

**IDRC
ANNUAL
REPORT
1979/1980**

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The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in five sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an international Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

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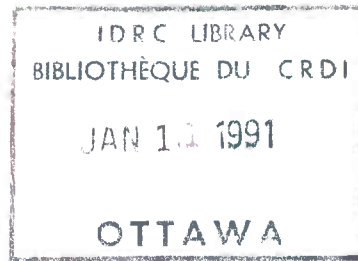
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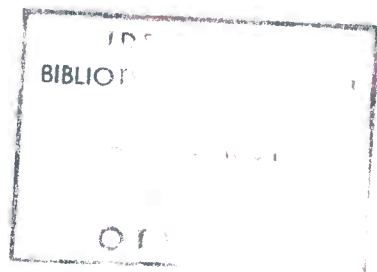


Annual Report 1979-1980

International Development Research Centre

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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

CENTRE DE RECHERCHES POUR LE DEVELOPPEMENT INTERNATIONAL

June 6, 1980

The Honourable Mark MacGuigan
Secretary of State for External Affairs
Lester B. Pearson Building
Ottawa, Ontario

Dear Mr. Minister:

I have the honour to transmit herewith the Annual Report of the International Development Research Centre for the fiscal year ending March 31, 1980, for submission to Parliament as required by Section 22 of the International Development Research Centre Act (Revised Statutes of Canada, 1970, 1st Supplement, Chapter 21).

Yours sincerely,

Roger A. Blais
Vice-Chairman of the Board

Introduction

In September 1969, on the eve of the creation of the International Development Research Centre, the World Bank Commission on International Development chaired by Lester B. Pearson issued its report. Its title, "Partners in Development," declared unequivocally the cooperative nature of development. The body of the report, however, characterized the problems as being primarily those of the developing countries.

A decade later, the Independent Commission on International Development Issues under the Chairmanship of Willy Brandt reported its findings. The report appeared as IDRC prepared to mark its tenth anniversary. The Brandt report is entitled "North-South: a Programme for Survival."

In ten years the theme had changed from "progress" to "survival" and the focus from developing countries to all countries.

The decade of the seventies brought with it a population increase of 500 million — a figure equivalent to 21 Canadas. And while the *rate* of population increase is beginning to decline — for the first time in recorded history — the total number of births is awesome: over 1 million every 3 days in 1980. Roughly a Canada every 2 months.

In the seventies the world experienced as well simultaneous increases in the price of energy and food. These presented serious problems to the industrialized nations and crippling blows to the developing countries. In South Korea, for example, the cost of imported fuel rose from 7 percent of imports to 33 percent. For the developing countries, fuel is not a commodity to be conserved. To meet their development objectives those countries will need to increase their energy consumption by as much as 500 percent in the next 20 years.

In sector after sector, the same mix of accomplishment and setback is evident.

- An LDC sustained increase in agricultural production of 3.04 percent, better than most industrialized states but woefully inadequate to meet the demands of population increase. By 1985 there is projected a cereal deficit for the developing countries of 95 million tonnes annually.
- A worldwide eradication of smallpox and a good beginning on other major diseases. Yet in terms of general health care, a woeful record. Canadians enjoy 1 physician for every 574 persons. In Ethiopia the ratio is 1 to 94 000.
- World illiteracy fell below 50 percent for the first time, now standing at 48 percent. In terms of human skills, however, the need remains desperate. In Japan there are 370 scientists and engineers per 10 000 population, and in Canada 280. In Botswana the figure is 12.5; in Bangladesh 3.2.

These are some of the facts that prompted the Brandt Commission to say that more must be done, and done faster, if catastrophe is to be avoided in both North and South. "For these trends to continue is

dangerous enough, but they can easily worsen. A number of poor countries are threatened with the irreversible destruction of their ecological systems; many more face growing food deficits and possibly mass starvation. In the international economy there is the possibility of competitive trade restrictions or devaluations; a collapse of credit with defaults by major debtors, or bank failures; a deepening recession under possible energy shortages or further failures of international cooperation; an intensified struggle for spheres of interest and influence, or for control over resources, heading to military conflicts. The 1980s could witness even greater catastrophes than the 1930s."

IDRC seeks to discharge its mandate with these figures and these predictions firmly in mind. Its role is to seek formulae for a preferred future. It does so by supporting research in the developing countries designed not only to solve problems but designed to enhance the skills and competence of the scientists and technologists of those countries. The Centre is not satisfied simply with the solution of a problem, no matter how important it may be. It strives to develop locally the ability to keep on solving problems. IDRC is focused on the developing countries. The research it supports meets their needs, employs their skills, reflects their priorities. Without question, however, the Centre contributes to the welfare of Canadians for it strengthens what Willy Brandt describes as "the preconditions of human survival."

Reports of the Centre's activities follow.

Agriculture, Food and Nutrition Sciences

59 projects — \$10.6 million

Since its beginning, the AFNS program has concentrated much of its resources on research to improve the traditional crops of the developing countries, crops that until then had been virtually ignored by agricultural scientists. One such crop is sorghum, the single most important cereal of the semi-arid tropics.

Back in 1972, the division began supporting sorghum improvement projects in Senegal, in West Africa, and Ethiopia in the East, aimed at not only developing better varieties of sorghum, but at developing a cadre of African research scientists to carry on the work. In the past year both projects entered their third and final phase, during which the emphasis will be on developing agronomic packages to give stable yields with the new varieties under farm conditions. Perhaps most important, this phase of the work will be carried out solely by African researchers, many of whom received their training in the earlier stages of the project.

By contrast, triticale is a new grain. The first successful hybrid ever produced, it was developed by scientists in Mexico and Canada, and has been receiving IDRC support since the Centre's inception. A cross between wheat and rye, triticale is a high protein grain that can resist drought, poor soil, high altitudes, and low temperatures. The Centre continues to support research to adapt triticale to different developing regions — such as in Chile, where research has now entered a third and final phase, or in Sri Lanka, where a new project will test triticale, wheat, and barley in cropping patterns to benefit the country's small farmers and cut down on costly food imports.

Barley is another of the traditional crops that has received inadequate attention from agricultural scientists. During the year a Centre grant was approved for a major barley improvement project to be carried out at three research stations in Turkey, where barley is the second most important crop. The Turkish researchers will cooperate with cereal scientists at international agricultural research centres in Mexico and Syria in their efforts to improve both the quality and quantity of barley grown. It is expected the results will be applicable in other Near Eastern countries where barley is common.

The Andean region of Latin America is the home of many traditional crops, perhaps the best known and most widely traveled of which is the potato. There are many others, however, many of which are virtually unknown outside the region. Crops such as quinoa and lupino could replace imported wheat and soybean in the region. In Peru the Centre approved a grant that will bring together three separate university research projects to study traditional crops including the potato — of which there are still hundreds of wild varieties — in a major effort to raise the standard of living of the small-scale farmers of the high Andes through improved farming systems.

Another root crop thought to have originated in this region is cassava — also known as manioc or tapioca — which is now a staple in many developing countries. As part of its continuing support for cassava research, the division approved a project to collect wild, previously uncultivated species, in northeastern Brazil and screen them for economic and other desirable characteristics. Such projects not only improve crops, they increase the plant genetic pool available for future breeding and hybridization programs.

One of the division's most successful programs to date has been the cropping systems network it helped to establish and support in Asia. Multiple cropping, scientifically practiced, can greatly increase the food production potential of a given piece of land and make more effective use of labour and other resources. Multiple cropping is familiar to many smallholder farmers in Latin America, and the division is now using its Asian experience to help establish a research network that will seek to adapt the lessons learned in Asia to multiple-cropping projects in Colombia, Costa Rica, and Honduras. As in Asia, the aim is to increase both production and income for the region's small farmers.

Bananas and their relatives the plantains are important local foods as well as major export crops in Latin America and the Caribbean, but their extremely high soil nitrogen requirement is making them too costly an investment for many of the small producers. In Panama a Centre grant is supporting research to grow legumes in banana plantations — legumes that have the ability to extract nitrogen from the air and convert it to a form that can be used by plants. A successful banana-legume combination may reduce the amount of supplementary nitrogen fertilizer required by as much as 50 percent, inhibit the growth of weeds, and reduce the damage caused to soils by erosion during tropical storms.

In the more arid regions of the world, such as Sahelian Africa, trees themselves can do much to prevent soil erosion and improve the immediate environment, as well as provide fuel, building materials, and fodder. In Senegal the division's forestry program has supported two projects: one concerned with rangeland reforestation to provide forested grazing areas

near cattle watering centres, and the other to improve the quantity and quality of gum-producing acacia trees. Now the two projects have been combined in a second phase with the aim of developing an integrated system of afforestation and gum production.

Gum arabic from the acacia tree has a wide variety of uses, from confectionery to cosmetics. Almost as versatile is the shea butter tree, also indigenous to much of the Sahelian region. The shea butter nut produces not only a high quality cooking fat (it is one of the few naturally occurring oils that is solid at room temperature) but also many pharmaceutical and cosmetic preparations, and is even smeared on the mud walls of houses to prevent erosion. The traditional process for extracting the butter from the nut is long, tedious, and not very efficient. In Mali where the 1977 harvest was a quarter million tonnes of nuts, the division is supporting a project to develop simple mechanical extraction methods such as a screw press that would extract 85 percent of the oil instead of the 35 percent recovered by traditional means. The process would also leave a high-protein residue suitable for cattle feed. In 1977 the extra oil alone would have provided additional revenues of some \$30 million to the rural people of one of the poorest countries in the world.

Another product of the African forest is charcoal, which is one of the main sources of cooking and heating fuels in the developing countries. But, in common with other fuels, charcoal is becoming increasingly expensive — a fact which has focused research attention on the inefficiency of most charcoal stoves. In Tanzania the division is supporting a comparative study of numerous African and Asian charcoal burning stoves with the aim of developing a simple, fuel-efficient stove that can be built locally, or adapted to available materials in other regions.

Perhaps one of the most versatile of woods is in fact not truly a wood at all: bamboo is used for everything from house construction to handicrafts to a tasty snack, and although it may grow as tall and as thick as a tree, it is in fact a grass. In spite of its economic importance to many Asian countries, relatively little research has been done on the bamboo species, so even the means of propagation are not fully understood. In Bangladesh it is one of the most important forest products and as demand continues to increase there is a need for large-scale plantations. The Bangladesh Forest Research Institute, with the aid of an IDRC grant, has undertaken a project to develop high-yielding, high-quality bamboo species for both household and industrial uses. The project will also seek an inexpensive means of mass propagation of bamboo, and provide training for bamboo researchers.

Bamboo is by no means exclusive to Asia, and neither is its close relative rice. In Sierra Leone, for example, rice is grown by 90 percent of the farmers, and in villages it is often stored on bamboo slats high above the cooking fire, where it stays dry and the smoke keeps the insects away. The country is presently making a major effort to become self-sufficient in rice, but much of this effort may be lost unless storage techniques can be improved. The division has supported numerous rice-storage projects in Asia, and is now able to bring that experience to bear on the somewhat different African situation. By studying traditional storage techniques the government's Rice Research Station hopes to devise improved storage that will significantly reduce the present high loss rate and be able to accommodate the projected increase in production. The project is linked to

a similar study of cowpea storage in Sierra Leone, and the results should be applicable to other African countries in the same climatic zone.

In Malaysia, where fast-growing rice varieties have made two or even three crops a year possible, another kind of storage problem is presented by the rice that must be harvested in the wet season: if it is not cleaned and dried within 24 hours it begins to ferment. What is needed is an inexpensive, simple cleaner-dryer for the small farmer. With IDRC support the Malaysian Agricultural Research and Development Institute is placing high priority on the development of a system using simple equipment such as iron pots heated on a fire of rice straw. The project is part of a network of rice postharvest research supported by IDRC in this region.

In Mali the climate is dry and the main cereal crop is millet, but the problem is the same: the inability of smallholder farmers to process the grain quickly and efficiently after harvest causes excessive losses. The Division du machinisme agricole (DMA) in Mali believes it can develop a man-powered thresher based on the threshing principle used in a 35 h.p. tractor-powered machine developed in neighbouring Senegal. Such a machine would be practical for a small village, even a large family group. With IDRC support the DMA will design and field-test an inexpensive manual thresher, in collaboration with a national farm machinery manufacturer, train villagers to operate it, and local blacksmiths to repair it. A successful prototype may well go into large-scale production in Mali and other millet-growing countries.

Between the manual thresher and the 35 h.p. model comes the concept of 10 h.p. mechanization, pioneered in Asia and now being adapted to very different conditions in Egypt. The idea is to design a series of farm implements — a thresher, a sprayer, a pump, a drill, for example — all powered by a single 10 h.p. diesel engine. After overcoming some initial difficulties the state-owned Behera Corporation in Alexandria, with the aid of an IDRC grant, succeeded in developing several machines suitable for Egyptian conditions. Now in a second phase the project engineers will further test, refine, and develop the machines that could help to increase the productive capacity of the country's small- and medium-size farms.

Another concern of the division's postproduction systems group is small-scale food processing. In a project in Thailand that recently entered its second phase, the objective was twofold: to develop processing and cooking methods for high-protein legumes, such as cowpeas, which would increase legume production and consumption. In the first phase more than 50 different foods made from local legumes were developed and tested and found to be highly acceptable to the villagers. Processing and product development will continue in the second phase, using a dehuller designed by the Prairie Regional Laboratory of the National Research Council of Canada, in Saskatoon, and a pilot-scale processing enterprise will be established in one village.

Fish is another important source of protein in many developing countries — in Mali for example fish and millet are the staples of the average family's diet — and its preservation presents a different, though not dissimilar set of problems. The division supports several research projects in fish processing, including one in Mali and another in Indonesia. Both were begun during the past year and are concerned with the uses of salt and solar energy to preserve the fish. As with other "crops," the overall

objectives of both projects are to develop economical techniques to reduce losses and improve quality.

But before the fish can be processed it must first be caught — or raised. Aquaculture, the practice of fish farming, is a major research-support area for the division's fisheries program. Increasing interest is being shown in cageculture, in which the fish are kept in floating pens until they are of marketable size. The system has obvious advantages where large bodies of water are available, whether natural, like Africa's Lake Togo, or man-made like Sri Lanka's ancient irrigation tanks. Cageculture projects were approved in both Togo and Sri Lanka during the year, together with another in Indonesia that will make use of abandoned tin-mine pools. Each will study various techniques with different species under different conditions as part of a growing network of Centre-supported aquaculture research.

Many fish that have never been cultivated show great economic potential. One such fish is an intriguing Latin American species found from Mexico to Peru, and known locally as *chamé*. The fish has a unique ability to survive out of water for several days, thus offering a simple solution to the problem of transporting fresh fish. It also has few bones, tasty white flesh, and can live in fresh or brackish water. The question is whether it will live, and breed, in captivity, which is what an IDRC-supported project at the Fundación Ciencia in Ecuador hopes to establish over the next three years.

One of the problems with aquaculture is the ever-present risk of disease or parasites, especially in ponds stocked at high density. The division has in recent years encouraged greater research into the control of fish diseases, and during the past year provided support for new projects in Malaysia and the Philippines to study problems created by fish parasites in aquaculture systems.

In Latin America, however, livestock are still the main source of animal protein. Scientists in Belize have been studying common pasture legumes from the region in a project designed to obtain increased forage from marginal lands. The legumes, many of which are regarded as weeds, will often grow where no other crop can survive, and the most promising varieties will be extensively tested in the project's second phase that has just begun. Also in phase two is a related pasture-management project in Mexico, where the objective is to find the most efficient systems of livestock production in semi-arid areas through balanced grazing systems and better pasture management. The project is vital to Mexico's agriculture because the high cost of forage under the present system is forcing many dairy farmers out of business. And in Peru a promising new project will experiment with grazing-based animal production in the fertile but fragile ecology of the vast Amazon river basin — a project which could have considerable significance for the six countries through which the basin extends.

A number of projects are also concerned with converting agricultural by-products to animal feeds. One of the most recent to receive an IDRC grant is in Thailand, but could have wide application elsewhere. The aim of the research is to identify certain types of fungi that will act on wood and other by-products, such as sugarcane bagasse and rice straw, in a fermentation process that will increase their protein content and improve

digestibility. The project forms part of a worldwide network of by-products research supported by the division.

The pig is one animal that seems to be able to survive on whatever scraps are available. In Central America most farmers keep three or four pigs, but productivity is low, in part because of the erratic food supply. The division is now supporting a project in El Salvador to develop practical low-cost feeding and management systems to enable smallholder farmers to increase production of the hardy native breeds that have demonstrated much higher survivability and reproductive rates than imported European breeds. The project is a joint effort with the Institute of Nutrition for Central America and Panama, which serves the entire region.

Health Sciences

26 projects — \$3.1 million

Tropical diseases affect tens of millions of people in the developing countries, causing incalculable suffering and severely limiting the capacity of the people to improve their lot. Six major tropical diseases are now the subject of a concerted international research effort coordinated by the World Health Organization of the United Nations. IDRC continues to support the WHO's Special Programme, but it is also concerned with diseases that are not presently part of the program.

One of these is dengue hemorrhagic fever (DHF), a virus that can kill from 4 to 40 percent of its victims, and is now wide-spread in Southeast Asia. In Indonesia, for example, the number of reported cases has been increasing for several years to the point where the disease is now considered endemic. IDRC supported a regional seminar on the disease in 1977, and a year later provided a grant for a project to study the disease in Indonesia. Complementing that work, a further project was approved this year to study the disease in the area of Ujung Pandang, one of the few urban centres in Indonesia still reportedly free of the hemorrhagic form of dengue fever. If researchers can find an explanation for Ujung Pandang's apparent immunity, they will add considerably to understanding the nature of the disease and possible measures to control it.

