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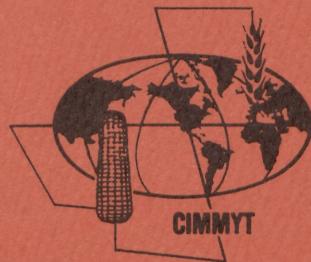
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Issues in Organization and Management of Research with a Farming Systems Perspective Aimed at Technology Generation

Proceedings of a Workshop



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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.

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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.

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

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4. Discussions

Agricultural Research with the Farmer in Close Focus

Is research with a farming systems perspective aimed at technology generation in the near term (4 to 5 years) the same as Farming Systems Research/On-Farm Research (FSR/OFR)? Participants at the workshop could not agree on an answer to this question in spite of the fact that the country and regional experiences described at the workshop were weighted toward FSR/OFR.

Although recognizing its benefits under certain circumstances, some participants considered FSR/OFR to be a premature and unwarranted attempt at rigidly delimiting a necessary and fruitful attitude: namely, the endorsement of interdisciplinary research judged in terms of its utility to farmers. Research with a farming systems perspective is held to imply (1) at the conceptual level, an emphasis on specific sets of farmers as well as a concern for immediacy, and (2) at the operational level, the use of interdisciplinary capacity for the development and use of diagnostic techniques for locating and ordering problems and solutions in terms of magnitude of payoff in the near term.

Those supporting FSR/OFR argued that though they would agree to a distinction between FSR "in the large" and FSR "in the small (FSR/OFR)," the latter is the only one which has proved itself. The FSR/OFR approach was described as well fixed and proven, capable of leading to significant productivity increments for small farmers in the near term. The poor performance and discontinuation of some FSR/OFR projects in Africa was attributed to factors beyond the control of the FSR/OFR teams and projects, factors of organization and mode of insertion into the national agricultural research systems (NARS).

While agreeing to discuss research with a farming systems perspective in terms of FSR/OFR, some

participants pointed out that the differing perceptions on agricultural research do have significant consequences on how such research should be conducted and where it should be located.

Differences on those issues came together with differing perceptions on how client-oriented research should be organized within the research system. Some saw this research being undertaken by clearly identified entities, such as in Ecuador and Nigeria. Some saw these entities as a temporary arrangement, the start of a movement towards a format in which such work is undertaken exclusively by disciplinary, commodity, or regional teams. Some saw the work as better initiated through such teams, for example, Panama. Some saw the diagnostic aspects in the hands of an assigned team with experimentation done by a disciplinary or commodity team, which would consult with the diagnostic team.

Initiation of Research with a Farming Systems Perspective

The workshop could not reach any general conclusions concerning the necessary conditions for the initiation of a specific farming systems program. The cases presented did not show any pattern: IAR in Nigeria could not readily be compared with CATIE or IDIAP in Latin America. It was agreed that CATIE's development path to farming systems research, with its massive multifactorial trials, was a special case prompted by unique circumstances.

The participants noted that in most of the cases presented at least one international agricultural research center (IARC) provided support in the development of FSR/OFR. In some cases this support may also have coincided with financial and technical support from other sources. The question was raised whether regional organizations (such as CATIE), or institutes in developing countries could be encouraged to increase their technical help to

other developing country programs. Networking between FSR/OFR programs was deemed worthwhile, and questions were raised as to whether developing country institutions (national or regional) would be the ideal headquarters for organizing such networking.

The workshop agreed that independent or semiautonomous institutes or agencies could probably incorporate agricultural research with a marked systems perspective more easily than could institutions which are part of the governmental apparatus and thus subject to civil service and other regulations.

The operational costs of research with a farming systems perspective are considered to be anywhere between 50% and 100% higher than the cost of ordinary commodity research programs. Significant increases in funding, either through national or international channels, is imperative. The workshop participants agreed that in order to absorb cost increases and to minimize staff attrition and possible demoralization, FSR/OFR should be introduced gradually in any agricultural research system.

Organizational Location of Research with a Farming Systems Perspective

The workshop was unanimous in agreeing that a farming systems perspective should permeate the NARS of developing countries. The real question was perceived as where to locate an FSR/OFR program. The Institute for Agricultural Research at Samaru, Nigeria, demonstrates that it is possible to create a farming systems research program that cuts across departments and programs – particularly when the administration of research is organized along departmental lines, while research is implemented along commodity lines. In the case of crop-based research programs at Samaru, an on-farm research subprogram is housed under each commodity-based program. On the other hand, Panama's IDIAP has maintained an organization by production lines and disciplines at the national level; the basic operational unit in the regional research programs is the area-specific, on-farm research project cutting across these national groupings.

