

THE FARMING SYSTEMS PERSPECTIVE AND IDRC IN EASTERN AND  
SOUTHERN AFRICA (1)

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IDRC / CRDI

1. General

The International Development Research Centre supports programmes of Government Ministries, Universities and Non-Government Organisations throughout Eastern and Southern Africa from a Regional Office in Nairobi.

Support is given primarily in the form of financial assistance for the development of new, applied research activities or for the strengthening of existing programmes of those institutions. In evaluating proposals received from developing country institutions, IDRC places emphasis on the importance of the proposed research for national priorities, its relevance for an identifiable group of beneficiaries and the sustainability of the programme after the external assistance is withdrawn. For these reasons, IDRC responds to requests but its staff do not write research proposals, work of local scientists rather than of expatriates is normally supported and funding levels tend to be modest (usually in the range of US\$50,000 to \$125,000 per year for agricultural research).

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2. Present Involvement in Research related to Farming Systems

Research that has a technology-generating objective is supported by the Agriculture, Food and Nutrition Sciences Division of IDRC. Three programmes of this Division are primarily concerned with the improvement of farming systems: Crops and Cropping Systems, Animal Sciences and Forestry. Many of the projects supported by its Post-Harvest Systems Programme also relate to aspects of farming systems.

In addition, the Social Sciences Division supports policy-related work in allied fields such as agricultural marketing and transfer or adoption of technology. In cases where the most appropriate kinds of technology-generating activities cannot be readily identified, the Agriculture Division and the Social Sciences Division can be requested to support jointly a preliminary geographic or sectorial study that may lead into one or more relatively discrete problem-solving projects.

The Agriculture Division encourages all projects to adopt a systems perspective in generating useful technology, although most projects are not by definition farming systems research projects. Out of twenty research projects currently active in this region in the fields of crop and livestock production, one is on farming systems research, two others consider animal production systems in relation to the entire production system, several others are looking at selected agronomic components identified as being important through surveys of farming systems (e.g. minimum tillage, intercropping) and the

majority of projects have crop improvement objectives (the development of new varieties and agronomic practices for a specific crop).

This balance in Africa reflects not only the nature of the proposals received but also the importance attached over the past ten years to the development of institutional capability to generate new technology for selected crops, especially the long-neglected food crops of semi-arid areas (sorghum, millets, oil seeds, cassava).

In Asia and Latin America, on the other hand, IDRC has been more actively involved in farming systems research because commodity programmes in those regions were already relatively well developed. Examples are the Caqueza agricultural development project in Colombia, and the Asian Cropping Systems Network of eight small national programmes.

### 3. Areas of Interest

Since IDRC attempts to respond to the research priorities and needs identified by individual developing countries and institutions, the nature and composition of projects will continue to show considerable variation according to circumstances. However, the following four areas of concern are likely to receive increased attention by IDRC in the Eastern and Southern Africa region:-

a) Institutionalisation of Farming Systems Research

IDRC subscribes to the definition of farming systems research that includes both the assessment of present farming systems used in an area, and the generation of technology that proves acceptable to farmers for improving their systems. This definition implies interdisciplinary research and IDRC does not believe that effective farming systems research can be conducted routinely by either agronomists or agricultural economists working alone.

An important consideration is that new research projects of this kind assist institutions to complement existing commodity and discipline-oriented programmes with a sustainable capability to conduct farming systems research. Availability of local staff to start new programmes is usually very limited, but from ten years of experience in Asia, Latin America and more recently Africa, it is evident that a large team of expatriates is not necessary for the development of farming systems activities in a country.

The provisions for new farming systems projects supported by IDRC will depend upon local circumstances, but projects of this kind typically comprise operational support and a phased programme of training for one or two field-based teams. A team consists of two or three recent agricultural graduates (an agronomist and/or livestock specialist, and an agricultural economist) and serves a defined area of the country.

The simultaneous development of two or more local teams, with institutional and technical support at the national level, can facilitate the development of methodology and operational

procedures appropriate to local conditions as a result of the sharing of experiences among teams. In the case of animal production systems research in Zimbabwe, support includes both a nucleus local team and a single, experienced staff member from ILCA. Emphasis is placed on field research with farmers, and relatively simple equipment such as hand calculators have proven to be appropriate for the task.

b) Methodology for Farming Systems Research

Standard methodology is in existence for farming systems surveys and diagnosis, for design, testing and evaluation of technology and for pilot scale production. However, many institutions do not yet have sufficient experience to be confident of the appropriate choice of procedures for use in a particular situation, (e.g. how to organise farmer-managed crop experiments so as to elicit effective input from farmers).

More generally, on-farm research procedures for use with livestock and agroforestry production technology require considerable development. Most programmes of this kind have opted for versions of the unit or model farm, yet a few programmes are experimenting successfully with new feeding regimes or tree planting arrangements under the more representative conditions of farmer management. Many farming systems in this region of Africa are influenced by interactions between sub-systems (e.g. crops and livestock, crops and trees) and between technical and social factors (e.g. animal production and land tenure arrangements).