Yellow fever, like dengue fever, is caused by an arbovirus. Such viruses are "held" by the animals of the forest, and transmitted by insects, and have been isolated not just in the tropics but in almost every area other than the polar regions. At the Caribbean Epidemiology Centre in Trinidad, the IDRC is supporting a project that will develop simple diagnostic tools for arboviruses in general, and, in particular, study the transmission of yellow fever by mosquitoes, and how the yellow fever arbovirus survives in the forest between epidemics.

Tuberculosis is still a major public health problem in several African countries, including Kenya. In order to evaluate and improve the national tuberculosis control program, the Kenya Tuberculosis Investigation Centre is carrying out a prevalence survey with the aid of an IDRC grant because no accurate statistics are available on the current tuberculosis situation in the country. Data from this two-year project, to be carried out in 17 different locations, will serve as a basis for future planning of tuberculosis control in Kenya.

Trypanosomiasis, better known as sleeping sickness, is a threat to some 35 million people in Africa, and a major impediment to the

development of beef and dairy cattle production. As an adjunct to the WHO Special Programme, which focuses on the epidemiology and pathology of sleeping sickness, IDRC is supporting a project aimed at biological control of the carrier of the disease — the tsetse fly. The project will be carried out in Kenya by the Commonwealth Institute of Biological Control, which in an earlier project identified the velvet ant and the bee fly as two of the tsetse's principal natural enemies. Under controlled conditions, the CIBC researchers will study the biology of the two predators, with a view to developing mass-breeding techniques, and evaluate the effectiveness of the predators as a means of tsetse control through a series of experimental releases at tsetse breeding sites.

Many diseases could be prevented through the provision of a clean water supply and adequate toilet facilities. The division continues to support several projects under its rural water supply and sanitation program, a number of which have now moved into a second phase of research. In Botswana, in one of a network of low-cost sanitation projects for Africa, researchers built and tested numerous simple toilets for testing in squatter communities around large urban areas. Three designs have proved technically satisfactory, but so far have not generally been well accepted in the communities. Acceptance is crucial, as the government plans to install 20 000 low-cost sanitation units in the 1980s. So in a second phase, a user survey will be conducted and further modifications and improvements made to the selected toilets. A public education program will be based on the results of the survey and economic studies will also be carried out.

In Panama, engineers have been studying simple water filtration systems that can be used in bringing river water to the villages and have produced a design and construction manual for the use of sand filtration galleries. Based on these studies, improved infiltration galleries will be constructed at four sites with different conditions and their effectiveness in providing clean water will be evaluated over several months. By putting theory into practice, the researchers will be able to revise their manual and put it into final form for widespread distribution.

A project in Singapore deals with a different sort of problem — how to dispose of the wastewater from an intensive pig-raising operation. The answer has been to grow algae in the water in specially designed ponds. This leaves the water clean enough for reuse in the piggery, and the extracted algae can be used as a feed supplement, thus reducing the cost of the treatment system. In phase two, the researchers will concentrate on developing an efficient means of harvesting and processing the algae and will carry out a detailed economic evaluation of the system. The project has already attracted considerable interest within the region and a seminar held at the end of phase one was attended by 22 scientists from 9 countries.

Approaches to rural health care delivery vary widely. Thailand is experimenting with the use of registered nurses, who receive a full year's additional training before they are posted as nurse-practitioners to run rural health centres. Some 300 nurse-practitioners have now been in the field for at least a year and IDRC is supporting an in-depth evaluation of their performance in order to help the Ministry of Health assess the effectiveness of the program in meeting basic health needs in areas where there may be only one doctor for every 200 000 people.

Nutrition is also important to health in more ways than one. In Colombia, the division provided grants in the past year for three projects

concerned with nutrition and health. One is concerned with the effects of malnutrition on physical and intellectual development. Another deals with the relationship between malnutrition and internal parasites such as roundworms. The third will investigate and attempt to confirm recent findings suggesting that even a moderate degree of malnutrition negates the effects of vaccinations against common childhood diseases such as measles, diphtheria, and polio. The three projects will add considerably to the body of knowledge on the problems of malnutrition and how best to overcome them.

Breast feeding is vital to the nutrition and general health of babies in most developing countries, but the relationships between lactation and fertility, and the possible dangers of using hormonal contraceptives while breast feeding, are still controversial. Through its program for research into fertility regulation methods, the division is supporting a number of projects around the world that are investigating different aspects of the fertility-lactation problem. In Egypt and Mexico, studies are under way to assess the effects of breast-feeding duration and type on postpartum amenorrhea (absence of menstruation). In Chile, a study is being made of the effects of new contraceptive implants in lactating women, while in Indonesia researchers are examining the effects of oral contraceptive use during lactation.

The fertility regulation program is also concerned with the development of new, safer contraceptives such as the subdermal hormonal implants mentioned above, which are also being evaluated in terms of effectiveness and acceptance in an IDRC-supported project in Ecuador. Another new development with which IDRC continues to be closely involved is the development of a contraceptive vaccine. The potential of such a vaccine was first demonstrated in the 1970s at the All India Institute of Medical Sciences (AIIMS). Since 1975, IDRC has been supporting a joint program with the AIIMS team and the International Committee for Contraceptive Research (ICCR) to develop the vaccine for widespread use.

The first phase of the project demonstrated that it is possible to immunize a person against a specific hormone in the body and counteract its action in maintaining a pregnancy. The immunity provided varied considerably, however, and in the second phase researchers will attempt to overcome this problem by developing a vaccine that is safe, reversible, and will ensure protection against pregnancy.

Finally, a new field of research for the division, one that will likely see increasing activity in future, was opened up with the approval of a grant for a project to study industrial health in Thailand. In common with a number of other developing countries, Thailand is becoming increasingly industrialized, and as the shift from agriculture to industry continues, attention will need to be given to improving conditions to safeguard the health of the workers. The first project will investigate conditions in Samutprakarn Province, which has 1000 factories employing 64 000 workers, and develop a model for improving conditions that could be applied elsewhere in Thailand and in the region generally.

Information Sciences

14 projects — \$3.4 million

If researchers and decision-makers are to proceed effectively and not to waste time repeating work (and mistakes) already made, they need to be

supplied with the information that represents a consolidation of what is already known.

But, in building such a service, no country can be self-sufficient. Even a superpower has difficulty in acquiring and processing the information that it needs from foreign sources; a developing country cannot hope, of its own efforts, to construct an adequate information service for its researchers and decision-makers. The solution lies in cooperation.

Fortunately the world now has experience in managing cooperative information systems. These require each country to identify and process the information produced on its own territory, but the systems also provide mechanisms by which the information reported can be merged into a single index and be made available to each participant. In exchange for providing its own information, a country thus obtains the information from the rest of the world.

The Information Sciences Division has strongly supported the establishment of such systems — efforts that are now yielding fruit and bringing about an increasing rationalization of investments. In particular, the information system for agricultural science (AGRIS), which is managed by FAO, now has the participation of most of the countries in the world and is reporting more than half of all new agricultural information produced. IDRC has helped particular regions (Latin America and Southeast Asia) to establish regional resource bases through which individual countries can participate in AGRIS and from which they can obtain outputs tailored to their needs. With the success of these regional resource centres IDRC is now carrying some of its investment down to the national level and, in the course of the last year, five grants were awarded to individual countries to consolidate their participation in AGRIS.

A similar cooperative information system (DEVSIS) has been proposed to serve the needs of development planners and investment banks. IDRC participated in its design and has helped the UN Economic Commission for Latin America carry out pilot experiments on a regional basis. The year under review saw a major decision to embark on a program known as DEVSIS Africa: this program will be managed by the UN Economic Commission for Africa in Addis Ababa, and is being financed jointly by the UN, the UNDP, and IDRC.

Large cooperative information systems provide essentially an inventory of information available in a particular economic sector. The end-user, however, often needs an interpretive information service delivering information in his own language and at his own level of understanding. Hence IDRC has also supported the establishment of specialized information analysis centres on particular topics of high priority for development. For example, since 1975, IDRC has supported the International Grain Legume Information Centre based at a research institute at Ibadan, Nigeria. This centre is now well established. A second grant was awarded during the year, but, after 1981, it is expected to become part of the core program of the host institute. During the year, work was done to prepare for the start of another specialized information centre, this one dealing with water buffalo will probably be located in Thailand.

Grants were made to continue the development of a network of institutions cooperating in a Pan American sanitary engineering information

system, based at Lima, Peru, and to establish a new Latin American human settlements information network, to be based at Bogota, Colombia.

Some older information science projects reached a new level of maturity during the year. The magazine *Famille et Développement*, which had been published by IDRC since January 1975, was transferred to a new organization, l'Association africaine d'éducation pour le développement (ASAFED), which will continue its publication with support from a consortium of donors, of which IDRC remains one. Also, the highly successful network of institutions engaged in industrial extension work (TECHNONET Asia, covering nine countries of Southeast Asia) became incorporated under the laws of the Republic of Singapore. The program thus ceases to be one administered directly by IDRC, but a grant was approved to give partial assistance to the operations of the new institution over the next three years. During this time it is expected that TECHNONET Asia will, among its various other programs, ensure the training of yet another 500 extension officers to serve the needs of small- and medium-size industries in the region.

In Ottawa, the division continues to maintain MINISIS, a set of computer programs that have proved extremely useful for the management of libraries, as well as the recording and retrieval of bibliographic information and other types of data. Ten installations of MINISIS have now been made and demands for this system continue to increase. In cooperation with the Office of the Secretary, a system of licensing has been developed and three private companies have signed agency agreements to market MINISIS commercially in Western Europe and North America. IDRC continues to provide MINISIS free-of-charge in developing countries. Other organizations have bought computers for the MINISIS operations in Tunis and Kinshasa, but the Centre agreed to provide a computer for a MINISIS operation at the Centre national de documentation (CND) in Rabat, Morocco. CND already has a machine-readable file of a hundred thousand Moroccan documents and, with its MINISIS installation, will be putting on-line terminals for information retrieval in several government departments as well as in the principal provincial planning agencies.

The IDRC library continues to provide service to the Canadian community concerned with Third-World development. A decision was taken to enhance the capacity of IDRC's own computer so that it can provide information retrieval services to any Canadian institution that connects to it by telephone. The data bases available for searching are those created within IDRC (the library, the Canadian DEVSIS experiment, and SALUS — information on health care services in rural areas of developing countries), as well as those obtained by agreement from four of the UN agencies particularly concerned with development work.

Social Sciences

52 projects — \$5.5 million

One of the major concerns of the division's economics unit is the question of food production. Thus the division continues its support for the International Food Policy Research Institute at one level, while also supporting a number of economic studies in the agricultural sector that deal with some of the basic issues confronting farmers in the developing countries.

In Sierra Leone, for example, IDRC is supporting a study of the economics of cassava, the second most widely grown food crop in the country after rice, with a view to finding out what are the relative advantages to the farmer and to the country of cassava production over rice. Another project in this West African country is examining the sometimes prickly question of crops versus cattle with the aim of developing policies and management practices that will both maximize production and minimize conflicts between farmers and herdsman. In Nigeria there is support for a research project to evaluate the effectiveness of large-scale agriculture, which currently receives the bulk of government support even though 90 percent of the country's food is produced on small farms. By studying the relative efficiency of both large and small farms the researchers will be able to develop recommendations for an agricultural strategy to lessen the country's present dependence on food imports.

Efforts to increase food production can often be undercut by inappropriate marketing policies, however, as farmers will quickly reduce production in response to low prices. In Ivory Coast the division is funding a study of agricultural marketing at its primary level — between farmer and initial purchaser — in an effort to gain a better understanding of the workings of primary markets. Data from the study will be made available to policymakers in other countries of the Sahelian zone.

Production and marketing are only two of the factors to be analyzed in a wide-ranging project in Thailand that will study the social, cultural, and economic constraints to development. In this IDRC-supported project, researchers will examine the successes and failures of development efforts in Ayutthaya province over the past decade and try to isolate the factors that determined what went wrong, and what went right. The resulting report should provide valuable insight into the dynamics of development and will have application well beyond one small area of Thailand as a contribution to understanding the impact of development programs.

Population is another important factor in the development equation. The negative effects of high growth rates are well documented, but only relatively recently have governments and agencies come to recognize that family planning programs alone are not sufficient to reduce fertility to manageable levels. The division's population and development program is now supporting a two-year study of integrated programs in three countries where family planning services are made available as part of a wider development strategy. The programs in Indonesia, Korea, and Thailand vary considerably in their efforts to link population to related development activities such as improved health and nutrition, job creation, and broader rural development objectives. By comparing the different approaches, the investigators will be able to evaluate, for the first time, the effectiveness of integrated population programs and provide policy recommendations to government planners.

The study of the movement of populations is also important in planning development programs. In Upper Volta the division has been supporting a detailed survey of population migration between rural areas, from rural to urban areas, and to neighbouring countries. The project has also helped to develop a research capacity in the country, and this will be strengthened in a second phase that will analyze the relationships between migration patterns and local socioeconomic conditions. In Paraguay the division is supporting a study of the effects of heavy in-migration resulting from the

construction of the Itaipu Dam. As in Upper Volta, the project will increase the research capacity of the country in a field in which it is presently weak, as well as obtain valuable data for regional development in the area to be affected by new hydroelectric projects.

Migration from the countryside to the towns and cities is of particular concern in Southeast Asia and Latin America, both regions undergoing rapid urbanization. One of the results of this rural-urban movement is the inability of municipalities to provide essential social services for a rapidly growing population, particularly for low-income groups. As a first step to tackling the problem the division is supporting a research study in Argentina to determine how the urban poor are affected by lack of services such as health facilities, water supply, and sanitation. The results of the 18-month study will be made available to other countries in the region with a view to conducting further, comparative research.

Infant mortality is one particularly sensitive indicator of socioeconomic conditions in any community, and one that can shed light on the impact of various forms of social services. Over a 25-year period to 1971 the infant mortality rate in Sri Lanka dropped from 141 per thousand to only 43. However in the late 70s there were signs of a slight upward trend to 47 per thousand. The population and development unit is supporting a project to study the factors affecting infant mortality in the island over the past 20 years, and to make the results available to assist government policymakers in planning investments in socioeconomic development and public health programs.

Probably the most costly of social services in most developing countries is education, especially in countries that are attempting to expand their school systems rapidly in order to make education universally available. Egypt, for example, some time ago set 1981 as the target date for universal primary education. As part of the ambitious program the government introduced the "one-classroom school" as an economical nontraditional approach to providing a flexible education service to remote rural areas — there are now more than 3500 of these schools. With the support of an IDRC grant the Egyptian National Council for Educational Research is evaluating a sample of the schools to assess their effectiveness and prepare policy recommendations for the next phase of the country's educational expansion.

Colombia is another country making a major effort to increase both the quantity and the quality of education available to its people — to the point where education now accounts for 20 percent of the national budget. The division's education unit is supporting several related projects in Colombia. One is to study the cost-effectiveness and efficiency of rural primary schools in order to assist in the future allocation of resources. A second is concerned with the factors, both in-school and out-of-school, that affect the acquisition of literacy and the habit of reading. And a third is evaluating the level of achievement in primary schools and developing the necessary testing instruments for future evaluations as the country attempts to improve the standard of education and eliminate regional disparities.

Similar projects concerned with primary school achievement are being funded in Nigeria and Thailand, while in India researchers are tackling the question of achievement from the viewpoint of the child with "learning disabilities." The aim here is both to identify the different types of learning

disabilities and to develop techniques to enable teachers to diagnose and remedy or prevent them.

Another aspect of education requiring investigation is the effectiveness of the teachers themselves. In Sierra Leone a project arising out of an IDRC-supported seminar will pioneer a new methodology to establish a profile of "the effective teacher." The teacher evaluation will be based on criteria developed in the country, and the resulting profile compared to those used in industrialized countries. Thus the researchers hope their findings will be of direct use to teachers' colleges, both in the preparation and evaluation of future teachers.

In the drive for development many countries face difficult choices in the areas of resource exploitation and industrial strategy. This dilemma is well illustrated in the case of the proposed copper mine at Namosi on the main Fijian island of Suva. As the single largest development in the region, the mine will produce profound changes in all aspects of Fijian life. A consortium of four multinational corporations is proposing development of the mine, but the government needs a great deal more information on the impact of the venture before it signs an agreement. The division's science and technology policy unit is therefore supporting a research study by the University of the South Pacific's centre for applied studies in development. The purpose of the study will be to fully evaluate all the technology policy options for the exploitation of the island's copper, and to describe for the government both the positive and the negative effects of the venture, both during construction, and under continuous operation.

By way of contrast with Fiji, Brazil, "the giant of Latin America," is well on its way to becoming a major industrial nation. But Brazil too faces difficult choices in its efforts to expand the economy. Choices for instance between large- and small-scale production, between efficiency and employment, between traditional and modern technologies. Two new IDRC-supported projects are aimed at providing the data needed to help the government arrive at the right decisions for this stage of its development. One is a study of the role of small- and medium-sized businesses and their contribution to the growth of employment, and the other will examine the effects of radical technical change on workers in the textile industry. And in neighbouring Argentina, which also has a rapidly growing industrial economy, the division is supporting a study of the role of state purchasing power in developing the nation's technological capacity. The project will concentrate on the electronics industry, but will also develop a methodology that can be used in other similar case studies.