The placement of an FSR program in a particular NARS has important ramifications. In Nigeria, for example, it is expected that on-farm studies in crop-based programs would engage more in "upstream" research (albeit with a farming systems perspective), while the farming systems research program would engage more in "downstream" or interactive farming systems work.

The participants in the workshop agreed that it was essential that specific organizational and managerial steps be taken to insure close linkages between an FSR/OFR project team and scientists upstream.

This was important for the morale, prestige, and retention of the FSR/OFR team members and also for the quality of their work.

The location of an FSR/OFR team in a development project was discussed at length. It was generally agreed that there was much to recommend this location insofar as the organization of the integrated development project might compensate for the absence of adequate extension services. Problems were noted, however, in connection with locating an FSR/OFR team in such projects. One problem is the generally short-term nature of these projects (5 years) – the project might be on the verge of termination by the time FSR/OFR results are available. (There is apparent now some tendency in international development organizations to consider funding integrated or agricultural development projects of 10 to 20 years' duration.)

Another problem with the location of the FSR/OFR team in a development project has to do with the linkages between the team and back-up disciplinary or commodity line services located in the NARS or IARC. These linkages with the scientific capabilities of central or regional experiment stations are essential, but some questions do arise: Is the project FSR team seconded to the project by an FSR unit in the NARS? What should be the position of IARC FSR/OFR members secondary to the project? What would be their lines of communication and responsibility to the NARS?

The workshop participants took note of the fact that an IARC would not, in general, wish to work in any country without the collaboration of that NARS. The participants also agreed that some lines of authority and main lines of communication upstream and from the FSR/OFR team should be through the NARS. This should insure adequate linkages during the life of the project and the subsequent reincorporation of the FSR/OFR team members into the NARS.

Funding is an important factor to be considered in the location of an FSR capability. The apparent "hybrid" nature of the Panamanian system is a function of funding (it is easier to secure funding there if the organization of IDIAP remains on disciplinary lines). There was no consensus among the workshop participants on whether FSR/OFR should be located in clearly defined entities, as has been done in Ecuador and Nigeria.

Relationship FSR - Extension Service

The work group was unanimous in emphasizing the need to bring extension workers into the on-farm research approach for more efficient and acceptable agricultural technologies. It was pointed out by some participants that this involvement of agricultural extension workers formed an integral part of the FSR methodologies developed at CIMMYT, other IARCs, and by national research organizations in both developed and developing countries.

Agreement on this point did not, however, obscure the difference between the normative and the actual. The workshop participants felt that a distinction should be made between two questions, both of which are legitimate and require answers: What should the appropriate division be between research and extension functions in FSR work? What can one expect the optimal division to be between the research and extension functions in FSR work (in different countries, regions, or - to use FSR terminology at country level - recommendation domains)?

Several participants in the workshop agreed that there were marked differences in the quality of the extension services, in terms of both personnel and organization, among countries and regions. The quality of the extension services was generally considered poorer in Africa south of the Sahara than in most countries of Latin America. The question was raised, therefore, concerning the organizational problems presented by a functionally inadequate extension system.

It was generally recognized that the selection of a number of extension agents to work with the agricultural FSR team at the farm level (OFR) did not raise insurmountable problems. What was not clear, however, was how to ensure that the few extension agents assigned to collaborate with an FSR team would not become mere appendages of the FSR team. Discussions have been focused on the links between FSR teams and researchers oriented along commodity or disciplinary lines at (central or regional) research stations. Workshop participants believed that an equally important problem was the relationship between the extension agents working with FSR teams and the ordinary extension agents.

There was general agreement that, though the participation of extension agents in the on-farm research phase can help alleviate the load on the researchers by taking on monitoring or organizing roles, such load alleviation is not the primary justification. Extension agents working with an FSR team are meant to do more than help smooth working

relationships with cooperating farmers and contribute to fine-tuning the packages being developed by FSR/OFR: They are meant also to link with other extension agents in order to insure the rapid testing, adaptation, and eventual use of the innovations proposed.