Programmes which propose to develop more appropriate research procedures are encouraged to do so provided that mechanisms are also developed for communicating their results to other projects. Workshops which bring together scientists who are tackling common problems within this region are especially valuable while on-farm research methods are still evolving. The sharing of practical experiences among scientists of neighbouring countries, or among scientists from different disciplines and institutions even within the same country, assists the rate of development of research procedures. Two examples are a workshop in Nairobi in 1982 that brought together a network of IDRC-supported projects working to improve the use of crop by-products for animal feeding, and another workshop in 1983 will allow the crop improvement programmes currently being supported in Eastern and Southern Africa to discuss issues related to the relevance of their research (e.g. how crop breeding objectives are established, and to compare procedures being used for multi-locational trials and on-farm testing).

c) Commodity Research.

Even though crop improvement programmes devote a greater proportion of their resources to activities on research stations than is the case with farming systems research, a clear orientation of objectives towards the intended beneficiaries is just as important. IDRC is interested in assisting food crop improvement programmes to look critically at the research requirements of producers and of consumers (who are often, but not always, the same people).

There is probably no standard recipe for achieving this objective. If there is adequate national coverage by farming systems research, the main requirements for effective communication and coordination between programmes are likely to be the establishment of formal mechanisms of coordination, development of mutual respect and confidence between programmes, and familiarity with one another's activities. Crop improvement objectives (e.g. desirable maturity ranges for new varieties, relative priorities for research on the various species of weeds, insects and diseases which cause crop losses on farms, and grain quality characteristics) are set as a result of discussions between the two research programmes, and most on-farm testing will be conducted by the farming systems programme. Requests for support to new farming systems projects are therefore particularly welcome where these are designed to complement commodity programmes already supported by IDRC and thereby to improve the effectiveness of agricultural research conducted by the local institutions.

In many situations, however, it may be unrealistic to expect adequate coverage by farming systems research teams in the near future. In these cases crop improvement programmes need to develop their own capability to undertake limited assessments of production problems and opportunities associated with a particular crop, and to conduct rigorous on-farm testing before recommending a new variety or practice. In such cases, IDRC appreciates that the need may exist for recruiting additional field-level staff, for specific training in on-farm research methods, and for ensuring that transport facilities are adequate for on-farm research.

Taking account of consumers' needs in crop improvement may require going beyond the environment normally treated by farming systems projects. For example, it may be possible to reduce the tendency for maize production to displace sorghum in marginal rainfall areas, and thereby benefit national productivity, by developing labour-saving dehulling and milling equipment that produces reasonable quality flour from bird-resistant types of sorghum. This development can affect a sorghum breeder's decisions on the grain characteristics desirable in new varieties.

Whenever technical interactions of this kind occur, IDRC encourages institutions to amplify the objectives and methodology of the crop improvement programme, or to propose starting a linked complementary project. Linked projects may be proposed by different local institutions. An example of diversifying the objectives within a project is the addition of a simple farm-level seed multiplication scheme to the third phase of a pigeon pea improvement project in Kenya. Examples of diversification through linked projects in a sorghum-producing region of Tanzania are:- Farming Systems; On-farm Grain Storage; Sorghum Milling; Sorghum Utilization. Linked projects can involve more than one programme or division of IDRC, e.g. in Zimbabwe, Animal Production Systems (Agriculture Division) and Small Farmer Milk Marketing (Social Sciences Division).

d) Training

IDRC is involved in various kinds of "training" with a farming systems perspective, as part of its interest in seeing farming



systems concepts institutionalized in the region.

Support for small projects of the farming systems type at Universities (e.g. Tanzania, Swaziland) provides opportunities for students to conduct relevant research at the farm level and for teaching staff to develop first-hand experience in on-farm research methodology including interdisciplinary cooperation, which benefits the education of the next generation of research workers. It is to be hoped that Universities in the region will continue to develop formal courses having a farming systems perspective, and that training at the M.Sc. level in departments of crop and animal sciences and agricultural economics will incorporate specializations in farming systems-related topics.

Sponsorship for individuals and groups to visit well-established research projects has been useful in raising awareness of operational requirements and methodological issues either prior to or after starting a farming systems-type programme. Formal training of a nucleus of staff prior to commencing a new research programme can also be useful (e.g. a Ugandan Ministry of Agriculture agronomist is starting in 1983 an MSc. course in Cropping Systems at the University of the Philippines).

Regional or national workshops on the development of methodology can also be powerful tools in the non-formal training of less experienced staff. Regional programme staff

of IDRC also assist, if requested, in training workshops related to these issues within the region. However, in the acquisition of new skills there is no substitute for practical experience and learning through one's own efforts and mistakes, and the provision of project support can often facilitate this process through providing mobility and research materials.