The study of technology policy in the developing countries has been relatively neglected in the past, due at least in part to a shortage of qualified researchers. Since 1976 the division has supported a successful program of training in technology policy studies through the Science Policy Research Unit of the University of Sussex, England. Building on this experience, and using much of the material developed in the initial program, the division will now support a series of training workshops for science policy researchers in Africa, Asia, and the Middle East. The Ottawa-based program is expected to train approximately 60 researchers and policymakers over a two-year period, and in doing so to build a continuing capacity for such training within those countries in the future, a capacity that will become increasingly important as the developing countries are faced with the growing industrialization of their economies.

These examples of the projects undertaken by the four program divisions during the past year give an indication not only of the complexity of each division's programs, but also how their work overlaps. The divisions as such exist for administrative convenience; they share a common objective, as spelled out in the IDRC Act, to improve the well-being of people in the developing countries by adapting and applying science and technology to their needs.

Over the past 10 years this is what the Centre has sought to achieve, through its support for 1000 research projects, and through its programs of training and development awards for developing country scientists in order to provide a strong local base for future research. In its second decade, while there will likely be changes in emphasis in particular areas, perhaps even new programs created to tackle previously neglected fields of research, that overall objective will remain the same. The words of the Centre's co-founder and first chairman, the late Lester B. Pearson, are as valid in 1980 as they were in 1970:

"Development assistance must be concerned not only with how much should be given, but the spirit in which it is given...with what its social as well as economic consequences will be; with how it is used, and for what purposes."

This narrative is necessarily condensed, and deals only with projects approved by the Board of Governors during the past fiscal year. A broader account of the Centre's activities may be found in IDRC's annual review entitled "Searching."

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Middle East, North and East Africa (Cairo)
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*Office of the Senior Vice-President closed as of 31 December 1979.

Projects for which funds were approved during the fiscal year 1979-1980

Agriculture, Food and Nutrition Sciences

73-0063 (S1) Plant by Plant Interactions (UBC), supplement

For the University of British Columbia, Canada, to complete training the student responsible for conducting research into the effects of residues from mungbean and cowpea crops in multiple cropping systems. \$3000 — 1 year.

74-0163 (S1) Trypanosomiasis (Kenya) — phase II, supplement

For the Kenya Agricultural Research Institute to complete the training of African scientists and to publish the results of its study into effective control of the lethal cattle diseases trypanosomiasis and East Coast Fever. \$78 700 — 6 months.

76-0020 (S1) Forestry Cooperative Research (Africa), supplement

For the Agriculture, Food and Nutrition Sciences Division, IDRC, to cover rising costs due to inflation and unforeseen expenses of office rent and utilities, and to extend its role in coordinating the work of African forestry researchers and in improving the exchange of information. \$195 000 — 1 year.

76-0103 (S1) Insect Resistance (ICIPE), supplement

For the International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya, to complete its project to develop sorghum strains resistant to the shoot-fly pest. \$70 000 — 6 months.

76-0105 (S1) Cassava (Zanzibar), supplement

For the Ministry of Agriculture and Lands, Zanzibar, for additional expenses arising from its research into improving the quality and use of cassava germ plasm. \$13 600.

74-0121 Wet Padi Handling (Malaysia)

For the Malaysian Agricultural Research and Development Institute (MARDI) to develop

and study alternative methods at the farm level of cleaning and drying rice harvested during the wet season in order to increase the time grain may be stored before final drying and reduce losses due to spoilage. \$96 300 — 2 years.

75-0036 Fish Processing (Thailand)

For the Ministry of Agriculture and Cooperatives, Bangkok, to develop ways to produce inexpensive, nutritious, and easily storable minced fish products using that portion of the marine catch that is now not used in human food. \$79 500 — 2 years.

77-0106 Charcoal Stoves (Tanzania)

For the Faculty of Agriculture, Forestry and Veterinary Science, University of Dar es Salaam, to develop and test a more efficient charcoal burning stove, suitable to Africa, to provide savings to householders and reduce the waste of energy resources. \$44 300 — 2 years.

78-0035 Amazonian Production Systems (Peru)

For the Veterinary Institute of Tropical and High Altitude Research (IVITA), Lima, to develop an economically and ecologically stable system of pasture development and management through the introduction of pasture grasses and legumes so that cattle can be maintained in the largely uncultivated Amazon river basin. \$278 700 — 3 years.

78-0042 Barley Improvement (Turkey)

For the General Directorate of Agricultural Research, Ministry of Food, Agriculture and Animal Husbandry, Ankara, to increase the barley yield per unit area and improve its quality by developing strains that are more resistant to disease and temperature change and which are higher in nutrition. \$219 100 — 3 years.

78-0058 Native Swine (El Salvador)

For the Ministry of Agriculture of El Salvador, with assistance from the Institute of Nutrition of Central America and Panama (INCAP), to

plan an improved management program for small farmers to help them increase the production and growth of native swine by determining the best feeding and breeding methods. \$385 200 — 3 years.

78-0091 Chameculture (Ecuador)

For the Foundation for the Scientific Study of Man and Nature, Quito, to improve cultivation and increase the practical uses of the native fish, the chame, as a food for rural communities along the tropical Pacific Coast of Latin America. Better ways to transport, store, and market the fish are also under study. \$185 700 — 3 years.

78-0104 Gum Arabic and Rangeland Reforestation (Senegal) — phase II

For the Ministry of Rural Development, Dakar, to continue research to improve the production of gum arabic from the acacia tree, to establish economically viable plantations in the Sahelian region, to develop new techniques for reforestation, and to continue training local researchers in forest sciences. \$33 600 — 4 years.

78-0130 Cassava Microbiology (Guelph) — phase III

For the Departments of Microbiology and Nutrition at the University of Guelph, Canada, to undertake third phase research into the microbiological conversion of cassava and starchy waste materials into protein-rich animal feed. \$49 900 — 1 year.

78-0133 Andean Crops (Peru)

For the Interamerican Institute of Agricultural Sciences (IICA) to raise the standard of living of small farmers in the high Andes by increasing productivity in their traditional agricultural systems and to support the universities of Puno, Cuzco, and Ayacucho to carry out farming-systems training and research programs in rural communities. \$398 500 — 3 years.

78-0135 Pasture Management (Mexico) — phase II

For the National Institute of Agricultural Research (INIA) to further study ways to increase livestock production in semi-arid areas through improved forage output and to increase the efficient use of these crops through improved grazing systems and pasture management practices. \$133 300 — 3 years.

79-0003 Pasture Legumes (Belize) — phase II

For the Ministry of Agriculture and Lands to

continue to identify grasses and native forage legumes with potential in the region and to develop pasture management techniques to increase beef and dairy production. \$214 400 — 2 years.

79-0007 Cowpea Storage (Sierra Leone)

For the Faculty of Agriculture, Njala University College, to reduce the postharvest losses of cowpeas in the wet and humid zone of West Africa by developing better and more economical ways of handling and storing this rich source of protein for the rural poor. \$70 000 — 3 years.

79-0016 Sorghum Improvement (Ethiopia) — phase III

For the College of Agriculture, Addis Ababa University, to carry into the final phase, a project to develop improved varieties and hybrids of sorghum grain and to help implement the necessary farming practices for reaching and maintaining a high yield in the major sorghum growing zones of the country. \$498 500 — 3 years.

79-0017 Groundnut Improvement (Mozambique)

For the Eduardo Mondlane University, Maputo, to increase production of the groundnut crop by selecting the highest-yielding, heartiest strains most suitable to the soil and climate of Mozambique and by introducing more efficient cropping systems. \$271 300 — 3 years.

79-0018 Cageculture (Sri Lanka)

For the Ministry of Fisheries, Colombo, to study the economic and technological feasibility of increasing freshwater fish production by cultivating them in cages or tanks in inland waters. \$109 700 — 2 years.

79-0019 Vegetables (Kenya)

For the University of Nairobi to enable its Department of Food Science and Technology to identify which native fruits and vegetables provide sources of essential micronutrients currently lacking in typical Kenyan diets and to improve preserving and storing methods to increase the availability of such foods. \$70 200 — 2 years.

79-0021 Multiple Cropping (Colombia)

For the Multiple Cropping Division of the Colombian Agricultural Institute (ICA), Bogota, to develop efficient multiple cropping methods for use under Colombian conditions and to recommend ways to increase small farm production and income. \$332 400 — 3 years.

79-0022 Wild Cassava (Brazil)

For the Department of Plant Breeding, Paraíba Federal University, to systematically collect and categorize wild Brazilian cassava, testing each type according to protein content, resistance to diseases, and adaptation to drought conditions. Such information will be used in present and future cassava breeding programs. \$54 500 — 2 years.

79-0024 Process Improvement (Singapore)

For the Singapore Institute of Standards and Industrial Research (SISIR) to study methods to improve the management, processing, and control procedures used in small factories producing traditional Asian food and to implement and evaluate these new techniques. \$95 000 — 3 years.

79-0026 Bamboo (Bangladesh)

For the Forest Research Institute, Chittagong, to increase the supply of high-quality bamboo in villages and state forest areas for household and industrial uses. \$167 000 — 3 years.

79-0027 Food Legume Drought Tolerance (IITA/Niger)

For the International Institute of Tropical Agriculture (IITA) for field experiments in Niamey to develop stable and high-yielding cowpea strains best adapted to the semi-arid areas of the Sahel. \$63 000 — 2 years.

79-0038 Food Legumes (Upper Volta/IITA) — phase II

For the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria, in cooperation with the Ministry of Rural Development, Upper Volta, to continue research on cowpea strains that are acceptable for cooking and eating, yet resistant to drought, heat, and pests and to determine appropriate farming practices for producing the highest yields. \$331 000 — 2 years.

79-0040 Root Crops (Congo Brazzaville)

For the General Directorate of Scientific Research, Congo, to increase cassava production by small farmers by combining high-yielding and stable varieties with the most effective farming methods. \$105 000 — 3 years.

79-0042 Triticale Utilization (Kenya)

For Egerton College, Njoro, to enable its Home Economics Department to determine consumer acceptance of various triticale-based food products. \$2200 — 1 year.

79-0043 International Council for Research in Agroforestry (ICRAF) — phase III

For the International Council for Research in Agroforestry (ICRAF), Nairobi, Kenya, to further develop programs in agroforestry — a land management system integrating food, forest and animal crops — in Africa, Asia, and Latin America. \$300 000 — 1 year.

79-0049 By-Products (Syria)

For the Agricultural Scientific Research Directorate of the Ministry of Agriculture and Agrarian Reform for research into the use of agricultural and agroindustrial by-products as sources of ruminant feed to increase beef and mutton production. \$265 100 — 3 years.

79-0050 Pisciculture (Tongo)

For the Fisheries Division of the Animal Production Department of the Ministry of Rural Development to cultivate and study freshwater fish in controlled cage-enclosure systems with the aim of improving the diet of the rural people. \$190 100 — 3 years.

79-0052 Triticale (Chile) — phase III

For the Catholic University of Chile, Santiago, to complete its triticale research by developing different strains suitable for baking, for animal feed, and for brewing. \$158 200 — 3 years.

79-0062 Cassava Germ Plasm (PRL) — phase II

For the National Research Council of Canada to enable its Prairie Regional Laboratory (PRL), Saskatoon, to continue research to determine the practicability of the freeze preservation of cassava tissue for extended periods as an alternative to maintaining stocks of cassava germ plasm for breeding purposes. \$24 000 — 1 year.

79-0063 Pigeon Peas (Kenya) — phase II

For the University of Nairobi to continue to breed improved, higher-yielding and more disease resistant varieties of pigeon pea. \$134 700 — 3 years.

79-0064 Drought Tolerance (Saskatchewan) — phase II

For the University of Saskatchewan, Canada, to continue research to identify the hormonal influences that affect drought tolerance in sorghum and provide indices by which plant breeders can select the highest yielding lines when grown under drought conditions. \$273 400 — 2 years.

79-0065 Cassava Mites (Trinidad) (CIBC) — phase III

For the Commonwealth Institute for Biological Control (CIBC), Curepe, to continue research on the biological control of the mites that infest small farmers' cassava crops in East Africa by applying previous findings to field conditions. \$132 300 — 2 years.

79-0066 Postharvest Technology (Senegal) — phase II

For the General Delegation for Scientific and Technical Research (SERST), Dakar, to continue to plan suitable postharvest systems in two Senegalese villages and to evaluate their economic and technical efficiency. \$113 600 — 2 years.

79-0069 Fish Parasites (Philippines)

For the Central Luzon State University, Nueva Ecija, to enable its College of Inland Fisheries to increase the present research on fish parasites infecting freshwater fish, to quantify the extent of the problem, and suggest methods of control. \$24 800 — 2 years.

79-0077 Shea Butter (Mali)

For the Ministry of Rural Development, Bamako, to improve the method of extracting the oils from the nut of the shea butter tree at the family and village level. \$52 400 — 2½ years.

79-0082 Millet Threshers (Mali)

For the Ministry of Rural Development, Bamako, to develop an efficient, manually operated, low-cost millet thresher suitable for local fabrication that can be purchased and used by a large rural family or a small village. \$44 200 — 2 years.

79-0085 Fish Parasites (Malaysia)

For the Fisheries and Marine Science Division of the Universiti Pertanian Malaysia to quantitatively examine the parasite problem of cultured fish in the fresh waters of peninsular Malaysia. \$18 400 — 2 years.

79-0087 Root Crops (Cameroon/IITA) — phase II

For the Cameroon National Root Crops Improvement Program (CNRCIP), a joint project by the National Office of Scientific and Technical Research (ONAREST) and the International Institute of Tropical Agriculture (IITA) to continue to increase root crop production by breeding superior varieties. \$374 000 — 3 years.

79-0090 Food Legumes (Pakistan)

For the Pakistan Agricultural Research Council (PARC), Islamabad, to increase and improve the production of food legumes including chick-peas, mung beans, mash beans, and lentils by the small farmer. \$376 100 — 3 years.

79-0091 Flood Fallow Aquaculture (Guyana)

For the Guyana Sugar Corporation (GUYSUCO) to use the irrigation/drainage canal system in sugarcane fields to cultivate fish, in rotation with sugarcane crops, to provide a protein source for coastal rural communities. \$270 000 — 3 years.

79-0093 Sorghum Milling (Tanzania)

For the Small Industries Development Organization, Dar es Salaam, to introduce a village-level milling system including dehullers, a grinder, and a packaging system to produce a sorghum flour of acceptable quality to the consumer. \$122 100 — 2 years.

79-0094 Sorghum (Senegal) — phase III

For the Secretary of State for Scientific and Technical Research, Dakar, in cooperation with the Senegalese Agricultural Research Institute (ISRA), to extend work at the Bambey Research Station to select and test varieties of sorghum best-suited for production in the ecological zones of Senegal. \$132 000 — 2 years.

79-0097 Conch Optimization (Belize)

For the Ministry of Trade Industry Cooperatives and Consumer Protection so that its Fisheries Unit can study the life history of the Caribbean conch to help establish effective regulation and management of the conch harvest and to explore the possibility of culturing and using the shells commercially. \$147 300 — 3 years.

79-0099 Inland Fisheries (Indonesia)

For the Inland Fisheries Research Institute (LPPD) to increase the availability of fish from the inland waters of South Sumatra by developing economical fish-culturing techniques using cages and induced spawning. \$225 600 — 3 years.

79-0101 Legumes Under Bananas (UPEB)

For the Union of Banana Producing Countries (UPEB) and the University of Panama to test the use of tropical legumes as a cover crop on banana plantations to replenish the necessary nitrogen in the soil. \$76 100 — 3 years.

79-0104 Oilseeds (Sri Lanka)

For the Department of Agriculture so its research station at Angunukolapelessa can introduce high-yielding oilseeds such as sesame and groundnut into existing production systems of the small farmer in the dry zones of Sri Lanka. \$224 200 — 3 years.

79-0105 Triticale and Small Grains (Sri Lanka)

For the Department of Agriculture to enable its Bandarawela research station to explore, in relation to the existing cropping patterns, the potential for growing triticale, wheat, or barley in the uplands region. \$174 500 — 3 years.

79-0107 Home Processed Legumes (Thailand) — phase II

For the Faculty of Agriculture at Khon Kaen University for additional research to develop and field test an acceptable method for processing cowpeas for use domestically in traditional Thai food. \$89 700 — 2 years.

79-0108 Lupino (Chile) — phase II

For the Institute for Technological Research (INTEC), Santiago, to develop methods of substituting lupino in products presently using soybean ingredients without reducing their acceptability and nutritive qualities. \$157 300 — 2 years.

79-0109 Upland Rice Storage (Sierra Leone)

For the Rice Research Station, Rokupr, to improve the present system of storing upland rice in the humid zone of West Africa to reduce losses due to spoilage. \$111 400 — 3 years.

79-0110 Fish Processing (Mali)

For the Laboratory of Solar Energy (LES) and the Secretary of State for Foreign Affairs, Bamako, to reduce losses and improve product quality of dried fish with a low-cost, indirect solar-drying system, suitable for the fishing people at Mopti. \$119 800 — 3 years.

79-0111 Fish Processing (Indonesia)

For the Department of Food Science and Technology, Brawijawa University, to develop and test improved procedures to preserve and process fish in family operations of East Java villages. \$128 000 — 2 years.

79-0112 Small Farm Equipment (Egypt) — phase II

For the Ministry of Agriculture to enable the Behera Engineering Corporation to continue to develop, test, and evaluate small, locally made farm machinery that will use a common engine as a power source. \$163 800 — 2 years.