In the absence of an adequate extension system, should the research team assume responsibility for extension activities and, if so, to what extent? What would be the organizational and managerial implications?

The workshop participants took note of the fact that IARCs of the CGIAR system have been constrained by their mandates, their comparative advantages, and by their limited resources, to concentrate on research leading to the development of agricultural technologies, and to helping NARCs build up research manpower. Though a number of IARCs have agricultural production training courses, IARCs are not seen as having a comparative advantage in this area over the long run. So far the IARCs have little interest in extension and do not claim special expertise in this area. The question one participant raised was whether this fact implies that, when an IARC is involved in a collaborative FSR/OFR project with a NARS, will it not consider the capability of extension to help propagate the improved technological package? The literature and actual practice of FSR/OFR assumes that the extension agents involved, especially in the OFR stage, will be able "to keep one foot on the bridge and the other on solid land." He or she may not be able to do so and could end up being a de facto junior or peripheral member of the FSR/OFR team. What then? What are the organizational implications? Is one to expect in those cases where the extension system is weak that a highly desirable research product will find its way independently to the farmer-consumer? One participant contended that the improved packages of the Green Revolution found their way to the farmers in the absence of (and at times in spite of) the activities of the extension agents: that extension agents are not necessary, if the technological package is appropriate.

The workshop could not come to any consensus on these problems. It took note of the fact that FSR/OFR was developed when researchers realized that results were not always appropriate because farmers' circumstances had not been taken into consideration. This asymmetry between farmers' needs and the research products was blamed on the academic disciplinary or narrowly commodity-focused orientation of the researchers, on the one hand, and on the lack of adequate data on farmers' circumstances, on the other hand. Correctly

or not, it was often felt by the agricultural researchers that it was the job of extension to provide the data on farmers' circumstances.

The incorporation of social scientists in FSR/OFR strategy sprang from the realization that even the better agricultural extension agents in developing countries were not capable of developing adequate data on farmers' felt needs (subjective) and circumstances (objective). If FSR/OFR can in fact be said to be an imaginative, methodological, and organizational response to lacunae in both research and extension, should FSR/OFR in some cases develop an extension arm using modern mass media technologies, for example? What are the organizational implications? The workshop participants agreed that the topic deserved further investigation.

Incentives

The workshop participants took note of the fact that in none of the country cases presented were financial incentives used to recruit FSR team members. Salary scales were not adjusted upwards to take into account increased hardships stemming from living conditions, distance from urban centers, separation from families, longer working days.

Compensatory allowances were being provided in a number of cases: for example, 10% of salary in Panama and up to 50% in Ecuador, depending on geographical area and project. It was emphasized that those are not incentive payments but compensatory allowances. If those allowances were flat payments not requiring documentation of expenses actually incurred, and to the extent that the allowances were greater than actual expenditures, then a subsidy or incentive might be said to be implicit in the allowance system. Management should ensure the adequacy of the allowance to cover reasonable expenditures incurred by FSR team members as a function of their assignment. Furthermore, the possibility that the allowance could provide a proper mechanism through which an incentive element could be deliberately included should probably be investigated.

The workshop participants recognized that the question of compensation or incentives raised a number of problems, some severe. For example, to the extent that the researchers are part of the civil service system, the question of financial compensation cannot be divorced from that of equivalence for other groups, such as teachers, nuns, etc., in hardship posts. This problem of comparability of civil service remuneration can be avoided to the extent that the governmental research

programs are located outside the civil service system, for example, in an independent institute.

Some participants strongly agreed that it would be a mistake to reduce incentives to purely financial ones, particularly when problems with civil service comparability and intraresearch organization resistance can render moot the institutionalization of such financial incentives. These participants emphasized that, without minimizing the importance of reliable and prompt reimbursements for reasonable expenses incurred, incentives can take many forms. Some of these are the provision of adequate housing, schooling facilities, reliable transportation to urban centers for the families of researchers, prompt access to adequate medical care, etc. Some of these nonmonetary incentives can be provided by management if it so wishes (such as transportation for families to urban centers or for other social functions). The workshop participants strongly recommended that managers of agricultural research systems should make a special effort to ascertain the factors which present and potential agricultural researchers weigh in deciding to join particular programs (for example, an FSR zone) which might increase their productivity.

Evaluation and Monitoring

The need to distinguish between the various forms of evaluation and monitoring was recognized from the outset.

