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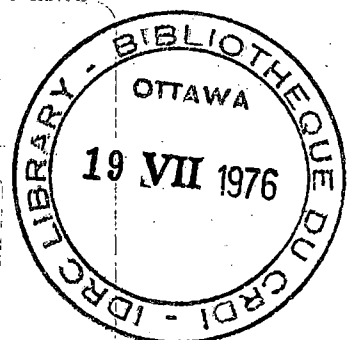
**PROGRAM THRUSTS OF THE
INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
TOWARD ACCELERATING AGRICULTURAL DEVELOPMENT**

E. J. Weber

**INTERNATIONAL WORKSHOP ON
ACCELERATING AGRICULTURAL DEVELOPMENT**

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PROGRAM THRUSTS OF THE INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
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Introduction

Agricultural development as we all know is an extremely complicated process which involves a wide variety of factors and activities in many interactions. Fundamentally it is related to the increased and more efficient production of agricultural goods which can provide the greater income farmers and their families need to achieve an improved standard of living and well-being. Obviously the physical factors of a resource base, as well as the biological ones that entail the growth of plants and animals are very important in this context. If the physical and biological aspects of increased production were the sole determinants of increased production, however, the problems of agricultural development would be relatively simple. Organizational planning, management and infrastructural factors also help determine what goods or crops are to be produced, how they are produced, by which farmers, with the aid of what extra inputs such as fertilizers etc., and how the produce will be disposed of in the final instance. These and many more components must be considered in establishing national agricultural development policies and programs which can be operationalized by national institutions and,

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where necessary, backed up by regional and international supporting ones. No one investigative approach, or a concentration on individual problems by themselves, will have much impact unless they are integrated into overall policies and plans which take careful note of how the many problems are interrelated and develop research programs to solve these problems in an integrated way.

The IDRC

The International Development Research Centre (IDRC) has been supporting research into various facets of this complicated process for close to six years. It has been concerned with encouraging and supporting integrated and applied research through institutions and scientists in developing countries themselves. The IDRC was established in May 1970 by an Act of the Canadian Parliament. It has the legal status of a Public Corporation and, though financed by Parliament, enjoys the independence of a private foundation. Its operating and research support policies are determined by an independent Board of Governors on which the Chairman and ten other members are Canadians and a further ten members are from other countries. Six of the present board members come from developing countries.

In addition to the headquarters of the Centre located in Ottawa, Canada's capital, five regional offices have been established in Bogota, Colombia; Dakar, Senegal; Singapore; Cairo, Egypt; and Nairobi, Kenya to keep in close touch with the changing needs of these developing regions and with the conduct of ongoing research projects. The total Centre staff is approximately 340 at the present time of whom 70 are non-Canadians from

29 different countries. For operational and programming purposes, the Centre is represented by five divisions; Agriculture, Food and Nutrition Sciences (AFNS); Information Sciences (IS); Population and Health Sciences (PHS); Social Sciences and Human Resources (SSHR); and, Publications. Each of these divisions has a core of experienced and technically competent program personnel whose responsibility it is to work with researchers and others in grantee institutions and governments in developing feasible and viable research projects and plans within the context of their own priorities and goals.

The Centre's budget is part of the official Canadian development assistance program which is authorized by the Parliament of Canada. During the Centre's first five years of operation, its Board approved over 270 projects involving appropriations of \$51.9 million. The AFNS Division has been allocated slightly over 40% of this budget every year. In addition, AFNS has been responsible for the management of several projects in conjunction with the Canadian International Development Agency (CIDA), Canada's official aid agency, involving research on cassava and triticale. This added responsibility has amounted to \$6.5 million over a five year period.