79-0137 Lignocellulolytic Fungi (Thailand)

For the Microbiology Department of Mahidol University, Bangkok, to convert agricultural plant wastes into animal feeds of improved protein content and digestibility. \$22 500 — 2 years.

79-0139 Postharvest Systems Research and Development (Southeast Asia) — phase II

For the Agriculture, Food and Nutrition Sciences Division, IDRC, to integrate further research by an international team of scientists and technologists to increase the availability of rice and other food grains with improved postharvest systems. \$350 000 — 3 years.

79-0142 Pulses and Groundnuts (Tanzania)

For the Faculty of Agriculture at Morogoro, University of Dar es Salaam, to improve the quality and increase the productivity of groundnuts as a source of protein and vegetable oil for the rural people of Tanzania and other East African countries. \$282 000 — 3 years.

79-0144 Grain Legumes (ICARDA) — phase II

For the International Centre for Agricultural Research in Dry Areas (ICARDA), Aleppo, Syria, to continue studies to improve the productivity of food legumes by breeding superior varieties, to determine suitable farming practices, and to carry out training and scientific information exchange programs. \$500 000 — 1 year.

79-0145 Cropping Systems (Honduras) — phase II

For the National Agricultural Research Program (PINA) and the Secretariat of Natural Resources (SRN) to further its on-farm research into improved alternatives to traditional cropping systems on small- and medium-size farms. \$226 600 — 3 years.

Health Sciences

76-0171 (S1) OC/Blood Disorders (Hong Kong), supplement

For the University of Hong Kong to cover salaries of the laboratory technician and assistant to complete the final analysis of laboratory tests to determine the effects of oral contraceptive pills on blood clotting. \$3100 — 6 months.

76-0185 (S1) Metabolic Effects (Korea), supplement

For the Centre for Population and Family Planning of Yonsei University, Seoul, to cover extra costs incurred on supplies and equipment needed to complete research on the effects of oral contraceptive pills on the metabolic functions of nursing mothers. \$6000 — 1 year.

77-0057 (S1) Communicable Disease Research (Zambia), supplement

For the Health Sciences Division of IDRC, to cover cost overruns in the allowances and relocation expenses of sending a consultant physician-epidemiologist to work with a team carrying out research on communicable diseases. \$14 388.

77-0079 (S1) OC Distribution/Hilots (Philippines), supplement

For the Institute of Community and Family Health (ICFH), Quezon City, to sponsor workshops to help broaden the role of *hilots* (trained birth attendants) who were trained to distribute contraceptives in rural areas as part of a community-based family-planning program. \$7910 — 2 years.

79-0028 Tuberculosis (Kenya)

For the Kenya Tuberculosis Investigation Centre of the Ministry of Health to carry out a tuberculosis prevalence survey in the national tuberculosis control program. \$64 260 — 2 years.

79-0031 OC/Lithogenic Index (Mexico)

For the National Institute of Nutrition (INN), Mexico City, to study the effects of four widely used hormonal contraceptives on gall-bladder function. \$110 000 — 2 years.

79-0032 Nurse Practitioner Evaluation (Thailand)

For the Faculty of Public Health of Mahidol University, Bangkok, to assess nurse practitioners in terms of skills, acceptance by patients, training costs, management support, and contribution to the health care system. \$76 100 — 2 years.

79-0033 Lactation/Amenorrhea (Egypt)

For the High Institute of Public Health, University of Alexandria, to determine the duration of postpartum amenorrhea in urban and rural Egyptian women, as related to breast-feeding patterns and nutritional status, in order to plan appropriate postpartum contraception programs. \$90 410 — 2 years.

79-0037 Lactation/Amenorrhea (Mexico)

For the Regional Research Centre of Yucatan University to investigate the relationship between breast-feeding patterns and postpartum amenorrhea in both urban and rural women. \$42 100 — 2 years.

79-0046 Traditional Child-Rearing Practices (Malaysia)

For the University of Malaysia, Penang, to examine how child-rearing practices of the three main ethnic groups in Malaysia affect the health of their children. \$18 450 — 1½ years.

79-0070 Industrial Health (Thailand)

For the Occupational Health Department of Mahidol University, Bangkok, to investigate the working and health conditions of employees in selected factories and to recommend improvements to existing industrial health services. \$66 700 — 2 years.

79-0071 Piggery Waste Treatment (Singapore) — phase II

For the Primary Production Department of the Ministry of National Development to continue to study how microscopic algae can be grown in pig wastewater for use as livestock feed. Phase II will develop economical harvesting methods. \$302 500 — 2 years.

79-0072 Pathogen Transfer/Wastewater (Israel)

For the Technion-Israel Institute of Technology in Haifa to develop operational criteria for the wastewater treatment/fish culture process by studying public health aspect of fish grown in sewage-fed ponds, including the mechanisms involved in pathogen invasion of fish muscle. \$223 300 — 2 years.

79-0074 Infiltration Galleries (Panama) — phase II

For the University of Panama's Polytechnical Institute in Panama City to continue to investigate a low-cost method of water treatment by field testing its design and operation in five rural communities. \$137 430 — 2 years.

79-0075 Oral Rehydration (Egypt)

For the University of Alexandria to enable its High Institute of Public Health to evaluate the effectiveness of a health education program in promoting the use of oral rehydration in the management of diarrhea in rural Egypt. \$57 620 — 2 years.

79-0076 Epidemiology of Diarrhea (Egypt)

For the University of Alexandria's High Institute of Public Health to investigate the causes of diarrhea in Egypt during different seasons and under various environmental and nutritional conditions. \$88 050 — 2 years.

79-0095 Tsetse Fly Control (Kenya)

For the Commonwealth Institute of Biological Control (CIBC) to assess the possibility of controlling sleeping sickness in Kenya by reducing the population of the carrier of this disease, the tsetse fly, using its natural enemies the velvet ant and the bee-fly. \$286 780 — 3 years.

79-0103 Fertility Regulation/Lactation (Chile)

For the National Centre of the Family (CENFA), Santiago, to test the contraceptive effectiveness and safety of progesterone pellet implants and of low-dose oral contraceptive pills for nursing mothers and breast-fed children. \$171 000 — 2½ years.

79-0106 Yellow Fever Arbovirus (Trinidad)

For the Pan American Health Organization (PAHO) to enable the Caribbean Epidemiology Centre (CAREC), Trinidad, to develop simple laboratory methods to diagnose yellow fever, to study the jungle reservoirs of yellow fever virus between outbreaks of the disease, and to study the occurrence of transovarial transmission in mosquitoes. \$270 835 — 2 years.

79-0123 Dengue Hemorrhagic Fever Sulawesi (Indonesia)

For the Faculty of Medical Sciences at the University of Hasanuddin to determine the prevalence and types of dengue fever in the city of Ujung Pandang in order to better understand this disease and to find measures to control it. \$29 650 — 3 years.

79-0128 Subdermal Levonorgestrel Implants (Ecuador)

For the Family Welfare Association of Ecuador (APROFE), Guayaquil, to introduce subdermal levonorgestrel implants and to evaluate for acceptance, effectiveness, and side effects. \$74 900 — 2 years.

79-0130 OCs/Lactation (Indonesia)

For the Department of Obstetrics and Gynecology at Padjadjaran University Medical School, Bandung, to compare the effects of two types of oral contraceptive pills on

lactation in nursing mothers. \$53 000 — 2½ years.

79-0132 Initiation of Sperm Motility (Thailand)

For the Department of Biochemistry at the University of Mahidol, Bangkok, to examine the motility of sperm in an animal model to increase knowledge of the male reproductive system — necessary to develop male contraceptive methods. \$61 600 — 2 years.

79-0133 Malnutrition/Vaccination (Colombia)

For the Foundation for Higher Education (FES) to enable the Centre of Multidisciplinary Research in Rural Development (CIMDER) and the International Centre of Cooperative Medical Research (CIDEIM) to determine whether moderate malnutrition impairs children's immune response to certain routine vaccines. \$86 500 — 2 years.

79-0150 Anticonceptive Technology — ICCR (India) — phase II

For the International Committee of Population Research (ICCR) and the All India Institute of Medical sciences (AIIMS), New Delhi, to continue research on a vaccine against pregnancy. \$550 000 — 3 years.

79-0154 Blood Pressure Survey (Korea)

For the College of Medicine at Yonsei University, Seoul, to identify the extent of hypertension in Korean communities. \$52 790 — 1 year.

79-0164 Squatter Settlement Sanitation (Botswana) — phase II

For the Ministry of Local Government and Lands to evaluate low-cost on-site toilet facilities that were developed for and installed in squatter settlements in urban centers of Botswana. \$20 870 — 2 years.

79-165 Oral Rehydration (Trinidad)

For the Eastern Caribbean Medical Scheme of the University of the West Indies in Port of Spain to implement an oral rehydration program for young children with mild to moderate dehydration owing to diarrhea on an hospital outpatient and neighbourhood clinic basis; to evaluate it; and to recommend a plan to the government for a national rehydration program. \$59 780 — 2 years.

79-0167 Deparasitation/Malnutrition (Colombia)

For the Foundation for Higher Education (FES) to enable the Centre of Multidisciplinary Research in Rural Development (CIMDER),

Cali, to document the impact of a deparasitation program on the nutritional status of specific groups of preschool children and to compare the cost-effectiveness of the program with the national food program. \$55 400 — 16 months.

79-0168 Epidemiology of Molar Pregnancy (Hong Kong)

For the University of Hong Kong to document the extent and distribution of trophoblastic disease, a serious complication of pregnancy among women in Hong Kong. \$13 100 — 1 year.

Human Resources

80-6000 (HR) Human resources development

To continue for a ninth year the Centre's program of awards to encourage and support the growth of individual competence through training and research in the field of development. \$2042 000 — 1 year. (See section on Human Resources Development Program for details.)

Information Sciences

76-0066 (S1) Bolivian National Information Centre, supplement

For the Information Sciences Division of IDRC to cover the cost of engaging the services of a resident advisor for this project to help coordinate scientific, technical, social, and economic information in Bolivia. \$78 000.

76-0147 (S1) International Irrigation Information Centre — phase II, supplement

For the International Irrigation Information Centre (IIIC) in Bet Dagan, Israel, to maintain its operations in providing information on irrigation science and technology while searching for other sources of support. \$200 000.

77-0012 (S1) Research on African Government Documents, supplement

For the African Training and Research Centre in Administration for Development (CAFRAD) in Tangier, Morocco, to extend its research into Northern Africa and to complete its

report on how governments can better handle official publications in that part of the continent. \$9700 — 1½ years.

77-0014 (S1) Latin American Education Documentation (CIDE), supplement

For the Education Research and Development Centre (CIDE) in Santiago, Chile, to complete its work to develop a Latin American network of educational information. \$28 400 — 1 year.

77-0015 (S1) Apicultural Bibliographies, supplement

For the International Bee Research Association, England, to cover extra expenses due to inflation and varying exchange rates in its project to produce and distribute selective bibliographies for developing countries. \$15 000 — 3 months.

77-0045 (S1) Famille et Développement — phase II (1979), supplement

For the Information Sciences Division of IDRC to continue to support the African periodical *Famille et Développement* by covering a deficit incurred in the delay over its transfer into the hands of the African Association for Education and Development (ASAFED). \$15 000 — 6 months.

77-0016 Nepal National Agricultural Documentation Centre

For the Agricultural Projects Services Centre (APROSC), Kathmandu, to help establish an agricultural information centre linked with AGRIS, the UN's Food and Agricultural Organization's (FAO) global information system. \$168 900 — 3 years.

77-0045 Famille et Développement — phase II (1980)

For the African Association for Education and Development (ASAFED) in Dakar, Senegal, to support the publication of the African periodical *Famille et Développement* for the third year of a five-year project. \$100 000 — 12 months.

79-0029 Development Data Bases: Use in Canada

For the Information Sciences Division of IDRC to operate a service providing on-line access for Canadian research institutions to the development data bases of IDRC and of several United Nations' agencies. \$177 100 — 2 years.

79-0034 Latin American National AGRINTER Centres — Honduras, Panama, Uruguay, Paraguay, Peru

For the Centre of Documentation and

Agricultural Information (CEDIA) in Honduras, the Institute of Agricultural Research of Panama (IDIAP), the Ministry of Agriculture and Animal Husbandry of Paraguay, and the Interamerican Institute of Agricultural Sciences (IICA) in Uruguay and Peru to enable the countries to strengthen their agricultural information networks and thus benefit from and contribute to the Latin American regional agricultural information system. \$350 000 — 2 years.

79-0035 Videocommunications (Haiti)

For the Institute of Cultural Action for Development (ICAD) in Guerchy, France, to record on videotape the interaction between three French-trained Haitian graduate students and local farmers in Haiti and to provide the tapes as a tool for the research team in the field and to increase the relevance of the students' study experience. \$35 250 — 15 months.

79-0080 DEVSIS (Africa)

For the United Nations Economic Commission for Africa (UN-ECA) to establish a regional cooperative information system to support social and economic development planning in Africa. \$550 000 — 2 years.

79-0081 MINISIS (Morocco)

For the National Documentation Centre (CND) in Rabat, to obtain a minicomputer, to implement the MINISIS software developed by IDRC, to manage a national bibliographic data base, and to set up a communications network within the country. \$412 150 — 2 years.

79-0117 Pan American Sanitary Engineering Information System (REPIDISCA) — phase II

For the Pan American Health Organization (PAHO) to enable the Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS) in Lima, Peru, to implement on a pilot scale the information system designed in phase I concerning sanitation and environmental engineering in Latin America and the Caribbean. \$344 380 — 2 years.

79-0118 Latin American Human Settlements Information Network (LATINAH)

For the National Centre for Studies in Construction (CENAC) in Bogota, Colombia, to organize, coordinate, and promote the activities of a regional information network concerning the construction and development

of human settlements in Latin America. \$96 400 — 2 years.

79-0119 Grain Legume Information Centre — phase II

For the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria, to continue to operate an information centre dealing with cowpeas and other grain legumes. \$215 700 — 2 years.

79-0141 International Buffalo Information Centre

To set up in Asia a specialized information centre to collect, organize, and distribute literature and research information on the water buffalo. \$380 000 — 3 years.

79-0149 Integrated Survey of Eastern Bolivia

For the Geological Service of Bolivia (GEOBOL), La Paz, to draft and publish a set of maps based on satellite surveys of the eastern plains. \$45 000 — 1½ years.

79-0151 TECHNINET Asia — phase III

For TECHNINET (Asian Network for Industrial Technology Information and Extension), Singapore, to continue as an autonomous body assisting its participating organizations to cooperate in strengthening industrial extension services that provide technical information and advice to small-scale industries in Asia. \$488 196 — 3 years.

79-0152 Development Information (UN-DIESA)

For the Information Sciences Division of IDRC to provide the UN's Department of International Economic and Social Affairs (DIESA) with a minicomputer that will serve as a model to demonstrate its capability to implement a DEVSIS application using IDRC's MINISIS software package. \$34 200 — 1 year.

Senior Vice-President

78-0108 (S1) Research Development in the Sahel (Africa) — phase II, supplement

For the Sahel Institute, Bamako, Mali, to continue assistance to countries of the Sahel by coordinating and supervising research and training projects of benefit to the region. \$5500 — 1 year

79-0048 Secretariat for International Development (Institutional Support) — 1979-1980

For the Secretariat for International Development, Ottawa, to expand the role of

Canadian universities in international development cooperation. The funds will support the secretariat's administrative expenses, workshops, studies, and publications. \$30 000 — 1 year

79-0116 Royal Society of Canada/International Foundation for Science — 1980

For the Royal Society of Canada, Ottawa, to continue support of the International Foundation for Science, Stockholm, Sweden, which assists young scientists in developing countries to undertake research of benefit to their regions, and to enable the society to participate in the foundation's scientific forums. \$230 000 — 1 year

79-0148 Secretariat for International Development (Institutional Support) — 1980-1982

For the Secretariat for International Development, Ottawa, to continue its mandate to expand the role of Canadian universities in international development cooperation. \$60 000 — 2 years

Social Sciences

76-0006 (S1) Printing Industry (Uruguay), supplement

For the Centre for Social Studies and Research of Uruguay (CIESU), Montevideo, to complete its review of the factors that contribute to technical change in the country's printing industry. \$8265 — 1 year.

76-0089 (S1) Population Distribution Policies (Latin America), supplement

For the Regional Population Centre (CCPR), Bogota, Colombia; the Centre of Population Studies (CENEP), Buenos Aires, Argentina; the Brazilian Institute of Municipal Administration (IBAM), Rio de Janeiro; the Centre of Social Research (CIS), La Paz, Bolivia; the Latin American Faculties of Social Sciences (FLASCO), Santiago, Chile; the Paraguay Centre of Social Studies (CPES), Asuncion; and the Centre for Social Studies and Research of Uruguay (CIESCU), Montevideo. The recipients will complete final research on policies and programs that influence the distribution of people in human settlements. \$22 300 — 13 months.

76-0137 (S1) Social Sciences Development (East Africa), supplement

For IDRC's Social Sciences Division to meet exceptional salary, relocation, and travel

expenses incurred in sending a senior social scientist to East Africa to aid research development. \$74 500 — 6 months.

77-0144 (S1) Generation and Absorption of Agricultural Technology (Latin America), supplement

For the Centre for Social Research on State and Government (CISEA), Buenos Aires, to cover the increased cost of personnel and to complete research on the technical progress in corn production in the pampa region. \$25 000 — 15 months.