Evaluation can be *ex ante* and *ex post*. Monitoring was seen ideally as a process of continuous collection of data on the operation of the object being investigated. Cybernetically, this is the process of generating feedback leading to continuous fine-tuning for optimum operation. Evaluation may be concerned with the whole program or part of it. The evaluation may result in a reorientation of the entire program or of parts thereof.

Evaluation and monitoring could focus on at least three levels:

- * Area teams.
- * Institutional arrangements.
- * Structures for policy determination.

It was agreed that the *ex post* evaluation should be given priority over *ex ante* evaluation. Although the *ex ante* evaluation stage (that is, determining feasibility in advance) of farming systems projects was seen as important, the consensus of the group was that (in view of the scarcity of human and financial resources) where general agreement exists

concerning the worth of the farming systems approach, ex post evaluation of programs and projects should be given priority.

An effective evaluation presupposes the existence of two conditions: (1) a clear statement of objectives and (2) a means of measuring their attainment in some way or another. Ex post evaluation is helped enormously when useful data have been gathered in a relatively continuous process of monitoring.

Ex post evaluation requires an evaluation of the relationships between inputs and outputs. The factors listed below were identified as elements of output (not an exhaustive list). Some factors might be quantified (marked with Q), while others may be measured only subjectively (marked with S).

In each case, prior decisions had to be made as to what elements would be most useful for the evaluation and then be fruitfully analyzed:

Output of farming systems research

Production/productivity	Q
Incomes of the people	Q
Employment of the people	Q
Human satisfactions	S
Social indicators, if available	Q
Public support for research	Q - S
Trained researchers and farmers	Q - S
Adjustments in methodologies	S
Cost of methodologies	Q
Information	Q - S
Clarification of policy alternatives	S
Impact on relations with other organizations	S
Ancillary factors	
Effect on research organization	S
Effect on FSR team	S

Inputs for farming systems research

Money	Q
Personnel	Q
Facilities	Q
Methodologies	S
Time of farmers	Q

It was repeatedly emphasized that evaluation may refer not only to the process of evaluation of a total program of farming systems research, but also to selected components. Thus, evaluation could be made of the economics, the human resources, the administrative, or other components of a farming systems program. Selection of a particular area for evaluation may or may not be prompted by a perceived weakness of that system component.

As indicated earlier, monitoring (the continuous evaluation of a system's operations) is an essential prerequisite for a thorough and maximally useful evaluation. Given its importance, responsibility should be clearly assigned for the monitoring task at different levels at which farming systems research might be undertaken.

Systematic evaluation should contribute significantly to increased efficiency of farming systems projects and programs. Only by continuous evaluation of the various components and feedback into the system can the farming systems perspective become an integral part of agricultural research programs in developing countries. The farming systems approach to agricultural research must be continually adapted and refined. Only by continuous monitoring and systematic evaluation of its components can cost efficiency be improved.

Decisions concerning the arrangements for carrying out evaluations is a management function. A number of possibilities or combinations already have been tried. These include

- * Setting up an evaluation unit within the farming systems research unit.
- * Evaluation from outside.
- * Evaluation by those engaged, plus an outside input.

The preference of the work group members was for the third option, development of a task force composed of individuals from within the system, supplemented by outside members.

Policy Formulation and FSR

The workshop participants agreed that it was important for results of FSR projects to reach policy makers. Whether the communication of such results lead to positive changes in the short run, or long run, may depend on the realism of the policy changes recommended (and thus, indirectly, on the correctness of some of the assumptions made by the FSR team in developing its experimental parameters) and on other factors over which the FSR team cannot be expected to have any control. The necessity of informing policy makers was recognized.

Agricultural policy plans will be made with or without much appreciation of the farmers' problems, and it was considered better to have well-informed policy makers. Dr. Coulter's (World Bank) view is that FSR is a useful tool to help maximize returns on resources, either those currently available or those additional resources to which farmers can get access as a result of policy changes (recommended by FSR teams as a result of their investigations).

The ease with which such communications can be developed depends partly on the intensity and specificity of the interest which policy makers may have in FSR. Good communications seem to exist in a number of countries, such as Nigeria and Panama. The importance of giving any FSR success wide publicity (conferences, mass media, etc.) – rather than keeping the news a secret within the research section or ministry – was agreed upon by the workshop participants; some noted that it took an average of 4 or 5 years to get any results, by which time policy makers may have become impatient or may have given up hope altogether. The wide dissemination of research results, of data on the levels of productivity enhancement to be expected from recommended policy changes and of interim increased production data from the group of farmers targeted, is particularly important where funding and policy changes recommended depend on a broad range of ministries and organizations.

