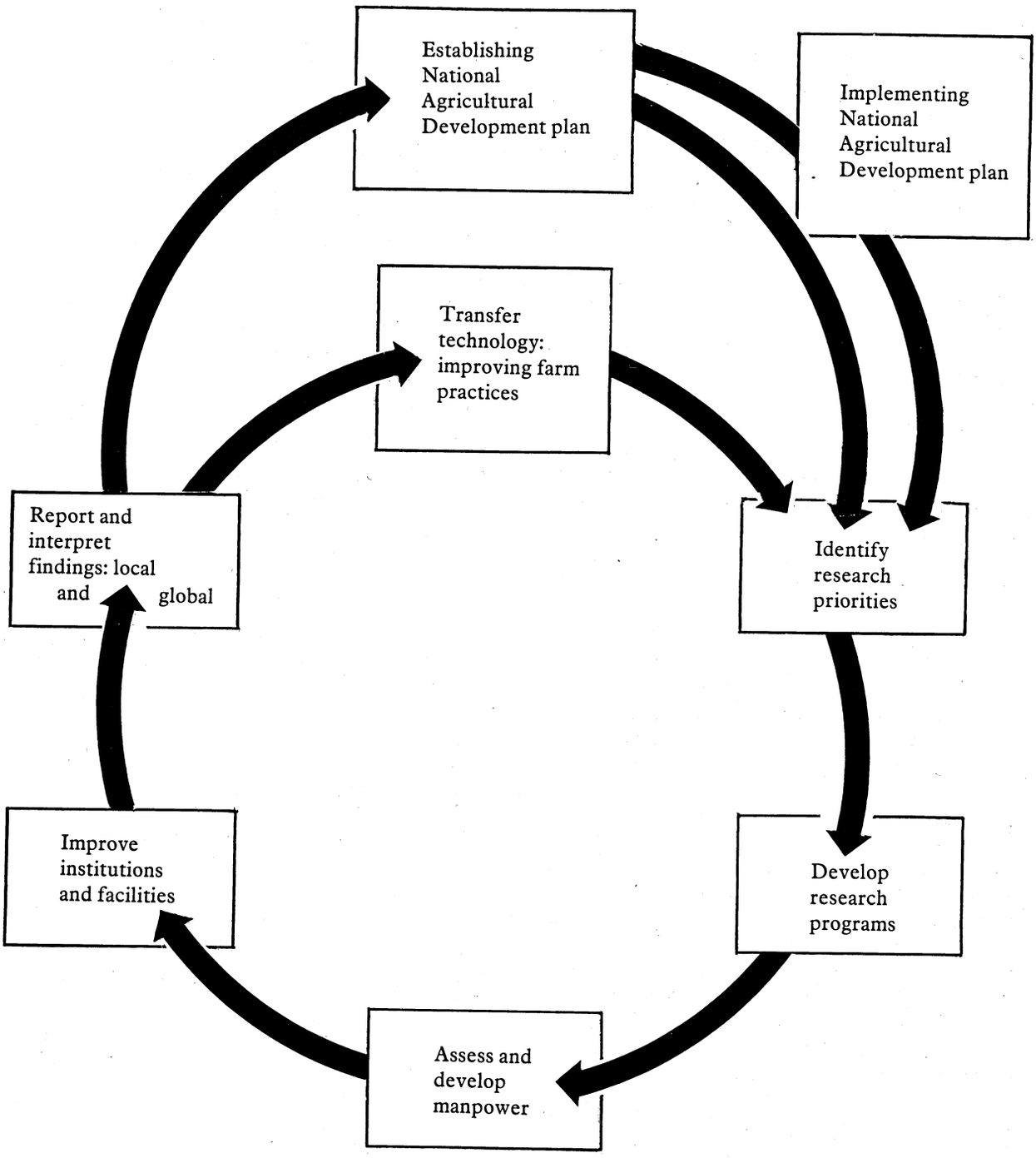


Figure 1. Planning for implementation of national agricultural research

There are "research" schemes of service in a few countries that reward research performance in addition to administrative responsibilities, but a reward system outside narrow disciplinary values is still difficult to achieve. The move towards integrated crop research in a team has been going on for some time, but team achievement in improvement of crop productivity is still hardly recognized as a basis for promotion. Farming systems research is broader still and even more divorced from disciplinary recognition.