78-0081 Rural Dynamics (Thailand)

For the Social Research Institute (CUSRI) of Chulalongkorn University, Bangkok, to analyze the social and cultural factors responsible for successes and failures of development activity in the Ayatthaya region in the last 10 years. \$90 000 — 2 years.

78-0101 Intra-Government Interactions and Policy Implementation (Colombia)

For the Foundation for Higher Education and Development (FEDESARROLLO), Bogota, to study financial and personnel management in the primary education system and to recommend needed reforms. \$110 720 — 1 year.

78-0136 A Study of Philippine IMPACT and Non-IMPACT Leavers and Graduates (Philippines)

For the Regional Centre for Educational Innovation and Technology (INNOTECH) in the Philippines, to determine the effects of participation in the mass primary education delivery system called IMPACT on long-term achievement, jobs, and further education. \$24 500 — 2 years.

79-0001 Namosi Copper Mine Technological Implications (Fiji)

For the University of the South Pacific, Suva, to study the possible economic, social, and ecological impacts of the proposed copper mine at Namosi and to evaluate what policies would most benefit the local population. \$48 000 — 1 year.

79-0004 Role of Women/Fertility Behaviour (Korea) — phase II

For the Centre for Population and Family Planning at Yonsei University, Seoul, to complete analysis of the influence of the changing role of women in Korea on contraceptive use. \$10 800 — 14 months.

79-0005 One-Classroom School (Egypt)

For the National Centre for Educational

Research (NCER), Cairo, to evaluate the effectiveness of the one-classroom school as a means of providing basic education in rural Egypt and to recommend remedies for any shortcomings that may be identified as a result of the evaluation. \$57 400 — 15 months.

79-0006 Primary School Achievement (Colombia)

For the SER Research Institute, Bogota, to assess the achievement of primary school children in Colombia, develop a set of measures to evaluate student performance, and compare educational standards in rural and urban areas. \$80 900 — 1½ years.

79-0009 The Canadian Connection — Third World Returnees (Canada)

For the Social Sciences Division of IDRC to award small grants to researchers trained in Canadian universities who seek to undertake educational research projects when they return to their native countries. \$100 000 — 2 years.

79-0012 Rural Family Homes (Senegal)

For the "Training for the Environment" Program (ENDA), Dakar, a project designed to evaluate the training of rural people in agricultural and vocational skills, to determine the impact of this training on productivity, decision-making, and family life, and to see how its successes can be applied to other training programs. \$46 700 — 1 year.

79-0014 AWARERC: Education and Development Research Awards (West Africa)

For the Social Sciences Division of IDRC to administer a small grants program in West Africa to improve and widen social science research in education in that region. \$140 000 — 2 years.

79-0015 Teacher Effectiveness (Sierra Leone)

For the University of Sierra Leone to devise a set of criteria and instruments for evaluating teacher performance and to establish a local profile of the effective teacher so that teacher education can be improved. \$46 200 — 2 years.

79-0020 Tracer Studies (Zaire)

For the National University of Zaire, Kinshasa, to enable the Institute of Economic and Social Research (IRES) to determine how well secondary-school education prepares for employment by tracing students who graduated 6 years earlier. \$38 300 — 20 months.

79-0025 Small Enterprises (Turkey)

For the Bogazici University, Istanbul, and the Middle East Technical University to study the dynamics of small-scale business operations in a specific region in Turkey and suggest ways to further develop this sector of the economy. \$73 600 — 2 years.

79-0044 Economics of Cassava (Sierra Leone)

For Njala University College to analyze the economics of cassava production in Sierra Leone by comparing its costs and returns to rice farming, assessing the possible effects of increased cassava production and studying government policy in cassava cultivation and marketing. \$78 000 — 2 years.

79-0045 Economies of Scale in Agriculture (Nigeria)

For the Faculty of Social Sciences at the University of Calabar to compare the technical and economic efficiency of large-scale and small-scale Nigerian farms and to evaluate the impact of government agricultural policies according to farm size and type. \$79 000 — 2 years.

79-0051 Academic Performance in Primary Schools (Nigeria)

For the University of Ibadan to identify which factors significantly influence academic achievement in primary schools and to compare the academic performance of children in private and public schools. \$23 300 — 15 months.

79-0053 State Purchasing Power (Argentina)

For the Centre for Social Research on State and Government (CISEA), Buenos Aires, to describe and evaluate the ability of the state to influence technical change through purchasing agreements, with reference to the electronics sector. \$42 000 — 10 months.

79-0055 Land Distribution and Employment (Thailand)

For the Agricultural Land Reform Office (ALRO) of the Ministry of Agriculture and Cooperatives to determine the number and economic status of landless farm workers in Central Thailand and to assess the ability of various programs to provide employment. \$34 000 — 1½ years.

79-0056 A/D/C Regional Research and Training Program (Asia)

For the Agricultural Development Council (A/D/C) in New York, USA, to continue

support for the Regional Research and Training Program designed to assist academic and government institutions to meet training and research needs in Asia and to promote interaction of Asian scholars across national borders. \$310 000 — 1 year.

79-0058 Integrated Population Programs (Asia)

For the University of Andalas, Indonesia, the Seoul National University, Korea, and the Population and Community Development Association, Thailand, to evaluate family planning programs that integrate population control with development activities and to suggest improvements to government planning in this area. \$215 000 — 2 years.

79-0059 Dissemination of Educational Research (Colombia)

For the Association for Education Today, Bogota, to recommend how information on educational research findings published in its journal can be made more effectively available to teachers. \$68 600 — 2 years.

79-0060 Sites and Services (Senegal) — phase II

For the Low-Cost Housing Office (OHLM), Dakar, to continue to study a program providing serviced building lots for low-cost, self-built urban housing by monitoring the rate of construction, the impact of the projects on the occupants, and the effectiveness of housing loan programs. \$48 300 — 2 years.

79-0061 Impact of Technical Change on Traditional Skills (Brazil)

For the University of Rio de Janeiro Institute of Investigation (UIPERJ) to examine the effects of recent technological changes in the Brazilian textile industry on the demand for the skills and services of blue-collar workers. \$19 700 — 1 year.

79-0067 Literacy Acquisition (Colombia)

For the Latin American Regional Centre for Reading and Books (CERLAL) to study the factors that influence the acquisition of reading skills and habits among Colombian primary school children and specifically the role of the family environment and formal schooling. \$52 500 — 14 months.

79-0068 Crops and Cattle (Sierra Leone)

For the Njala University College of the University of Sierra Leone to provide policymakers with a detailed description of farming practices in the northern province of the country where there are subsistence farmers and nomadic herdsman, and to

suggest ways to increase productivity. \$73 000 — 2 years.

79-0079 Population and Development Awards — MEAWARDS (Middle East)

For The Population Council of New York to continue its Middle East Population and Development Awards (MEAWARDS) Program designed to improve research on population and development in Arab countries by funding research proposals of younger scholars, coordinating study groups, and distributing research findings. \$135 000 — 2 years.

79-0083 Organization of Social Services for the Urban Poor (Latin America)

For the Centre for Studies on Government and Society (CEDES) to develop research methods for studying the adequacy and effect of government social service policies on the nutrition, health, and mortality of the urban poor. \$57 000 — 1½ years.

79-0084 Public Enterprise Fellowships

For the Boston University Public Enterprise Program in the USA to provide partial support to young scholars from developing countries enrolled in Boston University to undertake doctoral field work in their respective countries in the area of public enterprise. \$48 800 — 2 years.

79-0089 Costs of Rural Primary Education (Colombia)

For the Office of Socioeconomic and Legal Research (OFISEL), Bogota, to study the primary education system and determine the actual costs, cost structure, and cost efficiency of the system. \$56 600 — 13 months.

79-0092 Urban Preschool Environment (Guatemala)

For the Institute of Research, University of the Valley of Guatemala, to examine elements in the life of children of the urban poor that may cause later learning difficulties in the first six years. \$74 500 — 1 year.

79-0113 Internal Migration (Ivory Coast)

For the Institute of Tropical Geography, Abidjan, to study and recommend to government authorities, how successfully to populate less densely-settled areas of the country. \$138 500 — 2 years.

79-0114 Agricultural Marketing Transactions (Ivory Coast)

For the Centre of Economic and Social Research (CIRES) of the National University of the Ivory Coast to study the marketing of agricultural products at the farm level and to

identify the factors influencing the timing of sales, selling prices, and the proportion of the total output marketed. \$102 000 — 2 years.

79-0115 Migration: Volume and Determinants (Upper Volta) — phase II

For the National Institute of Statistics and Demography (INSD) and the University of Montreal, Canada, to continue to explore the relationship between migration in Upper Volta and development programs such as resettlement, school construction, and health care. \$150 000 — 2 years.

79-0121 Journal Support (East Africa)

For the Ford Foundation to cover one-half of the costs necessary to maintain publication schedules of five social science journals in East Africa. \$74 800 — 2 years.

79-0122 Primary School Efficiency (Thailand)

For the National Education Commission in Bangkok to evaluate the efficiency of the new primary school system implemented in Thailand in 1978. \$18 000 — 18 months.

79-0129 Learning Disabilities in Early Education (India)

For the Maharaja Sayajirao University of Baroda to enable its Child Development Department to identify the types and magnitude of learning disabilities in primary school children and develop methods for teachers to detect and help solve these problems. \$11 000 — 2 years.

79-0131 Technical Change, Productivity, and Small-Scale Industry, São Paulo (Brazil)

For the School of Business Administration of the Getulio Vargas Foundation to examine the textile and autparts industries in São Paulo to discover how technology is used by medium- and small-sized firms and to suggest ways to strengthen their competitive ability. \$160 000 — 20 months.

79-0135 Infant Mortality (Sri Lanka)

For the University of Peradeniya to discover how infant mortality has been affected by government development programs and public health services in the past 15-20 years. \$70 000 — 1½ years.

79-0136 Intermediate Fertility Variables (Zaire)

For the University of Zaire's Department of Demography, Kinshasa, to improve knowledge of the trends in fertility and the factors that account for these tendencies, such as breast

feeding, abstinence, contraception, abortion, education, and urbanization. \$16 200 — 26 months.

79-0143 Research Methodology Training Program (Indonesia)

For the Population Studies Centre of the Gadjah Mada University, Jogjakarta, to conduct workshops to improve training in research methods within provincial universities in the area of population and development studies. \$95 000 — 2 years.

79-0146 Technology Policy Workshop (Global)

For the Social Sciences Division of IDRC to hold workshops in developing countries to train researchers and policymakers in the methods and uses of technology policy research. \$600 000 — 2 years.

79-0147 International Food Policy Research Institute — phase III

For the International Food Policy Research Institute (IFPRI) of Washington, D.C., USA, to continue to analyze public policies for meeting the world's food needs, with an emphasis on the poorest countries and the low income groups. Phase III will study the role of technological change in agriculture: its possible social and economic consequences and how policies affect the adoption of new methods by producers. \$1 177 000 — 2 years.

79-0153 Latin American Faculties of Social Sciences (FLACSO)

For the Latin American Faculties of Social Sciences (FLACSO), Santiago, to meet operating and institutional costs during a transitional period in which alternative sources of funding will be found. \$44 000 — 1 year.

79-0157 Educational Reform (India)

For the Indian Institute of Education (IIE), Pune, to evaluate educational reform in India in the pre- and postindependence periods. \$69 800 — 3 years.

79-0158 Regional Development, Migration, and Employment (Paraguay)

For the Paraguay Centre of Social Studies (CPES) to investigate how government policies in regional development affect employment, migration, and colonization in rapidly expanding areas of the country. \$60 000 — 1½ years.

79-0159 Research Fellowships Competition (East Africa)

For the Social Sciences Division of IDRC to offer seven awards to the annual fellowships

competition conducted by the Ford Foundation, which supports research projects related to the social and economic development of East Africa. \$69 000 — 1 year.

79-0161 Marketing of Cassava (Thailand)

For the Department of Agricultural Economics at Kasetsart University, Bangkok, to examine the role played by the middleman and by overseas markets in the growth of the Thai cassava industry. \$34 000 — 1 year.

79-0162 Urban Low-Cost Transport (Kenya)

For the Mazingira Institute in Nairobi to study how effectively the *matatu*, or private taxi, meets the transport needs of the lower-income groups in Nairobi. \$73 000 — 15 months.

79-0166 Survey of School-Age Children (Sierra Leone)

For the Institute of Education of the University of Sierra Leone, Freetown, to examine the school-age population in terms of family background, employment aspirations, and the attitudes of both the children and their parents toward schooling. \$56 500 — 1½ years.

79-0169 Population and Development Policies (Africa)

For the Working Group on Population and Development of the Council for the Development and Social Research in Africa (CODESRIA) to study how policies concerning the growth and distribution of labour relate to population movements in Africa. \$71 400 — 2 years.

79-0170 Children's Learning Disabilities (Jamaica)

For the School of Education at the University of the West Indies, Kingston, to devise a standardized test that will diagnose learning disabilities resulting from poverty and deprivation among young children. \$57 500 — 2 years.

79-0174 Impact of Project Land Lease (Jamaica)

For the Department of Economics at the University of the West Indies, Kingston, to evaluate a project of providing land to small farmers, called land lease, to determine its success in raising rural income, increasing food production, and increasing the employment of rural labour. \$37 000 — 1 year.

Division Activity Projects

In addition to the projects listed on the preceding pages, the Centre also funds numerous relatively small projects that are in one way or another supportive of the on-going activities of the program divisions. For instance they may be to support workshops or seminars to identify priority research areas in a particular region or field. A small grant may enable several developing country researchers to attend international meetings of experts in other parts of the world. Or a consultancy may be provided to enable experts from one country to visit and assist a project team in another.

The great majority of such projects are in fact to cover the cost of meetings and consultancies related directly or indirectly to IDRC-supported research projects in developing countries. During the past fiscal year 188 Division Activity Projects were approved at a total cost of \$1 428 244. Project grants range in size from a few hundred dollars to twenty thousand or more. The following are just a few examples of the activities funded under this program.

- A workshop in Singapore to bring together researchers from five Centre-supported projects dealing with food legume improvement in Southeast Asia. The workshop enabled the participants to compare results and exchange experiences first hand.
- To enable several participants from low-income developing countries to attend the 16th World Conference of the Society for International Development held in Colombo, Sri Lanka, the Centre provided air fare and expenses.
- A workshop in Thailand to develop ways and means to improve training courses in early childhood education was partially supported by a Centre grant.
- Representatives of research funding agencies from several European countries and the USA attended a meeting hosted by the Centre in Ottawa to explore prospects for future cooperation and possible joint activities.
- Another meeting hosted by the Centre in Ottawa brought together participants in MINISIS projects (see Information Sciences section of the Introduction) for an exchange of experiences. The MINISIS users' meeting is expected to become an annual event.
- A Centre grant enabled a study to be carried out of the potential areas of research cooperation among the four Latin American countries involved in developing the resources of the Amazon Basin.
- A meeting in Singapore of finance officers from Centre-supported projects in eight Asian countries resulted in the preparation of a handbook of financial guidelines and a better understanding of recipient institutions' problems.
- To enable the director of Project IMPACT, a successful experiment in primary education in the Philippines, to visit Jamaica, where educators are developing the materials for a similar project.
- To identify potential research projects in the field of water supply and sanitation, the Centre provided an expert consultant to visit seven countries and discuss problems with local researchers and health officials.
- A one-day working group of Canadian scientists was sponsored by the Centre to review agricultural research priorities for Canada and the Third World.

Financial Analysis and Statements

Fiscal year 1979-80 was, for the Centre, a successful year. Successful, because the Centre was able to achieve its main financial objectives despite a number of difficult challenges and a zero-growth situation in available cash and human resources. This achievement can be attributed in great part to the fact that the measures initiated in 1978-79 in anticipation of the difficulties were effective in containing expenditures to the same level as the previous year. Not only was the Centre able to channel approximately the same amount of funding into programs or program related activities, but it was also able to restrict its administration expenditures to the previous year's level.

It was obvious that the Centre could not undertake a level of program activity in 1979-80 that would compromise the funding requirements of existing projects, nor could the level of program activity be as ambitious as the level the Centre's Officers were willing and capable of undertaking. With a real reduction in the financial resources available, the Centre was faced with the difficult choice as to how and where to allocate these scarce resources. Its goal was to try to maintain the same level of program activity as was achieved in 1978-79.

A scrutiny of the "Financial Highlights" schedule which follows this text, reveals the similarity in financial results and program activity levels between the last two fiscal years. Similarly, the review of the financial results and program activity levels of the current year confirms that the budgetary objectives were achieved.

Revenue

The Parliamentary grant, set at \$36.867 million was identical to the grant for the previous fiscal year and only 6.9% over the grant received two years ago in 1977-78. When weighed by the decline in the value of the Canadian dollar over the past three years and the substantial rates of inflation in developing countries, the grant has declined significantly in real terms. Fortunately for the Centre, high interest rates enabled it to realize investment income of \$1.625 million as compared to \$1.143 million the previous year, a 42.0% increase. The Investment function was a key element in enabling the Centre to increase its revenues to meet increasing expenditures. The other income relates mostly to the sale of publications and various service fees. In summary, revenues were 0.3% below the level budgeted and 1.0% over the level experienced the previous year.

Development Research and Related Expenditures

The level and distribution of expenditures between the various cost categories are real indicators as to how the Centre achieved its financial objectives. In spite of the pressures for expenditures to increase, the Centre was able to keep expenditures 0.4% below last year's level and to within 0.7% of the budget. One must keep in mind that in addition to inflation and the decreasing value of the Canadian dollar, the Centre was also faced with a number of additional pressures in the countries in which it operates. The effects of increased oil prices, legislated salary increases, and persisting inflation are only some of the factors which the Centre has had to take into account.