Some participants in the workshop argued that FSR generally – and certainly FSR/OFR – is aimed at the acquisition of practical knowledge that will lead to incremental increases in production, mostly within the broad parameters of resources available and of existing policy. Some felt that this definition of FSR was too restrictive and did not allow for the development of FSR as new farming systems developed. It was generally agreed that FSR/OFR was not concerned with national macroeconomic analyses, but was concerned with socioeconomic analyses at the farm level only to the extent that they may affect the development and acceptance of successful near-term alternative improved technologies.

Planning and Program Formulation

The workshop focused its discussion on the role and potential contribution of the farming systems perspective to the research planning and program development processes.

It was felt that a definition of the content and scope of this process was needed. The differences between planning and program formulation were stressed. Planning was considered to be related to the overall priority-setting process carried out at the top level of government and its institutions on the bases of broad social, economic, and political considerations and the country's resource potential. On the other hand, program development was seen as a bottom-up process through which the priority problem areas (coming from the plan) are translated into researchable questions and specific proposals. At the planning level, the essential interaction was seen as

between top management and policy makers. Program development is a scientist-centered process. The quality of the resulting program will depend on the training and competence of the scientists and their comprehension of the problems of the clients of research.

Having these two processes properly executed is the first step for sound management of the research effort.

The FSR contributes to both levels. To higher planning, it brings a flow of reliable information concerning the farmers' conditions and potentials. It is with respect to program development that FSR becomes essential as a proxy for farmers in assessing the relevance of research proposals to their conditions and value systems. It permits the focusing of technology generation on the farmer. At the same time, it is instrumental for increasing the probability that research results are more useful in the generation of acceptable technology.

Another major contribution is through improving the transfer of research results to the delivery system (extension).

From the management point of view, two aspects become crucial for this contribution to planning and programming. One is the kind of capacities needed for FSR; the second is how this perspective is brought into the organization. The approach is basically interdisciplinary, requiring inputs from both the biological and the socioeconomic sciences.

This is perhaps one of the most important problems to solve, since few research systems have (or are large enough to afford) the number of economists or sociologists that may be needed. The discussion of these issues touched on several aspects, concentrating on whether these capacities should be brought into the research system as a separate effort, as a farming systems unit or program, or as part of regular research activities. The extent to which this can be done will depend on the resources and the size of the system; but it was agreed that, at a minimum, this capacity should be available at the level of each of the major operational units of the research system – whether commodity or regional/geographical groupings (commodity programs and research centers or stations).

Communication

There were few observations on how to raise the probability of effective communication among those undertaking on-farm research and those undertaking

other classes of research or – perhaps better – between those doing interdisciplinary research aimed at near-term recommendations and those engaged in research on components. Delgado reported to one discussion group about INIAP's investment in raising the probability of communication. Effective communication will require a significant commitment of resources.

Networking

The participants agreed that some attention should be given to the development of a network which could facilitate the exchange of experience and ideas as well as materials. Countries contemplating the organization of FSR/OFR work could benefit from discussions with those already involved. Visits of two or three weeks to the organizations with experience in research with a farming systems perspective might be recommended. There was a strong feeling among some participants that the base for this networking should be located in an institute, center, or NARS in a developing country. It was emphasized as well that the costs of networking would have to be defrayed by donor countries or an international organization such as World Bank.

Some participants emphasized that networking involved not only the sharing of information and materials, but making available training places for personnel from areas just starting FSR/OFR projects. There was some insistence that such mutual assistance between developing country institutions would be particularly appropriate, given the scarcity of training places in IARCs and the general unsuitability for FSR/OFR work of formal courses in developed country universities.

The value of networking was reinforced by discussions – reported under Human Resources Requirements in this chapter – of what suitable training might be and how it could be organized.

Human Resources Requirements

The workshop was unanimous in deciding that only in a few cases would a reorganization of a whole NARS take place around an FSR approach. In those rare cases, recommendations would have to take into consideration the constraints of the specific situation. The workshop decided to focus on situations where the viability and integrity of a NARS organization is not at stake, but where the problem is integration into the system of an FSR perspective and FSR/OFR teams.