Philosophy

Broadly speaking the IDRC seeks as stated in the Act establishing its existence, "to initiate, encourage, support and conduct research into the problems of the developing regions of the world and into the means for applying and adapting scientific, technical and other know-

ledge to the economic and social advancement of those regions, and in carrying out those objects

- A) to enlist the talents of natural and social scientists and technologists of Canada and other countries;
- B) to assist the developing regions to build up the research capabilities, the innovative skills and the institutions required to solve their problems;
- C) to encourage generally the coordination of international development research; and
- D) to foster cooperation in research on development problems between the developed and developing regions for their mutual benefit."

Out of this broad overall statement of purpose, the Centre, to date, has focused its efforts principally on the encouragement and support of research into problems of developing regions with strong orientation toward efforts involving a practical or an applied significance for the economic and social development of recipient institutions and nations. In particular, the Centre has focused on building the research skills of scientists and technologists in developing countries and providing them with expanded opportunities to build their personal skills while contributing to the solution of development problems within their own societies.

Within the general priorities and policies expressed in the Act, the Centre has evolved some general operational criteria for the encouragement, selection and approval of project requests. First of all, the project should fit a priority that has been expressed by a

government or an institution in a developing country. Second, the findings emanating from the project should have useful application outside the specific country in which the research is taking place so that there is a possibility of a multiplier effect. Third, the project should contribute toward closing the gap in living standards between the poorest and the richer people in developing countries. Fourth, the project should be carried out in great part by personnel from the countries involved. Expatriates are hired by the Centre only for projects where specific expertise requested by the grantee institution is crucial to the project's success and which the country cannot supply. Fifth, and closely related to the fourth point, projects should have a training component to ensure that a better trained and experienced cadre of workers is left behind at the end of the project funding. All of these criteria are applied during project development discussions and in the evaluation of proposals submitted by prospective grantees.

Priorities

Since I am a member of the AFNS Division of IDRC, I will principally use the projects and program thrusts of that Division to illustrate ways in which the Centre has been attempting to put its idealistic conceptual approach into practice in an operational way. From the outset certain priority areas for agricultural research were chosen which seemed to have potential for rapid and substantial payoff to research and/or were relatively ignored and underfunded. Emphasis was

given overall to identifying opportunities for, and seeking solutions to the problems of disadvantaged people in rural areas; the small farmers and fishermen who are usually last to benefit from technological advances.

An initial top priority research area for AFNS Division encouragement and financial support was in the semi-arid tropics, a belt that runs across the middle of Africa and India and through a number of Asian and Latin American countries as well. Here some 400 million people depend on crops such as sorghum, millet and various legumes for their sustenance and livelihood. Considering the number of people who utilize them, research on these crops had been greatly underfunded in the past compared to such crops as wheat, maize or rice. Another crop which is widely consumed in tropical areas, although not in the semi-arid tropics, is the root crop cassava and it too had received relatively little attention in terms of concentrated organized research. Cropping systems managed by small farmers usually entail multiple cropping production systems and at the time the Centre was established much less research attention was being given to these systems than currently. Animals are a part of most small farm systems and they have been included as a program priority along with the study of appropriate management and feeding systems. Another priority area AFNS director, Mr. Joe Hulse, included in the division's activities was post harvest crop storage and processing along with nutrition, home economics and food technology applied research. Forestry and the use of

forest products were also added as areas of interest as were the technical problems of small fishermen and aquaculture. These program interests are divided loosely into five very general program sections: (1) Crops and Cropping Systems; (2) Animals; (3) Fisheries; (4) Food and Nutrition, and (5) Forestry.

Agricultural Programs

A. Crops and Cropping Systems

The Crops and Cropping Systems program forms the largest portion of the AFNS program. The Division's Associate Director for Crop Sciences is resident at ICRISAT in Hyderabad where in addition to having a major input into the sorghum and millet research programs, he continues liaison with projects IDRC supports on drought tolerant crops in a number of national programs. There are IDRC supported projects in Senegal, Ethiopia, Northern Nigeria, Uganda, the West Indies and India to name several. Each project is concerned, in its own right, with the improvement of yields and quality in one or more of the semi-arid crops produced in that specific area. Each project receives material and technical advice from ICRISAT and in return provides additional germ plasm into the ICRISAT pool. In the national institution projects as well, encouragement is given to maintain close links with extension institutions and farmers to make sure that the plant and planting recommendations being developed are in fact those which will be relevant to farmers needs.