In order to achieve its objectives, the Centre postponed some projects to future years and reduced the size of its grants to recipients. The 1978-79 management decisions taken in order to reduce costs were also instrumental in meeting these objectives:

- The first and most serious of these decisions, in terms of adverse impact, was the closure of the East Africa Regional Office in Nairobi and the liaison offices in London, New Delhi, and Washington.

The decision to close the Nairobi Office was not well received in Africa and seriously curtailed Centre operations in the region, one in which a substantial level of technical and administrative support of research activity is vital.

- There was a real reduction in the number of employees resulting from management initiative and a further reduction in response to Treasury Board direction.

- A reduction in accommodation costs was affected by subleasing a floor in the Head Office building.

- Restraints were imposed on program development and project monitoring costs by imposing budget reductions for travel. (This, combined with manpower constraints, could reduce the capacity of program staff to provide adequate technical support to projects unless alternative measures are adopted.)

- The Centre's benefit structure was reviewed and adjusted to produce reductions in costs and future liabilities.

- Finally, restraints were exercised in the placement of project advisors.

Because these measures were initiated in 1978-79, the Centre was able to benefit from these actions for most of 1979-80. The Centre was thus able to direct as much funding to project activity as in the previous year and still maintain a good proportion between the various cost categories, namely 69.7% for development research and research related activities, 21.2% for research operational support, and 9.1% for administration.

Development research expenditures decreased marginally by \$0.549 million to \$24.422 million or 2.2% less than last year. The decrease is reflected entirely in the level of new projects.

Research related activities increased 11.6% to \$2.907 million. The largest elements in this increase were the higher level of activity and the production and dissemination costs of publications. The remaining cost categories of expenditures performed very closely to the levels of last year and are analyzed in greater detail in the next section. The following table summarizes this data:

	1980	%	1979	%
Total expenditures	\$ 39,216,568	100.0	\$ 39,355,605	100.0
- Development research	24,421,882	62.3	24,970,757	63.4
- Research related activities	2,907,450	7.4	2,606,098	6.6
Total project expenditures	27,329,332	69.7	27,576,855	70.0
Research operational support	8,331,509	21.2	8,213,222	20.9
Administration	3,555,727	9.1	3,565,528	9.1

One of the reasons why the Centre is able to plan and control its expenditures with accuracy is its method of monitoring expenditures. The Centre has developed a series of ratios and key indicators based on the interrelationship of appropriations, commitments, and expenditures. The close and regular monitoring of these ratios and key indicators during the year assisted the Centre in achieving its financial objectives.

The Centre did notice in 1979-80 a continuing trend to a higher disbursement ratio on committed projects. Though the rate was lower than the previous year, it was nevertheless higher than anticipated. Funding requirements for previously committed projects were originally forecast at \$19.8 million, while actual expenditures amounted to \$21.2 million. Since extensive control measures and cost reduction procedures were effected previously, the increased funding requirements had to be taken from new projects and from equity. As a result, this was the first year where the Centre has not been able to maintain or increase funding for new projects. Funds expended in 1979-80 for new projects amounted to \$6.1 million compared to \$7.8 million the previous year.

Appropriation and commitment activity was reasonably close to the projected activity plan. Appropriation and commitment levels must be reviewed constantly since they translate into future expenditures. The appropriation level for 1979-80 totalled \$41.8 million compared to \$43.5 million budgeted and \$42.1 million experienced last year.

Research Operational Support and Administration Costs

The administrative measures introduced in 1978-79, and which were detailed earlier in this report, were designed to restrict the escalation of management costs. These measures were effectively continued in the current year. New ones were initiated to further reduce the level of these expenditures in order to meet the Centre's objective of maintaining costs to last year's level.

These measures were effective and account to a large extent for the remarkable success the Centre has enjoyed in restricting these expenditures within budgetary limits and below last year's expenditure levels. Costs would have been significantly higher had the above measures not been in place, especially when one considers that 10.0% as an annual increase is quite normal for escalation in management and administration costs.

The Centre was also able to hold its research operational support expenditures to \$8.332 million compared to the \$8.1 million budgeted. It is significant to note that at \$8.332 million, research operational support expenditures exceeded actual expenditures for the previous year by \$118,287, an increase of only 1.4%. As an allocation of total expenditures, however, they represent 21.2% of total expenditures as compared to 20.9% for 1978-79 — a ratio well within acceptance limits.

Administration costs are similar for both years and, as a measure of total expenditures have not changed at 9.1%. Expenditures for 1979-80 amounted to \$3.556 million compared to \$3.566 million in the previous year and well below the budget of \$3.945 million.

These cost reduction measures and results were not achieved without a considerable sacrifice and strain on staff morale. It is a tribute to the staff that its cooperation and dedication was the key factor in the success of the restraint program. As a result of the reduction in personnel strength, most staff members have seen their work load increase significantly.

Equity

The equity account was reduced by \$635,750 during the year in order to fund the higher than anticipated expenditures on previously committed projects. As a result, the balance in the equity account now stands at \$2.826 million. When one considers that \$1.652 million represents the undepreciated capital value of property and equipment and that \$1.0 million is required to meet the minimum funding reserve set by the Board of Governors, it is obvious that the Centre will be closely monitoring the balance in its equity account.

The Way Ahead

The Centre considers that, in spite of the difficult financial and operating environment that has prevailed for the past two years, it has successfully fulfilled its mandate in support of development research. The Parliamentary grant for 1980-81 has been established at \$42.0 million. This appreciable increase will enable the Centre to resume the growth path which was characteristic of its earlier years. Already it has enabled the Board of Governors to approve an appropriation budget of \$51.123 million for the 1980-81 fiscal year. The Centre faces the future convinced of the necessity for continued development research activities, confident of its ability to play a leading role in such endeavours, and desirous of enhancing the image of Canada as an active and conscientious member of the international community.

Contract Research

The Centre continues to administer projects on behalf of other donor organizations. Funds for such projects are provided by the donor, and are expensed in the Centre's accounts when they are disbursed. Any balance in excess of expenditures is recorded as a liability in the Centre's books. Total contract research expenditures, recorded on the Statement of Expenditures and Revenues as Project Grants, under the caption Contract Research, amounted to \$813,280 in the period under review. Important projects include continued support for the International Council for Research in Agroforestry, and the Control of Wildlife (Kenya).

In the past, in almost all cases where the Centre has acted as the managing agency on behalf of other donors, it has absorbed the costs of managing and administering the programs and has not requested a management fee. Future contracts, however, will include such a fee.

FINANCIAL HIGHLIGHTS

(thousands of dollars)

	1980	1979	% Increase (Decrease)
RESULTS OF OPERATIONS			
Revenues	\$ 38,581	\$ 38,203	1.0%
Grant from Parliament of Canada	36,867	36,867	—
Interest and other income	1,714	1,336	28.3
Expenditures	\$ 39,217	\$ 39,356	(0.4)%
Development research	24,422	24,972	(2.2)
Research related activities	2,907	2,606	11.6
Research operational support	8,332	8,213	1.4
Administration	3,556	3,565	(0.3)
Excess of expenditures over revenues	\$ 636	\$ 1,153	(44.8)%
FINANCIAL POSITION			
Total assets	\$ 11,085	\$ 10,273	7.9%
Current assets	9,348	8,469	10.4
Other assets	1,737	1,804	(3.7)
Total liabilities	\$ 8,259	\$ 6,812	21.2%
Current liabilities	6,238	5,094	22.5
Other liabilities	2,021	1,718	17.6
Equity of Canada	\$ 2,826	\$ 3,461	(18.3)%
PROGRAM ACTIVITY			
Appropriations	\$ 41,783	\$ 42,944	(2.7)%
New projects	29,895	31,166	(4.1)
Regional and liaison offices	2,032	2,165	(6.1)
Technical support	4,100	3,790	8.2
Division management	2,200	2,258	(2.6)
Administration	3,556	3,565	(0.3)
Commitments	\$ 35,428	\$ 45,763	(22.6)%
Projects	23,540	33,985	(30.7)
Regional and liaison offices	2,032	2,165	(6.1)
Technical support	4,100	3,790	8.2
Division management	2,200	2,258	(2.6)
Administration	3,556	3,565	(0.3)

Above data does not include amounts related to contract research.

1979-80 ACTUAL vs BUDGET

(\$ millions)

	Actual	Budget	% Increase (Decrease)
FINANCIAL ACTIVITY			
Resources			
Grant from Parliament of Canada	\$ 36.9	\$ 36.9	— %
Interest and other income	1.7	1.8	(5.6)
Total	\$ 38.6	\$ 38.7	(0.3)%
Requirements			
Existing projects	\$ 21.2	\$ 19.8	7.1%
New projects	6.1	7.2	(15.3)
Regional and liaison offices	2.0	1.9	5.3
Technical support	4.1	4.0	2.5
Division management	2.2	2.2	—
Administration	3.6	3.9	(7.7)
Transfer to (from) Equity	(0.6)	(0.3)	100.0
Total	\$ 38.6	\$ 38.7	(0.3)%
PROGRAM ACTIVITY			
Appropriations	\$ 41.8	\$ 43.5	(3.9)%
New projects	29.9	31.5	(5.1)
Regional and liaison offices	2.0	1.9	5.3
Technical support	4.1	4.0	2.5
Division management	2.2	2.2	—
Administration	3.6	3.9	(7.7)
Commitments	\$ 35.4	\$ 39.8	(11.1)%
Projects	23.5	27.8	(15.5)
Regional and liaison offices	2.0	1.9	5.3
Technical support	4.1	4.0	2.5
Division management	2.2	2.2	—
Administration	3.6	3.9	(7.7)
Expenditures	\$ 39.2	\$ 39.0	0.5%
Projects	27.3	27.0	1.1
Regional and liaison offices	2.0	1.9	5.3
Technical support	4.1	4.0	2.5
Division management	2.2	2.2	—
Administration	3.6	3.9	(7.7)

Above data does not include amounts related to contract research.

MANAGEMENT REPORT
for the year ended March 31, 1980
(thousands of dollars)

Sector/Activity	Approved Budget	Approved Appropriations	Commitments	Cumulative Commitments 1979-80	Cash Payments			as at March 31, 1980	
					During 1979-80	Uncommitted Appropriations	Outstanding Commitments	Total Encumbrances	Total
1-Program Operations									
Agriculture, Food and Nutrition Sciences	\$ 12,824	\$ 12,820	\$ 10,100	\$ 28,261	\$ 11,285	\$ 5,699	\$ 16,976	\$ 22,675	
Health Sciences	4,704	4,305	3,120	8,605	3,535	1,320	5,070	6,390	
Social Sciences	8,364	7,818	7,007	15,192	7,520	4,663	7,672	12,335	
Information Sciences	5,766	5,824	4,170	8,812	5,554	3,194	3,258	6,452	
Special Governing Board Activities	518	63	41	324	98	—	226	226	
2-External Liaison and Relations									
Office of the Vice-President — Planning	2,336	2,452	2,451	2,494	2,421	—	73	73	
Office of the Senior Vice-President Communications	3,284	3,150	3,235	8,386	3,510	2,594	4,876	7,470	
	1,774	1,795	1,748	2,028	1,738	—	290	290	
3-Administration									
General Management	3,945	3,556	3,556	3,556	3,556	—	—	—	
TOTAL	\$ 43,515	\$ 41,783	\$ 35,428	\$ 77,658	\$ 39,217	\$ 17,470	\$ 38,441	\$ 55,911	

Above data does not include amounts related to contract research.

International Development Research Centre
and
The Honourable Mark MacGuigan, P.C., M.P.
Secretary of State for External Affairs
Ottawa, Ontario

I have examined the balance sheet of the International Development Research Centre as at March 31, 1980 and the statements of expenditures and revenues, equity and changes in financial position for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the International Development Research Centre as at March 31, 1980 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

J.J. Macdonell

Auditor General of Canada

Ottawa, Ontario
June 20, 1980

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
(Established by the International Development Research Centre Act)

BALANCE SHEET
as at March 31, 1980

	1980	1979
ASSETS		
Current Assets		
Cash	\$ 232,986	\$ 368,876
Short-term deposits (Note 3)	8,397,191	7,628,531
Amounts receivable (Note 4)	624,657	360,780
Prepaid expenses	92,908	111,254
	<u>9,347,742</u>	<u>8,469,441</u>
Recoverable deposits	85,024	82,682
Property and equipment (Note 5)	1,652,138	1,721,061
	<u>\$ 11,084,904</u>	<u>\$ 10,273,184</u>
LIABILITIES AND EQUITY		
Current Liabilities		
Accounts payable and accrued liabilities (Note 6)	\$ 5,921,184	\$ 4,961,154
Funds provided for contract research	316,947	132,744
	<u>6,238,131</u>	<u>5,093,898</u>
Provision for employee separation benefits	2,020,953	1,717,716
Total Liabilities	<u>8,259,084</u>	<u>6,811,614</u>
Equity of Canada	2,825,820	3,461,570
	<u>\$ 11,084,904</u>	<u>\$ 10,273,184</u>

The accompanying notes and schedules are an integral part of the financial statements.

Approved:

R.J. Audet
Treasurer

Ivan L. Head
President

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

STATEMENT OF EXPENDITURES AND REVENUES for the year ended March 31, 1980

	1980	1979
EXPENDITURES		
Development research		
Project grants	\$ 19,656,331	\$ 20,235,357
Centre projects	4,765,551	4,735,400
	<u>24,421,882</u>	<u>24,970,757</u>
Research related activities		
Project development and support	1,071,635	1,179,196
Information dissemination	1,142,834	737,588
Development research library	692,981	689,314
	<u>2,907,450</u>	<u>2,606,098</u>
Research operational support		
Regional and liaison offices	2,031,420	2,165,315
Technical support	4,099,672	3,789,650
Division management	2,200,417	2,258,257
	<u>8,331,509</u>	<u>8,213,222</u>
Contract research		
Project grants	813,280	902,001
Total research and support activities (Schedule 1)	<u>36,474,121</u>	<u>36,692,078</u>
Administration (Schedule 2)	3,555,727	3,565,528
Cost of operations	<u>40,029,848</u>	<u>40,257,606</u>
REVENUES		
Grant from Parliament of Canada	36,867,000	36,867,000
Interest and other income	1,713,818	1,335,540
Contract research	813,280	902,001
	<u>39,394,098</u>	<u>39,104,541</u>
EXCESS OF EXPENDITURES OVER REVENUES	<u>\$ 635,750</u>	<u>\$ 1,153,065</u>

The accompanying notes and schedules are an integral part of the financial statements.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

**STATEMENT OF EQUITY
for the year ended March 31, 1980**

	<u>1980</u>	<u>1979</u>
EQUITY OF CANADA — BEGINNING OF THE YEAR		
As previously reported	\$ 3,461,570	\$ 2,772,026
Adjustment for change in capitalization, depreciation and amortization of property and equipment	<u>—</u>	<u>1,842,609</u>
As restated	3,461,570	4,614,635
 Excess of expenditures over revenues	 <u>635,750</u>	 <u>1,153,065</u>
EQUITY OF CANADA — END OF THE YEAR	<u>\$ 2,825,820</u>	<u>\$ 3,461,570</u>

The accompanying notes and schedules are an integral part of the financial statements.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

**STATEMENT OF CHANGES IN FINANCIAL POSITION
for the year ended March 31, 1980**

	1980	1979
SOURCE OF FUNDS		
Excess of expenditures over revenues	\$ (635,750)	\$ —
Add (deduct) items not requiring a cash outlay		
Gain on disposal of property and equipment	(7,101)	—
Depreciation and amortization	285,277	—
Accrual of employee separation benefits	523,963	—
Funds provided by operations	166,389	—
Net decrease in other current assets	—	4,161
Net increase in current liabilities	1,144,233	670,202
Proceeds from disposal of property and equipment	16,520	195,965
	<u>1,327,142</u>	<u>870,328</u>
USE OF FUNDS		
Excess of expenditures over revenues	—	1,153,065
Add (deduct) items not requiring a cash outlay		
Gain on disposal of property and equipment	—	114,021
Depreciation and amortization	—	(307,923)
Accrual of employee separation benefits	—	(509,654)
Funds required for operations	—	449,509
Increase in recoverable deposits	2,342	11,394
Net increase in other current assets	245,531	—
Additions to property and equipment	225,773	154,232
Payment of employee separation benefits	220,726	206,674
	<u>694,372</u>	<u>821,809</u>
INCREASE IN FUNDS FOR THE YEAR	632,770	48,519
FUNDS — BEGINNING OF THE YEAR	7,997,407	7,948,888
FUNDS — END OF THE YEAR	<u>\$ 8,630,177</u>	<u>\$ 7,997,407</u>
Represented by:		
Cash	\$ 232,986	\$ 368,876
Short-term deposits (Note 3)	8,397,191	7,628,531
	<u>\$ 8,630,177</u>	<u>\$ 7,997,407</u>

The accompanying notes and schedules are an integral part of the financial statements.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

NOTES TO FINANCIAL STATEMENTS

March 31, 1980

1. Nature and Objectives

The International Development Research Centre is a Corporation, without share capital, established by the Parliament of Canada through the International Development Research Centre Act which received Royal assent on May 13, 1970. The annual grant received from the Parliament of Canada is pursuant to External Affairs Votes 40 and 45 for the years ended March 31, 1979 and 1980 respectively.

The objectives of the Centre are 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 knowledge to the economic and social advancement of those regions.