The composition of an FSR/OFR team and the intensity of activities of its members will vary over the life cycle of the FSR/OFR project. The participants agreed that, as a rule of thumb, the team should include one social scientist for every three general agronomists/biological scientists; extension agents should be incorporated as soon as practicable, certainly by the time the OFR stage is reached. This rule-of-thumb ratio does not take into consideration the ex post evaluation stage demand on research personnel.

The participants agreed that the formal integration of support disciplines (such as, soil science and entomology) into FSR teams would make them unmanageable, even though it would help ease some of the current linkage difficulties by providing essential back-up disciplinary research inputs for FSR projects, especially as they are extended to new production areas. In other words, other disciplines will need to be represented in the core team as new regions involving animals, agroforestry, and horticulture become target areas.

Some participants emphasized the integrator/evaluator role that can be played by FSR in developing countries. It was agreed that the farmer in developed countries (usually better educated and informed than his developing country counterpart) performs the role of integrator/evaluator, as well as being the articulator of his needs. These roles must be filled by the researchers in developing countries, in this case by the FSR/OFR team. It was noted that in developed countries the private sector does a lot of integration in the process of developing inputs that are offered to farmers.

The basic attitudinal requirement for selection of personnel to be assigned to farming systems teams is open-mindedness and an ability to work as a team. The team members should be well trained in their own disciplines in order to maintain mutual respect and meet the challenge of the task. The team leader should have pronounced multidisciplinary know-how as well as the skills usually associated with leadership.

Experience in Latin America and elsewhere seems to suggest that the FSR/OFR teams are composed of relatively young and highly motivated individuals. It was suggested by some participants that the experience of Ecuador and Guatemala seems to indicate that hands-on training and the selection of young members with less than 5 years of station experience form the best combination. Other participants cautioned against the preponderance of young, relatively untrained and inexperienced

researchers in FSR/OFR teams. Irrespective of the question concerning the ability of these researchers to do a good job, managerial considerations are involved; FSR/OFR teams composed mainly of younger researchers may have problems gaining prestige and acceptance by older, more established researchers in disciplinary or commodity-oriented programs.

It was considered likely that incentive and other measures for such FSR/OFR teams might be resisted by other researchers, as these could threaten the continuation of differentials perceived to be legitimate and based on seniority or formal educational attainment. In the absence of adequate incentives and prestige for the FSR team, a problem of retention of experienced FSR/OFR team members may arise. The relative newness of farming systems research may explain why this has not been widely experienced as a problem. A carefully developed career plan, aimed at retention of experienced FSR/OFR team members, is essential if participation in FSR is not to be viewed as an unfortunate but transitory career phase. One effective management tool for keeping such individuals is the provision of frequent opportunities for additional training of both a formal and nonformal nature. Frequent short visits to regional and central stations, as well as regular visits by top administration

and researchers to the FSR/OFR field locations, are important to facilitate integration and to develop the legitimacy of the FSR/OFR teams.

Considering the amount of farming systems activity, the workshop members felt that there was a large underinvestment in training at all levels. It was felt that an especially attractive leverage point would be a program for improving the agricultural sciences curriculum in the developing countries by helping them to incorporate an FSR perspective in their training.

Some participants felt that it might be particularly useful to target university professors who teach agricultural undergraduates in the developing countries. These professors would then incorporate the FSR/OFR methodology into the regular curriculum. In the formal educational program, every attempt should be made to have students conduct their research work in connection with FSR/OFR programs or projects. Participants felt that it would be more economical and effective to develop short, practical FSR/OFR courses in country (there are, in any case, few FSR training opportunities overseas at present, including those at IARCs), even if it means that an international team of trainers might have to be called on to supplement local resources.

5. Recommendations of Committee to Consider Conclusions from the Workshop

Conclusions

The workshop reaffirmed that the farming systems approach to research has a significant contribution to make to national agricultural research systems.

Every effort should be made to instill a farming systems perspective into the national research system, and research management should ensure the capacity to carry out farming systems research.

The main sets of activities described as farming systems research are diagnosis, priority determination, experimentation in relevant environments, monitoring and evaluation, and communication of interpreted conclusions to users.

Valuable experience has been gathered from existing operations for initiating farming systems research activities in other countries on a small scale: the pattern of growth depends on a learning process in local circumstances and the growth of capacity in personnel. Little guidance is currently available for launching farming systems research on a large scale.