Farming and cropping systems studies occupy a prominent role in the research encouraged by IDRC. The main program here is very closely associated with that of IRRI whose cropping systems program at the present time is largely supported by IDRC. National institution research on multiple cropping and cropping systems is currently supported by IDRC in Bangladesh, Indonesia, the Philippines, Sri Lanka and Thailand. The principal ideas behind this work involved first taking a close look at what farmers are currently doing on their own fields and trying to identify constraints to greater output in their production systems. The results of this cross disciplinary evaluation are used to help orient biological and physical science research toward problems whose solutions are likely to have a rapid and substantial impact. This approach is important because small farmers for the most part do not grow single crops without relating them to their supply of resources of land, labor and capital over time. The methodology for doing this as well as component technology to fit into rice based multiple cropping situations is being developed by IRRI and tested by researchers in national programs of the countries mentioned.

B. Animals

Animals are often an integrated part of small farm production systems and therefore the Animal Sciences program in IDRC is related as closely as possible to improving animal production in this context. The program covers three main themes. The first of these involves animal nutrition in the tropics dealing with the use of by products of tropical agricultural

production as sources of animal feed such as coffee pulp, sugarcane residues, and whole chopped cane. Some work is also being supported on pasture legumes as components of tropical grazing lands. A second theme relates to animal health and deals specifically with insect borne protozoal diseases in Africa. The third and largest portion of the program deals with the tropical root crop cassava. This program originally involved research on cassava as an animal feed and for this reason is linked to the animals program but research support has broadened out considerably to include all aspects of cassava production and utilization varying from germ plasm collection to processing technology and market forecasting. This program forms a network based on the International Centre for Tropical Agriculture (CIAT) in Colombia and links with the International Institute of Tropical Agriculture (IITA) in Nigeria. This global network of cassava research activities embraces projects in over twenty countries of Africa, Asia, and Latin America.

C. Fisheries

The Fisheries program has concentrated on three main areas which include research on improvement of rural artisanal fishing methods, increased fish production through aquaculture in confined waters, and the reduction of waste through better handling and processing of fish. The majority of IDRC fisheries support has been for aquaculture since it is becoming evident that capture fisheries are close to reaching the maximum catch of wild stocks without depleting them. Southeast Asia

is a main focus for this program since 4 million tons of fish and fish products are already raised here each year through aquaculture. Projects include breeding of carp in West Malaysia and India, milkfish production in the Philippines and oysterculture in Sabah.

D. Food and Nutrition Sciences

The Food and Nutrition Sciences program embraces the whole post-harvest scene including methods of harvesting, drying, storage, processing, distribution, utilization and consumption of major food crops. Project support is for applied research on specific components of various post-harvest systems and the development of food processing industries. Projects in some of the other program sections may have a research component related to these factors, particularly utilization and nutrition. One of the first projects in this program established a village-size flour mill in Northern Nigeria. This pilot mill is producing a consumer acceptable flour from locally grown sorghum grain and the project has integrated many activities associated with the mill from the procurement of grains to consumer acceptance and utilization studies of the product in both traditional and new foods. The mill also provides a market for indigenous grains which were normally grown as subsistence crops. The results of this early project encouraged similar research in other countries and currently a network of projects concerned with various aspects of the system is developing across Africa.

A network of post harvest systems projects has been established in Southeast Asia oriented to rice producing countries. A series of workshops and meetings were organized through which Asian food scientists have been able to identify and set priorities on a number of research activities which should be undertaken in a coordinated way. Several donors in addition to IDRC have become interested in this approach to the problem and a multidisciplinary, multi-national team is being established this year to provide both the technical assistance needed and the coordination of donor support activity to gain the greatest results from the resources available.