2. Significant Accounting Policies

The accompanying financial statements have been prepared in accordance with Canadian generally accepted accounting principles. Significant accounting policies are as follows:

Research expenditures

Expenditures for development research, research related activities and contract research are charged to operations at the time of disbursement, or as provided for under contractual agreements.

Foreign currency translation

Foreign transactions are translated into Canadian dollars by the use of an average exchange rate which closely approximates the rate in effect at the transaction date. Exchange gains or losses are reflected in the determination of cost of operations for the current period.

Monetary assets and liabilities as at March 31, 1980 have been translated to Canadian dollars at the rate of exchange in effect at that date.

Contract research

The Centre has entered into agreements to undertake contract research on behalf of various donor agencies. The Centre recognizes contract research income at the time related expenditures are incurred. Funds received in excess of contract research expenditures incurred are reflected in current liabilities.

Depreciation and amortization

The methods and rates employed annually to provide for the depreciation and amortization of property and equipment are as follows:

	Method	Rate
Leasehold improvements	Straight line	5 to 15 years
Office furniture and equipment	Diminishing balance	20%
Computer hardware and systems		
software	Straight line	5 years
Vehicles	Diminishing balance	30%
Residence	Straight line	25 years

3. Short-Term Deposits

	1980	1979
Canadian chartered banks	\$ 8,094,791	\$ 6,422,150
Commercial enterprises	—	839,058
Exchange certificates (non interest bearing)	302,400	367,323
	<u>\$ 8,397,191</u>	<u>\$ 7,628,531</u>

4. Amounts Receivable

	1980	1979
Balance due from disposal of property and equipment	\$ —	\$ 165,449
Staff travel advances	189,391	93,992
Accrued interest	198,382	44,502
Costs to be recovered from other organizations	100,699	28,909
Operating funds advanced	82,282	—
Others	53,903	27,928
	<u>\$ 624,657</u>	<u>\$ 360,780</u>

5. Property and Equipment

	Cost	Accumulated Depreciation and Amortization	1980 Net	1979 Net
Leasehold improvements	\$ 1,206,060	\$ 423,427	\$ 782,633	\$ 837,426
Office furniture and equipment	722,757	428,972	293,785	352,262
Computer hardware and systems software	614,727	269,343	345,384	288,667
Vehicles	247,384	122,783	124,601	132,795
Residence	104,076	23,341	80,735	84,911
Land	25,000	—	25,000	25,000
	<u>\$ 2,920,004</u>	<u>\$ 1,267,866</u>	<u>\$ 1,652,138</u>	<u>\$ 1,721,061</u>

6. Accounts Payable and Accrued Liabilities

	1980	1979
Accrued liabilities — projects	\$ 4,089,992	\$ 3,608,030
Accrued annual and other leave benefits	1,178,468	1,208,287
Accounts payable and accrued liabilities — others	652,724	144,837
	<u>\$ 5,921,184</u>	<u>\$ 4,961,154</u>

Accrued liabilities for projects represent the value of payments due under project agreements but not yet disbursed as of March 31, 1980.

7. Contractual Commitments and Contingent Liabilities

Project grants and project development and support

Subject to funds being provided by Parliament, the Centre is committed to make grants totalling \$32,447,754 against approved projects during the next four years.

The Centre has also submitted formal grant offers to prospective recipients totalling \$5,275,426 and is awaiting acceptance of these offers.

Leases

The Centre has entered into various lease arrangements for office premises, equipment and staff accommodation, in Canada as well as various countries. The total liability over the next three years under such lease arrangements in effect as of March 31, 1980 amounts to \$2,408,629 with \$1,377,448 representing lease costs for the next fiscal period.

Contract research

As at March 31, 1980, the Centre has commitments under various contract research agreements totalling \$547,947 which will be met by funds provided under such agreements.

8. Reclassification

Certain figures for the preceding year have been reclassified to conform to the current year's presentation.

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE
SCHEDULE OF RESEARCH AND SUPPORT ACTIVITIES
for the year ended March 31, 1980

	Development Research	Research Related Activities	Research Operational Support	Contract Research	1980 Total	1979 Total
EXPENDITURES						
Programs						
Agriculture, Food and Nutrition Sciences	\$ 9,515,079	\$ 158,006	\$ 1,611,518	—	\$ 11,284,603	\$ 11,564,948
Social Sciences	5,632,741	300,001	1,586,955	—	7,519,697	6,416,948
Information Sciences	3,828,237	153,052	879,219	—	4,860,508	4,826,058
Health Sciences	2,600,104	62,985	873,007	—	3,536,096	4,775,219
Human Resources	2,032,217	—	—	—	2,032,217	2,071,517
Program related activities						
Regional and Liaison Offices	—	46,791	2,031,420	—	2,078,211	2,165,315
External Liaison and Relations	824,636	252,391	742,327	—	1,819,354	1,401,493
Information Dissemination	(11,132)	1,142,834	607,063	—	1,738,765	1,533,275
Development Research Library	—	692,981	—	—	692,981	689,314
Special Governing Board Activities	—	98,409	—	—	98,409	345,990
Contract research	—	—	—	813,280	813,280	902,001
TOTAL RESEARCH	\$ 24,421,882	\$ 2,907,450	\$ 8,331,509	\$ 813,280	\$ 36,474,121	\$ 36,692,078
AND SUPPORT ACTIVITIES						

Schedule 2**INTERNATIONAL DEVELOPMENT RESEARCH CENTRE****SCHEDULE OF ADMINISTRATION EXPENDITURES**
for the year ended March 31, 1980

	1980	1979
Salaries and benefits	\$ 2,325,114	\$ 2,388,682
Rent and accommodation	393,410	398,253
Office expenses	175,203	196,746
Professional and special services	169,558	123,953
Travel and relocation	163,862	119,339
Governors' meetings	99,176	78,829
Depreciation and amortization	97,369	112,131
Telecommunications	84,457	103,883
Insurance	47,578	43,712
	<u>\$ 3,555,727</u>	<u>\$ 3,565,528</u>

Human Resources Development Program

The general objective of the Human Resources Development Program is to improve the competence of professionals and researchers from developing countries and to broaden the resource base of Canadian professionals concerned with international development. In the past year, the program's orientation has shifted toward shorter term awards with particular emphasis on upgrading of professional, managerial, or research skills rather than long-term academic training.

The following award categories were offered in 1979-1980:

- Pearson Fellowships
- Pre- and Post-Project Awards
- Professional Development Awards (Canada)
- Research Associate Awards (Developing Countries)

These awards are described below together with a list of selected candidates and a brief outline of the work they have undertaken during tenure.

Pre- and Post-Project Awards

These awards are designed to provide a "sabbatical leave" for Canadian professionals at the midcareer level to undertake training, personal study, or investigation in the field of international development. The aim is to:

- (1) allow professionals already involved in international development to improve or update their skills and knowledge; or
- (2) permit professionals with no specific exposure in the field of international development to investigate the possibility of adapting their skills to that particular field through a period of study or "on the job" training.

Ten awards (man-years) are offered annually to Canadian citizens or landed immigrants with 3 years residence in Canada.

AWARDED

H.M.T. Boissonnault, Gossas, Senegal
M.Sc. course in community health
Location: U.K.

G. Bragg, Waterloo, Ontario
To prepare a book on the engineering of
wind-powered water pumping systems
Location: Canada, U.K., and East Africa

W.D. Durant, Sackville, New Brunswick
Studies towards a diploma in rural social
development
Location: U.K.

B. Hanneson, Vancouver, British Columbia
Study of informal economics and the
development process in Latin America
Location: Canada, USA, and Colombia

M. Moo-Young, Waterloo, Ontario
Research on bioconversion of bagasse and
agricultural wastes into proteinaceous
feed/food products
Location: Cuba

B.D. Murphy, Saskatoon, Saskatchewan
Research on methods of increasing
production of domestic animals
Location: Mexico

R.P. Shaw, Geneva, Switzerland
Research on population, labour force, and
employment strategy for the Arab world
Location: Canada, Switzerland, and Lebanon

A. Sprudz, Ottawa, Ontario
Comparative study on the mechanics of
assistance and advisory service delivery by
established cooperatives in developed
countries to cooperatives in developing
countries
Location: U.K., Sweden, USSR, and East
Africa

F.J.R. Taylor, Vancouver, British Columbia
Research on factors governing the
distribution of the dinoflagellate source of
ciguatera fish poison in the Caribbean Sea
Location: Barbados

W. Welsh, Winnipeg, Manitoba
To examine problems in industrial arts
teacher education
Location: Jamaica

T. Yamamoto, Edmonton, Alberta
Research on viral diseases of animals and fish
Location: Kenya

Research Associate Awards (Developing Countries)

The objective of these awards is to improve and upgrade high-level manpower in developing countries. The awards consist of a "sabbatical leave" of 4–12 months to enable midcareer professionals to pursue further training, personal study, or investigation closely related to the needs and development of their career.

During 1979–1980, 20 award holders took up tenure (some of these were candidates selected the previous year) and 21 candidates were recommended for awards.

AWARDED

R.D. Arenas, Colombia

Study on self-management as a strategy for
community development and generation of
employment

Location: U.K.

D. Chaudhary, India

Study on upland rain-fed and drought-
resistant rice

Location: Philippines

M. Cissoko, Senegal

Studies in urbanization

Location: France

G. Delgadillo, Bolivia

To complete a Ph.D. thesis on the
adaptation of some tropical forage species
to an oxisoi of Latin America.

Location: Canada

P. Friedman, Cuba

To obtain hands-on experience and
knowledge of the industrial applications of
computer process control, with particular
emphasis on the sugar industry

Location: USA, Canada

F. Jimenez, Colombia

To study in the Special Programme for Urban
and Regional Studies of Developing Areas
(SPURS) and to carry out a project on the
regional metropolitan structure in Colombia

Location: USA

R. Keita, Mali

Socioeconomic study of agropastoral and
pastoral communities in Kaarta

Location: Mali, France, Senegal, and USA

Krase Chanawongse, Thailand

Study to assess the needs of primary health
care for public health planning and project
operation as perceived by selected health

personnel and people at the local level in
Thailand

Location: USA, Thailand, Sri Lanka, and
Malaysia

E.O. Choi Lee, Korea

Studies at the doctoral level in nursing,
principally in research methodology

Location: USA

L. Leñero, Mexico

To complete a Ph.D. thesis on a sociological
study of the family in a developing country

Location: Belgium

J.S. Montemayor, Philippines

Study tour of agrarian research and training
institutes in Asia

Location: Thailand, India, and Bangladesh

Mubyarto, Indonesia

Personal study to write a book on
agricultural policy in the Indonesian
language

Location: USA

G.D. Ojuando, Kenya

Postgraduate course in library studies

Location: U.K.

G. Perry, Colombia

Research on the relationships among policy
formulations, resource allocations, and
school achievements in Tanzania

Location: U.K.

M. Abd-el-Rehim, Egypt

Research on the role of physical and
biochemical treatments for soybean and
peanut seeds for the improvement of
seedlings and combating of foliar diseases

Location: USA

B. Riascos, Colombia

Studies in the postqualification program of

the postgraduate school of librarianship and
information sciences
Location: U.K.

K. Sathyanarayanaiah, India

Research on the improvement of dry lands
wheats for yield potentiality
Location: Canada

F.C. Sercovich, Uruguay

Research on engineering design and
endogenous technical change — a
microeconomic approach concerning the
chemical industry
Location: USA

F.M. Valdez, Philippines

Ph.D. thesis research on the community
health nursing clinical experience program
in the basic baccalaureate program for
nursing in the Philippines
Location: Philippines

R. Varadarajan, India

Research in health education practices and
study of current developments in the
professional preparation of health care
personnel
Location: USA

RECOMMENDED (February 1980)

R.I.T. Alles (Sri Lanka)

C. Browne (Jamaica)

R.J. Campos (Peru)

J.J. Cardos (Gambia)

G. Corvalan (Paraguay)

T. Dharmalingam (India)

C. Dieng (Senegal)

S.A. Fiad (Egypt)

C.H. Filgueira (Argentina)

F. Flores Manchego (Bolivia)

B. Kishore (India)

M.H. El-Lakkany (Egypt)

A.S. Murty (India)

M.A. Mustafa (Sudan)

T. Ramaprabu (India)

J. Santos Rojas (Chile)

C. Schmitt (Chile)

H. Singh (India)

S.C. Tongdee (Thailand)

J. Varea-Teran (Ecuador)

K.K. Zain (Malaysia)

Pre- and Post-Project Awards

This award program is intended to provide training for individuals from developing countries prior to their participation in an IDRC-supported project and to further the training of others who have been associated with IDRC projects.

Nomination and selection for this award are made by the appropriate program division in cooperation with the Human Resources program. The number of grants to be awarded annually is variable, as is the level of the grant; the nature and location of training are dependent upon the individuals selected. The awards given during the year under review are:

PRE-PROJECT AWARDS

J. Arong, Philippines

To learn research instrumentation, data-gathering procedures, and analytical techniques from Egyptian researchers conducting an IDRC-supported study on literacy retention
Location: Egypt

R.D. Faisal, Indonesia

Training program in research methods
Location: Indonesia

E.B. Gapit, Philippines

Studies at the University of Wales and visits to libraries for orientation and practical training
Location: U.K., Canada, and USA

T.O. Honrado, Philippines

M.Sc. program in computer science
Location: Canada

F.H. Navajas, Argentina

Training as a research assistant through the preparation of a monograph and a bibliography on machine-tool production in Argentina
Location: Argentina

I. Omah-Maharaj, Trinidad

Practical training on serological and field techniques used in the study of Chagas' Disease
Location: Venezuela

- C. Rivera, Philippines
To learn research instrumentation, data gathering procedures, and analytical techniques from Egyptian researchers conducting an IDRC-supported study on literacy retention
Location: Egypt
- M. Simpara, Mali
To carry out an evaluation of materials and techniques used for well drilling and water pumping.
Location: Canada
- M. Valisno, Philippines
To learn research instrumentation, data-gathering procedures, and analytical techniques from Egyptian researchers conducting an IDRC-supported study on literacy retention
Location: Egypt
- T. Worwarte, Thailand
To attend a seminar on planners, peasants, and poverty at the University of Sussex
Location: U.K.
- A. Zulkarnain, Indonesia
Training program in research methods
Location: U.K.

POST-PROJECT AWARDS

- R. Chaiwat, Thailand
To complete a Ph.D. program in rural sociology
Location: USA
- H. Claire Pericon, Bolivia
Postgraduate program in wood technology
Location: Venezuela
- A. Idris, Indonesia
Short-term training course on demographic statistics
Location: Indonesia
- T.S. Ly, Senegal
M.A. program in economics
Location: Canada
- P. Muschett, Jamaica
M.A. program in social work
Location: USA
- Nurmansyah, Indonesia
Short-term training course on the application of biostatistics in community medicine
Location: Indonesia
- A. Quijano-Solis, Mexico
To study methods used by ECLA for data processing and analysis as well as documentation techniques used for disseminating socioeconomic information
Location: Chile

Pearson Fellowships

The Pearson Fellowships are designed for young public servants from developing countries to give them an opportunity of pursuing their professional interest in Canada. The Canadian Missions in developing countries are responsible for nominating candidates. The Fellowships are confined each year to a particular field of concentration. During the year under review, eight Fellowships were awarded for research or training in the field of Information Sciences.

- S.O. Adagala, Kenya
Management of broadcasting systems
Location: Ottawa, Ontario
- R. del C. Cadagan, Chile
National library policy
Location: Ottawa, Ontario and London, Ontario
- R. del Carpio, Bolivia
Formation and development of national data bases

Location: Ottawa, Ontario and
Quebec, Quebec

M.A. Mahmoud Aziz, Egypt
Scientific editing and reporting
Location: Ottawa, Ontario and
London, Ontario

S. Castrillon de Miranda, Colombia
Libraries for primary and secondary schools
Location: Montreal, Quebec

L.O. Orbase, Philippines
Library and information sciences
Location: Ottawa, Ontario and London,
Ontario

J.V. Tchienehom, Cameroun
Television programing and production
Location: Montreal, Quebec

Yanyong Boon-Long, Thailand
Computer policy for Thailand
Location: Ottawa, Ontario

Publications and films

Publications et films

The Centre has always placed great importance on the publication and dissemination of research results. IDRC's Communications Division produces a wide range of technical and scientific materials for worldwide distribution, particularly in the developing countries, as well as more general materials to inform the public about the work of the Centre. A list of publications and films produced by the Centre during the fiscal year follows.

By the very nature of their work, IDRC staff are frequently called upon to participate in workshops and seminars, to speak at conferences, and to contribute to scientific journals. A list of many of these external publications by Centre staff comprises the second part of this section.

Many of the research projects supported by IDRC generate their own publications — reports, texts, newsletters — that, although not produced or distributed by the Centre, form an important part of the effort to disseminate research results as widely as possible. The third part of this section includes as many of these publications as were available at the time of publication of this report.

Catalogues of IDRC publications and audiovisual productions in English, French, and Spanish, can be obtained from the Communications Division, IDRC, Box 8500, Ottawa, Canada K1G 3H9. If the material listed under other headings cannot be obtained from normal sources (authors, libraries, bookstores), IDRC will try to supply copies. In case of short supply, preference will be given to researchers in developing countries.

Le Centre attache une extrême importance à la publication et à la diffusion des résultats des travaux qu'il subventionne. C'est pourquoi la Division des communications produit et distribue dans le monde entier — surtout dans le Tiers-Monde — un large éventail de documents scientifiques et techniques, ainsi que des publications et films visant à renseigner le public sur les activités du CRDI. Ci-après, la liste des films et publications du Centre produits au cours du dernier exercice.