There is an urgent requirement for applying rapid methodologies to lead to results for early impact with farmers.

Recommendations

It is recommended that the development of an international network be encouraged so as to benefit from sharing in the experiences of organization and operation of farming systems research in different countries.

Detailed information on costs of implementing farming systems research is needed as patterns of operating costs are not familiar to research administrators. It is recommended that a research project be set up to collect this information from different countries to enable more realistic budgets to be prepared.

Lack of personnel with training in farming systems research is a major handicap to expansion of a farming systems perspective. Maximum use should be made of training courses in farming systems research offered by institutions, but in-service, in-country training courses are very desirable. Linkages should be developed between practical research operations and educational institutions.

Point on Organization

Strong linkage mechanisms should be established between those carrying out farming systems research and the rest of the research system (for generation of better technology) and with the extension service (for rapid diffusion of results). A mechanism should be institutionalized within the research system to ensure multidisciplinary review of research proposals at the earliest stage of research program formulation.

COMMITTEE MEMBERS

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Annex 1

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Ms. Teresa	- Consultant
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Dr. Floyd Williams	- Clerical Assistant
Mr. Kees van Hartrop	- Secretary
Ms. Joyce Ogiste	- Secretary
Ms. Esther de Ribeiro	- Secretary
Ms. Audrey Spronk	- Secretary

Annex 2

ISNAR/CIMMYT WORKSHOP PROGRAM

Organization and Management of Research with a Farming
Systems Perspective Aimed at Technology Generation
ISNAR Headquarters, The Hague, Netherlands
September 27-30, 1983

Monday, 26 September

	Arrival of participants at The Grand Hotel Central in The Hague
18.30-20.00	Cocktail – Grand Hotel Central – Cambridge Room – Mezzanine

Tuesday, 27 September

08.45-09.15	Welcoming Address by M. Dagg ISNAR
09.30-10.30	Recent views on the farming system research D. Winkelmann
10.30-10.45	Coffee break
10.45-11.45	Activities of Development Agencies in Support of Farming Systems Resarch at CATIE J. K. Coulter
11.45-12.45	Discussion Discussion leader: H. Davis Rapporteur: K. R. Kern
12.45-14.00	Lunch
14.00-15.00	Concepts and Implementation of Farming Systems Research at CATIE G. Paez, L. A. Navarro, C. F. Burgos, J. L. Saunders, and J. Arze
15.00-16.00	Organization and Management of Farming Systems Research: Experiences from Nigeria G. O. I. Abalu
16.00-16.15	Coffee break
16.15-17.15	Discussion Discussion leader: J. Mieman Rapporteur: M. Dagg

Wednesday, 28 September

08.45-09.45	Zambia country report: W. Chibasa*
09.45-10.45	Experience in Organization and Management of Research with a Farming Systems Perspective in Panama R. Tarté
10.45-11.00	Coffee break
11.00-12.00	ICTA Production Oriented Research A. Fumagalli
12.00-13.00	Discussion Discussion leader: D. Winkelmann Rapporteur: P. Bennell
13.00-14.00	Lunch
14.00-15.00	Ecuador country report: J. Delgado
15.00-16.00	Discussion Discussion leader: R. Waugh Rapporteur: M. J. Chang
16.00-16.15	Coffee break
16.15-17.15	Preparation for working groups: M. Dagg
08.45-12.45	Working groups Chairman: M. Dagg
	Discussions on requirements in organization and management of research with a farming systems perspective

* Planning and program formulation
* Human resources requirements

* In view of Dr. Chibasa's absence, this country report was not presented.

Thursday, 29 September (cont.)

* Financial and other support requirements
* Communications/Evaluation and monitoring

12.45-14.00 Lunch
Chairman: J. K. Coulter
Rapporteur: T. Weersma-Haworth

14.00-16.00 Presentation of group discussions and conclusions by rapporteurs of individual groups

16.00-16.15 Coffee break

16.15-17.15 Plenary discussions

19.00 Dinner offered by ISNAR

Friday, 30 September

08.45-10.45 Plenary discussions
10.45-11.00 Coffee break
11.00-12.30 Committee work
12.30-13.30 Lunch
Chairman: J. K. Coulter
Rapporteur: K. R. Kern

13.30-15.30 Workshop conclusions
Chairman: M. Dagg
Rapporteur: K. R. Kern

15.30 End of workshop