Traditional methods of processing grain into flour have involved a considerable amount of labour and drudgery on the part of rural women. New processing methods which allow them both time and energy for other activities is another program focus being encouraged by IDRC.

E. Forestry

In addition to food crops, animals, fish and their utilization, the AFNS Division also has a forestry program which has concentrated mainly on two activities. The first of these involves tree planting in regions which are short of wood such as the Sahel in Africa and the second involves the utilization of timber in areas where little use is made of the larger forest resources which are available. An extensive network of projects covering various aspects of dryland afforestation and irrigated forest plantations has been established in the Savanna regions of Africa for the purpose of protection of

agricultural fields and the production of wood products for local needs. Another network of projects to develop technology for the utilization of a larger number of tropical timber species in construction is currently operating in the Andean countries of Latin America.

Recently work on agrisilvicultural systems in the tropical rain forest zone of West Africa has been encouraged. The projects being developed there involve a multiple land use system within which forest crops are raised in combination with agricultural crops in a long term rotation. It is hoped that research of this type may find some solution to the problems of the shortening rotations in shifting cultivation resulting from increased population pressure on the land.

Supporting Activities

In addition to providing funds for research in national institutions, a number of supporting activities are also funded and organized by IDRC. A variety of workshops and small conferences on important topics have provided opportunities for researchers and policy makers from many countries to get together to discuss problem areas, identify research priorities which may need funding, review programs in on-going projects and generally share experience. Where necessary or advantageous, scientists with specialist knowledge from developed or other developing countries may be invited as resource people but generally an attempt is made to keep the groups small and focused on specific problems. These activities are intended to

encourage networks of similar projects in an attempt to remedy some of the isolation experienced by developing country researchers from a larger investigative community.

At times IDRC may provide consultants on a short-term basis to a research project to provide a specific technical input during the course of the project or to help define specific details of research methodology and focus during project development. Occasionally, as mentioned earlier, an expatriate scientist may be provided to a project as a technical adviser but never as a project leader or director. Such a person is provided only when requested by the grantee institution because it lacks expertise in a particular technical field or where the provision of such a technical person will help develop that expertise locally and fill manpower gaps while local people are away undergoing technical or degree training.

IDRC has funded and produced a number of publications coming out of workshops and programs funded by it. These tend to be state-of-the-art reviews, compilations of papers presented at specific problem-oriented meetings and in some cases have been bibliographies or technical reviews. A number of these have been done in cooperation with the International Agricultural Research Centres related to programs receiving IDRC support. These are usually done through the IDRC Publications Division. In addition, the IDRC Information Sciences Division has been deeply involved in developing a variety of information services and centres providing computerized literature search and copy services.

Access to information is an extremely difficult problem for developing country researchers and these services attempt to provide a means for them to obtain the latest and most relevant research information on topics related to their research.

Training is another important aspect of IDRC's activities which is aimed at improving the technical and administrative capability of personnel from the institutions receiving IDRC support. This training takes a variety of forms and for the most part is project oriented rather than simply providing general scholarship support. Since the kind of research project we like to support is one that can have a catalytic role, in that it has the potential for generating further activity in both research and action programs, most of our projects contain a training component which will help to increase the capability and number of people available to carry on and develop the program in a more effective way after project funding ends. This training may be at the graduate degree level, special short-term training at an international agricultural research centre, a regional institution or a locally organized course. In some cases in-service training is included with provision for students to gain experience working in the project directly or through providing funds to support thesis research supervised jointly by the project personnel and university advisers. In addition to the training funds included within the specific projects our Social Science and Human Resources Division provides pre and post project training scholarships and a variety of fellowships for mid career and senior scientists

to take sabbaticals or further specialist training away from their home institutions.