Les employés du CRDI, de par la nature même de leurs fonctions, sont souvent appelés à faire des conférences, à participer à des colloques ou à des séminaires et à collaborer à des revues scientifiques. Une liste de la plupart de ces communications extérieures figure dans la deuxième partie de la présente section.

Plusieurs projets de recherche subventionnés par le CRDI débouchent sur la publication de documents, rapports ou bulletins qui, même s'ils ne sont pas publiés et distribués par le Centre même, constituent une part importante des efforts de diffusion des résultats des recherches. La troisième partie de cette section donne la liste de toutes les publications parues au moment de la rédaction du présent rapport.

On peut obtenir les catalogues complets des publications et des productions audiovisuelles du CRDI actuellement disponibles en français, anglais ou espagnol, en s'adressant au Service de distribution, Division des communications, CRDI, B.P. 8500, Ottawa (Canada) K1G 3H9. S'il est impossible de trouver un document donné chez les dépositaires habituels, (auteurs, bibliothèques ou librairies) le CRDI s'efforcera de fournir les exemplaires demandés.

Vu l'approvisionnement limité pour certaines publications, les stocks en voie d'épuisement seront, de préférence, réservés aux chercheurs des pays en développement.

Centre publications Publications du Centre

IDRC Annual Report 1978-1979/Rapport annuel 1978-1979, Ottawa, IDRC/CRDI, 1979. 114 p. (IDRC-003/79e,f)

El bosque tropical sobreexplotado y subutilizado, J.G. Bene, H.W. Beall, y A. Côté, Bogotá, CIID, 1979. 51 p. (IDRC-084s)

Caqueza: living rural development, Hubert Zandstra, Kenneth Swanberg, Carlos Zulberti, and Barry Nestel, Ottawa, IDRC, 1979. 321 p. (IDRC-107e) (Also available in Spanish, IDRC-107s)

Coffee pulp: composition, technology, and utilization, J.E. Braham and R. Bressani, editors, Ottawa, IDRC, 1979. 95 p. (IDRC-108e) (Also available in Spanish, IDRC-108s)

Science et technologie pour le développement: rapport comparatif principal du projet "Instruments de politiques scientifique et technique", STPI 2, Francisco Sagasti, Ottawa, CRDI, 1979. 124 p. (IDRC-109f) (Also available in English IDRC-109e and Spanish IDRC-109s)

Búsqueda: informe de actividades del CIID 1978, Bogotá, CIID, 1979. 32 p. (IDRC-110s) (Also available in English, IDRC-110e and French, IDRC-110f)

Beyond Manila: Philippine rural problems in perspective, Gelia T. Castillo, Ottawa, IDRC, 1979. 420 p. (IDRC-116e)

The world of literacy: policy, research, and action, Ottawa, IDRC, 1979. 128 p. (IDRC-117e)

Earthquake history of Ethiopia and the Horn of Africa, Pierre Gouin, Ottawa, IDRC, 1979. 258 p. (IDRC-118e)

Les fermes de la mer: description du programme de recherches aquicoles subventionné par le Centre de recherches pour le développement international, Bob Stanley en collaboration avec W.H. Allsopp et F. Brian Davy, Ottawa, CRDI, 1979. 40 p. (IDRC-120f) (Also available in English, IDRC-120e)

Mujer rural y desarrollo: nuevo enfoque de la educación del hogar en América Latina, Eleonora Cebotarev, Bogotá, CIID, 1979. 188 p. (IDRC-121s)

Proyectos 1970-1978, compilación: Rowan Shirkie, Bogotá, CIID, 1979. 96 p. (IDRC-122s)

La quinua y la kañiwa: cultivos andinos, M. Tapia, H. Gandarillas, S. Alandia, A. Cardozo, A. Mujica, R. Ortiz, V. Otazu, J. Rea, B. Salas, and E. Zanabria, Bogotá, CIID, 1979. 227 p. (IDRC-124s)

Low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, Volume 4, compiled by Frances M. Delaney, Ottawa, IDRC, 1979. 186 p. (IDRC-125e)

Food legume improvement and development: proceedings of a workshop held at the University of Aleppo, Aleppo, Syria, 2-7 May 1978, Geoffrey C. Hawtin and George J. Chancellor, editors, Ottawa, IDRC, 1979. 216 p. (IDRC-126e)

Atlas of hystero-graphic studies of the "IUD-holding uterus": mode of action and evaluation of side effects of intrauterine contraception, Ibrahim Kamal, Ottawa, IDRC, 1979. 118 p. (IDRC-127e)

Information for development in Latin America and the Caribbean: summary of a meeting held in Cali, Colombia 23-28 October 1977, Ottawa, IDRC, 1979. 28 p. (IDRC-128e)

Información y desarrollo: diálogo entre proveedores y usuarios. Resumen del informe de la reunión sobre información para el desarrollo en Latinoamérica y el Caribe, Cali, Colombia, Octubre 23-28 1977, Bogotá, CIID, 1979. 28 p. (IDRC-128s)

Información y desarrollo: diálogo entre proveedores y usuarios. Informe de la reunión sobre información para el desarrollo en Latinoamérica y el Caribe, Cali, Colombia, Octubre 23-28, 1977, Luis R. Beltrán S., Y. Betty Johnson de Vodanovic, Bogotá, CIID, 1979. 137 p. (IDRC-129s)

Science and technology for development: technology policy and industrialization in the People's Republic of China, STPI 4, Genevieve C. Dean, Ottawa, IDRC, 1979. 108 p. (IDRC-130e)

Give us the tools: science and technology for development, David Spurgeon, editor, Ottawa, IDRC, 1979. 190 p. (IDRC-131e)

Des outils pour bâtir: la science et la technologie au service du développement, textes et recherches: David Spurgeon, édition française: Bernard Méchin, Ottawa, CRDI, 1979. 198 p. (IDRC-131f)

Pathogenicity of trypanosomes: proceedings of a workshop held at Nairobi, Kenya, 20-23 November 1978, George Losos and Amy Chouinard, editors, Ottawa, IDRC, 1979. 216 p. (IDRC-132e)

Science and technology for development: planning in the STPI countries, STPI 3, Francisco R. Sagasti and Alberto Araoz, editors, Ottawa, IDRC, 1979. 178 p. (IDRC-133e)

Standardization of analytical methodology for feeds: proceedings of a workshop held in Ottawa, Canada, 12-14 March 1979, W.J. Pigden, C.C. Balch, and Michael Graham, editors, Ottawa, IDRC, 1979. 128 p. (IDRC-134e)

A partly annotated bibliography on infections, parasites, and diseases of African wild animals, Lars Karstad, Ottawa, IDRC, 1979. 111 p. (IDRC-135e)

Role of cassava in the etiology of endemic goitre and cretinism, A.M. Ermans, N.M. Mbulamoko, F. Delange, and R. Ahluwalia, editors, Ottawa, IDRC, 1979. 182 p. (IDRC-136e)

Traditional medicine in Zaire: present and potential contribution to the health services, Ottawa, IDRC, 1980. 40 p. (IDRC-137e) (Also available in French, IDRC-137f)

La médecine traditionnelle au Zaïre : fonctionnement et contribution potentielle aux services de santé, Ottawa, CRDI, 1979. 63 p. (IDRC-137f)

Acronyms relating to international development/Liste de sigles en développement international/Siglas relacionadas con desarrollo internacional, compiled by Margaret Carroll, Ottawa, IDRC, 1980. 162 p. (IDRC-138e, f, s)

Diseases of fish cultured for food in Southeast Asia: report of a workshop held in Cisarua, Bogor, Indonesia, 28 November-1 December 1978, Brian Davy and Michael Graham, editors, Ottawa, IDRC, 1979. 32 p. (IDRC-139e)

10 años del Grupo Andino: memorias de un protagonista, M. Guerrero, Bogotá, CIID, 1980. 440 p. (IDRC-140s)

Canada's role in science and technology for development: proceedings of a symposium held at the Ontario Science

Centre, Toronto, Canada, 10-13 May 1979, J. King Gordon, editor, Ottawa, IDRC, 1979. 136 p. (IDRC-141e)

Intercropping with cassava: proceedings of an international workshop held at Trivandrum, India, 27 Nov.-1 Dec. 1978, Edward Weber, Barry Nestel, and Marilyn Campbell, editors, Ottawa, IDRC, 1979. 144 p. (IDRC-142e)

Food or famine: an account of the crop science program supported by the IDRC, A.D.R. Ker, Ottawa, IDRC, 1979. 79 p. (IDRC-143e)

SALUS: Low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, Volume 5, Rosanna M. Bechtel, editor, Ottawa, IDRC, 1980. 194 p. (IDRC-144e)

Polyphenols in cereals and legumes: proceedings of a symposium held during the 36th annual meeting of the Institute of Food Technologists, St. Louis, Missouri, 10-13 June, 1979, Joseph H. Hulse, editor, Ottawa, IDRC, 1980. 72 p. (IDRC-145e)

Food systems: an account of the postproduction systems program supported by the IDRC, R.S. Forrest, W. Edwardson, S. Vogel, and G. Yaciuk, Ottawa, IDRC, 1979. 72 p. (IDRC-146e)

Les migrations voltaïques : Tome I. Importance et ambivalence de la migration voltaïque, Sidiki Coulibaly, Joel Gregory et Victor Piché, Ottawa, CRDI, 1980. 144 p. (IDRC-147f)

Searching: review of IDRC activities 1979, Ottawa, IDRC, 1980. 40 p. (IDRC-150e)

Quête d'avenir : rapport d'activité du CRDI en 1979, Ottawa, CRDI, 1980. 44 p. (IDRC-150f)

Un système interactif sur mini-ordinateur pour la recherche documentaire et la gestion de bibliothèques, Faye A. Daneliuk, Ottawa, CRDI, 1979. 19 p. (IDRC-TS14f) (Also available in English, IDRC-TS14e)

Rural health care in Egypt, Nawal El Messiri Nadim, Ottawa, IDRC, 1980. 40 p. (IDRC-TS15e)

Tropical oysters: culture and methods, D.B. Quayle, Ottawa, IDRC, 1980. 80 p. (IDRC-TS17e)

The theory and practice of induced breeding in fish, Brian J. Harvey and William S. Hoar, Ottawa, IDRC, 1979. 48 p. (IDRC-TS21e)

Energy from biomass for developing countries: a state of the art report, J.G. Bene, H.W. Beall, and H.B. Marshall, Ottawa, IDRC, 1979. 144 p. (IDRC-MR3)

Food and agricultural research — its past and future contribution to agricultural, social and economic development: paper to the UNCSTD symposium on non-government agencies — Singapore, January 20–28, 1979, Joseph H. Hulse and Odette E. Pearson, Ottawa, IDRC, 1979. 36 p. (IDRC-MR4)

Education, work and employment: a summary review, Maureen Woodhall, Ottawa, IDRC, 1979. 58 p. (IDRC-MR5)

The research process, David Court and Pablo Latapi, Ottawa, IDRC, 1979. 24 p. (IDRC-MR6)

Malnutrition and later development: a summary review, Ottawa, IDRC, 1979. 67 p. (IDRC-MR7)

Basic methods of specimen preparation in parasitology, Murray J. Kennedy, Ottawa, IDRC, 1979. 50 p. (IDRC-MR8)

The determinants of school achievement: a review of the research for developing countries, Ernesto Shiefelbein and John Simmons, Ottawa, IDRC, 1979. 46 p. (IDRC-MR9)

A review of teacher effectiveness research in Africa, India, Latin America, Middle East, Malaysia, Philippines and Thailand: synthesis of results, Beatrice Avalos and Wadi Haddad, Ottawa, IDRC, 1979. 170 p. (IDRC-MR10)

A current awareness bibliography for IDRC-supported fisheries projects, Vol 3 No 4, compiled by Deborah Turnbull, Ottawa, IDRC, 1979. 40 p. (IDRC-MR11)

Rapport sur l'évaluation de la situation nutritionnelle des populations rurales du Sahel à la lumière des enquêtes effectuées entre 1960 et 1979, J.C. Dillon et N. Lajoie, Ottawa, CRDI, 1979. 86 p. (IDRC-MR12)

Post-harvest technology in Senegal: current practices and future needs, Gordon Yaciuk and Anne Dorothy Yaciuk, Ottawa, IDRC, 1979. 190 p. (IDRC-MR13)

Proyecto arial. Asignación de recursos para investigación agrícola en América Latina. Colombia: estudio de caso, Bogotá, CIID, 1980. 243 p. (IDRC-MR14)

Les migrations voltaïques : Tome II. Méthodologie, Sidiki Coulibaly, Joel Gregory et Victor Piché, Ottawa, CRDI, 1980. 171 p. (IDRC-MR16)

Les migrations voltaïques : Tome III. Mesure de la migration 1969–1973, Sidiki Coulibaly, Joel Gregory, André Lavoie et Victor Piché; **Tome IV. Caractéristiques des migrants et des non-migrants**, Sidiki Coulibaly, Louise Dallaire, Joel Gregory et Victor Piché, Ottawa, CRDI, 1980. 189 p. (IDRC-MR17)

Les migrations voltaïques : Tome VI. Opinions sur le phénomène migratoire, Sidiki Coulibaly, Joel Gregory et Victor Piché; **Tome VII. Opinions sur le rôle du gouvernement en matière de migration**, Sidiki Coulibaly, Joel Gregory et Victor Piché; **Tome VIII. Appréciation collective du phénomène migratoire**, Sidiki Coulibaly, Denise Desrosiers, Joel Gregory et Victor Piché, Ottawa, CRDI, 1980. 363 p. (IDRC-MR18)

A current awareness bibliography for IDRC-supported fisheries projects, Vol 4 No 1, compiled by Deborah Turnbull, Ottawa, IDRC, 1980. 39 p. (IDRC-MR19)

IDRC library bulletin/ Bulletin de la bibliothèque du CRDI, Ottawa, IDRC/CRDI, 1979–1980.

THE IDRC Reports/ Le CRDI Explore/ CIID Informa
(Michelle Hibler, Editor-in-chief/rédactrice en chef)

Published in three separate language editions, this is a quarterly magazine of report and comment on the work supported by IDRC and on related activities in the field of international development. Total circulation of the English, French, and Spanish editions is about 12 000 per issue, of which approximately 50 percent is to developing countries, 40 percent within Canada, and the remainder to other industrialized countries.

The magazine is published in January, April, July, and October, and is available through the Centre's Communications Division.

Cette revue trimestrielle est consacrée aux recherches financées par le Centre de recherches pour le développement international et aux activités connexes dans le domaine du développement international. Son tirage est de 12 000 exemplaires — éditions anglaise, française et espagnole — dont à peu près 50 % sont distribués dans les pays en développement, 40 % au Canada et le reste dans des pays industrialisés.

Le CRDI Explore paraît en janvier, avril, juillet et octobre et peut être obtenu sur demande à la Division des communications.

IDRC Features/Reportage CRDI

This monthly news feature service on scientific, technical, and educational subjects pertinent to development, is provided free of charge to selected newspapers and magazines in the developing world. During the past year 36 articles, many of them written by IDRC staff, others by selected contributors, were distributed in English and French to some 300 publications in 74 countries. Although it has not been possible to obtain a complete record of the number of *IDRC Features* actually published, it is known that the series is widely used and appreciated, with clippings and comments being received from Argentina to Zambia.

Ce bulletin mensuel d'information sur l'actualité scientifique, technique et éducative relative au développement est distribué gracieusement aux principaux journaux et revues publiés dans le monde en voie de développement. Au cours de l'année écoulée, 36 articles, écrits en français et en anglais par des employés du Centre et des correspondants choisis, ont été distribués à environ 300 publications dans 74 pays. Bien qu'il soit impossible de connaître le nombre exact d'articles reproduits à l'étranger, nous pouvons affirmer qu'ils sont largement utilisés et lus avec intérêt, si on en juge par l'abondant courrier qui nous arrive de l'Argentine à la Zambie.

Films

(Filmed and produced by/Filmé et produit par Neill McKee)

Oyster Farming in the Tropics. 16 mm, 28 min. Illustrates techniques used in experimental systems in Malaysia and Sierra Leone and commercial operations in Japan and the Philippines.

Démonstration des méthodes ostréicoles expérimentées en Malaysia et en Sierra Leone et opérations commerciales établies au Japon et aux Philippines.

An End to Pounding. 16 mm, 15 min. Shows how a simple dehuller does away with tedious sorghum processing and benefits producers and consumers in Botswana.

Démonstration d'un décortiqueur simple crée pour épargner cette corvée aux producteurs et consommateurs de sorgho du Botswana.

Publications and texts by Centre staff

Publications et textes rédigées par les cadres du Centre

Akhtar, Shahid

DEVSI-AFRICA: a Pan-African documentation and information system for social and economic development: report of a team of experts, IDRC, Ottawa, 1979. 253 p.

DEVSI-Afrique : un système panafricain de documentation et d'information pour le développement social et économique: rapport, Nations Unies, New York, 1979. 253 p.

Allsopp, W.H.L.

Potential for developing oysterculture in tropical countries. Paper presented at the Annual Joint Meeting of the Shellfish Institute of North America and the National Shellfisheries Association, Vancouver, Canada, 26 June 1979. 4 p. mimeo.

Aubrac, R.

Information systems and services in the UN family of organizations. Seminar on Information for Development Planning: Information Transfer and Exchange at International Level, Bangkok, Thailand, 1978. 6 p.

Beltrán S., Luis Ramiro

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