It may prove to be necessary to strive for some specific recognition of the approach in order to give a focus for recruitment, training reward, and promotion. The mechanisms to bring this about must fit into a conceptual framework that gives researchers a chance to work. Central to the farming systems perspective is the need to use a value system based on the needs of the farmer as the main client. Thus the "good" technology created, or the "good" object and outcome of an experiment, is not to be based on its scientific or knowledge-generating excellence, or even that of crop production efficiency. This is likely to require a profound shift of emphasis in research management, and a considerable degree of firmness by management to keep the thrust of research work towards the farmer's interests – or rather to maintain a judicious balance among farmer's, government's and researcher's interests (because the balance is usually well away from the farmer's interests).

Improve institutions and facilities

Suitable research facilities are needed if well-trained research scientists are to be able to give a good return on the investment in personnel. The facilities usually include farms, research stations and equipment, and adequate current funding for continuity of a vigorous research program. The physical needs of traditional research methodologies are familiar to many administrators, but the distinctive needs and costs for farming systems research are not yet so well known.

Report and interpret local and global findings

In general, the research service is concerned with reporting its findings in an appropriate form to its major clients: the government planners, the producers, and the research community. There is a need for establishing appropriate (two-way) channels of communication to each of these groups. However, in the particular circumstances of this workshop, the internal communications channels within the research organization are clearly paramount. These are intimately linked to the creation of strong mechanisms for the formulation of the research program at an early stage by interdisciplinary review panels.

Monitoring and evaluation

The completion of the cycle in reporting the product of research activity back to clients is a key step in monitoring the progress and effectiveness of the research sector. Evaluation, like beauty, tends to reside in the eye of the beholder, the value system of the client. It is important for the research service to recognize its major clients and to ensure that the thrust of the research work and its outcome are expressed clearly to the clients in terms they appreciate. Contribution from a farming systems perspective in this respect is as valuable in assessing the end product as it is or was in formulating the research project.

Requirements of Organization to Incorporate a Farming Systems Perspective in Research towards Technology Generation

The requirements of a research organization to incorporate a farming systems perspective will depend to a certain extent on the objectives of the organization and on the methodology used for farming systems research. However, in general, the material facilities additional to those of a traditional research station would involve support for a core group of scientists for an exploratory or diagnostic survey of farmers' needs and more capacity for conducting on-farm trials. In disciplinary terms it usually implies an addition of social scientists.

This group must have intimate contact with the existing technical scientists to be able to deliver information to encourage them to work on key improvements to the agronomic system. It must also have good lines of communication to policy makers to encourage them to generate improvements in institutional arrangements. (And it will need to have good links to the delivery or extension system.)

In practice, this requires a shift in all of the main functions of the research system, beginning probably with an improvement in the articulation of the farmers' technical needs at the political level. It is important to have a voice at the strategic research planning stage (where government interests tend to dominate), and at the research program formulation stage (where researchers' interests tend to dominate). The recognition and evaluation of the team research work done for the farmers' good is of critical importance for the career satisfaction of scientists working with this thrust.

What sort of major structural arrangements might be appropriate for incorporation of farming systems

research? Several structures have been tried or proposed with varying degrees of promise. No comprehensive discussion is attempted.

Major difficulty arises here in that farming systems research addresses a wide operational field. We have concentrated on the contribution of a farming systems perspective/farming systems research on the generation of new technology – and its linkage with the technical research teams; but farming systems research is equally concerned with on-farm testing of developed technology and therefore closely linked with the technology delivery system and extension. Structural arrangements must at least take care of these two aspects of farming systems research.

Separate visibility and status come mainly from financial and administrative responsibility, but the main contribution of a farming systems perspective to technology generation is perhaps through the other line of control: responsibility for the content of the research program. Some of the structures proposed are included in the following list, but discussion is left to the groups:

* A separate division for farming systems research to work alongside existing divisions within a department responsible for agricultural research.

* A separate division within a department responsible for planning or economic research.

* A separate division within a department mainly responsible for extension and technology delivery.

* A separate unit or team within an agricultural research division.

* A farming systems research team made up from component staff recruited from different disciplines within a research division.

* No farming systems research team at all; instead a general strengthening of desirable component disciplines within the administrative system and a strong cross-discipline structure for determining the research program (on a commodity or farming systems basis).

* Radical alternatives: Traditional research structures could be abolished and replaced with entirely new systems. For instance, there could be regional development-oriented research teams centered on a farming systems research group with technical research units fulfilling service roles by feeding in new components, while additional testing teams followed up with adaptive trials.