A further program thrust of IDRC has been support for the international agricultural research centres. In general this support has been for specific activities related to the priority areas of crop research mentioned earlier. Specific examples of this support are the Cassava program at CIAT in Colombia, Sorghum and Grain Legumes at ICRISAT, and the Cropping Systems program at IRRI here in Los Baños, to mention several. In every case IDRC program officers have worked closely with international agricultural research centre personnel to link these core technical activities as quickly and as closely as possible to networks of national research programs through workshops, working groups, regional travel opportunities to visit other research groups and sites, and training. On a few occasions funds have been provided to a Canadian university or other relatively developed country research institute to do some basic research of a very highly specialized nature as back up support for work at the international centres. Examples of this are research into the physiology of drought tolerance and the development of tissue culture techniques for cassava as a means of getting clean plant material which can eventually safely be moved around the world for testing in other cassava growing areas without the danger of carrying unwanted disease factors with it.

Other Programs

In addition to the sample of AFNS projects and program thrusts I have described, mention must also be made of activities in both the

Social Sciences and the Population and Health Sciences Divisions which are very closely related to agricultural development. Of direct importance is a series of projects supported by SSHR concerned with institutional and management effectiveness. The focus of these projects covers topics as broad ranging as institutional modernization problems, comparative case studies of development projects, evaluation of performance and effectiveness of various development programs and study of rural credit associations. Support for development of a research administration and management training program has also been provided. Other social and environmental problems which affect the way people can work and respond to opportunities if provided are receiving research support. These relate to education, to health problems, village health delivery systems, sanitary drinking water and waste disposal to mention just a few.

In Conclusion

Most of the specific projects I have referred to deal with the development or improvement of technology and its application to production and utilization systems of small farmers and other rural people. These activities by themselves, of course, do not constitute agricultural development but are important components which help form a solid basis from which to achieve the more general objective of a productive agricultural system which can provide greater well-being for its participants. We are very much aware that any one of these projects or approaches is only a small part of what is needed to bring

about real and lasting agricultural development. Nevertheless, while we have focused our research support on fairly narrow immediate objectives, every project is judged on the basis of its ultimate potential for improving the living standards of potential users of project results. Consideration is also given to the linkages and production systems which will make the specific technology useful and to the way it will be introduced to large numbers of small farmers and other users. The answers to these questions are not always clear but attempts are made to encourage research program formulation in such a way that these kinds of questions are asked by the people carrying out the research and to keep the ultimate goals close in mind.

No one research project can adequately cover all the activities, technical questions and administrative problems which must be encompassed in an agricultural development program. These range from technology and techniques through a comprehensive understanding of current production practices and systems, production input availability, local, national and regional institutional organization, education, and clear policies and good management on the part of these institutions. How all of these things are put together in an effective way is still very much an art which all of us are struggling together to understand and master. What mix of these various components will work best is probably different in each situation and must be determined by those involved. Hopefully, the kinds of program support IDRC has been providing can help fill in some of the pieces of this intricate

puzzle. While I can say that there is concern in IDRC for putting all the pieces of the puzzle together into a clear and cohesive design, I do not claim that we have touched on more than just a few of those pieces. We hope that some of them are key pieces, however, that will help decision and policy makers in the institutions and countries receiving our support to see the overall patterns more clearly and arrange the pieces they have available in the most effective way.

How successful we have been in working with others to accomplish these goals and in being responsive to the needs of developing countries is best judged by those who have dealt with us and received support for research activities. In some way the value of IDRC's contribution toward accelerating rural development must be assessed by measures expressed in the words of a prominent leader of the Third World, Julius Nyerere, President of Tanzania when he says: "Development means the development of people. Roads, buildings, increases in crops ... are not development; they are only the tools of development ... an increase in the output of wheat, maize or beans is development only if it leads to better nutrition of people ...

But people cannot be developed; they can only develop themselves ... an outsider cannot give a man pride and self-confidence in himself as a human being. Those things a man has to create in himself by his own actions.

We hope that IDRC's activities and approach in support of research in developing countries is making these things possible in some small measure.

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