

# ***Responding to Global Challenges***

## ***IDRC Media Review 1993-94***

### ***IDRC in 1993-94 ♦ 1***

### ***Hot Spots: Rebuilding Societies and Economies ♦ 2***

South Africa — Building a Post-Apartheid Future

Eastern Europe — Cleaner Water for the Ukraine

The Middle East — Negotiating for Peace

Indochina — Charting a Path to Sustainable Economic Development

### ***Leveraging: Partnerships in Research ♦ 6***

Fish for the Future

Ending Hidden Hunger

WETV — Voices from Around the World

### ***Environment and Development: Some Success Stories ♦ 8***

Building a Better Bean

An Ecological Banana

Battling Malaria

The World's First Fish Gene Bank

Protecting the Rainforest

Clean Drinking Water for the North and South

Bountiful Fog

Using Census Data

Aquaculture — Preparing for the Blue Revolution



**International Development Research Centre**

PO Box 8500, Ottawa, Ontario, Canada K1G 3H9



## **IDRC in 1993-94**

The past year has been fraught with problems: continuing war and strife in many parts of the globe, a faltering world economy, and the worsening of many environmental problems. It has also brought hope. Many nations of the former USSR started to rebuild their economies and societies, South Africa continued to break free of the shackles of apartheid, and governments and individuals everywhere took concerted action to stem pollution.

Some of the past year's accomplishments have passed almost unnoticed, but they are no less important for millions of people:

- ◆ more productive, disease-resistant food crops were developed
- ◆ technologies were implemented to provide clean water
- ◆ uses were found for polluting industrial byproducts
- ◆ safe methods and products were found to prevent diseases and
- ◆ sustainable job creation strategies were formulated.

These, and many more, are just a few of the results of research carried out in developing countries, with funding from Canada's International Development Research Centre (IDRC).

For IDRC, 1993/94 also marked the first full year of activities geared to meeting new challenges: at the United Nations Conference on Environment and Development (UNCED) — the Earth Summit — in June 1992, the Canadian government chose IDRC to be the key Canadian implementing agency for Agenda 21. This global action plan is designed to help both world governments and nongovernmental organizations solve urgent environmental problems.

In the months following the Earth Summit, IDRC launched an extensive consultation process to develop and strengthen strategic partnerships and help create the basis for a broadly based North-South coalition dedicated to Agenda 21. It also engaged in reflection on how best to structure its programs to meet the challenge.

The IDRC that emerged in 1993 is more tightly focused. Its mission — to help developing countries build their scientific competence — and its commitment to development research remain constant. Increasingly, however, it will bring a multidisciplinary approach to the search for new solutions to problems of environment and development.

### ***The Challenge***

For IDRC, the challenge is not only to engender the knowledge needed for new solutions, but to put that knowledge into action. In June 1993, at the first anniversary of the Earth Summit, the Centre's president, Dr Keith Bezanson, announced that IDRC would direct half of its annual budget of \$115 million towards research that will help developing countries explicitly address the links between environment and development. Over the next three years, funds allocated by IDRC will help countries in the South and elsewhere to train specialists and increase knowledge, adopt policies that integrate environmental concerns with economic and social issues, adapt environmentally sensitive technology, increase food security, understand the impact of environmental problems on health, and protect ecosystems.

The Centre is no newcomer to this endeavour. Since its creation 24 years ago, it has supported close to 5,000 projects in 100 countries, many of them in these areas. A great number have borne fruit. A few are described on the following pages.

During the past year, IDRC also welcomed the secretariat of WETV, a new global, nonprofit television network. The Centre is already home to international secretariats coordinating and directing world research efforts in the control of micronutrient deficiencies and in putting fisheries on a sustainable footing.

The Centre's vast network of contacts, as well as its non-partisan, international reputation, are also enabling it to play key research roles in some of the world's politically sensitive areas including South Africa, the Middle East, the Ukraine and Indochina. These accomplishments are described in further detail on the following pages.

## ***Hot Spots: Rebuilding Societies and Economies***

Countries emerging from years of conflict, strife and oppression face a daunting task. How best to transform instruments of war into agents of reconciliation and reconstruction? How to end isolation?

It is a problem faced by many. Lebanon, Vietnam and Uganda, for instance, have been grappling with the situation for some years. Others, such as South Africa, Angola and the Occupied Palestinian Territories, have hardly begun to address the problem. Many others, including Cambodia and Mozambique, are in the throes of reconstruction.

For many of these countries, development must start with building a new social and political order. But no recipe exists for social reconstruction, and many countries lack the expertise, information and institutions to help forge new directions.

External organizations, such as IDRC, are in a unique position to provide critical assistance at the appropriate time. Because of its international contacts and reputation, IDRC can bring together the top experts in a country and internationally to quickly pave the way to solutions. IDRC can support the research and strategic planning that is vital to policy making at local, national and international levels and also help countries learn from each other's experiences.

By the end of the 1993/94 fiscal year, the Centre was actively involved in helping a number of countries rebuild, including South Africa, Eastern Europe, the Middle East and the countries of Indochina.

### ***South Africa: Building a Post-Apartheid Future***

Early in 1992, South Africa took its first hesitant step toward democracy. With democratic elections in April 1994, the first leg of the journey has been completed. At the request of the democratic movement, IDRC has travelled along that road with South Africans, supporting the efforts of the democratic movement and facilitating the transition process.

From its initial involvement in 1988, IDRC's support has been directed to those disadvantaged by apartheid. The Centre's early South Africa program concentrated on economic restructuring, urban governance, and health.

In 1992, the importance of research and policy analysis for the future development of South Africa prompted IDRC to expand its program to include such areas as education, land use/land

reforms, restructuring the research system, and regional integration. A regional office was opened in Johannesburg to facilitate the work.

Since 1992, the focus has been on "democratic development," — on research into how government policy will be formed, on creating and supporting the networks that are producing the new policies, and on helping ordinary people become involved in the shift to democracy. For example, IDRC helped form a coalition of South African economists and top economic advisors who have worked with the democratic movement to develop economic strategies and policies for the country.

Today, IDRC-managed projects have contributed to the development of all the key new policies of the democratic movement in the areas of economic policies, industrial policy, environment, science and technology, education, local governance and public service.

Here are some examples:

- ◆ Black education in South Africa is in crisis. But democracy brings hope that the present discredited system of education can become an effective, nonracial system. The task has been entrusted to the Centre for Education Policy Development (CEPD), established in January 1993 with financial assistance from IDRC and the Canadian International Development Agency (CIDA). In its first year, CEPD has been involved in negotiations that have led to the release of a new education policy.
- ◆ Apartheid has been a major obstacle to long-term economic growth in South Africa. Even the manufacturing sector has declined, making the country's economy dependent on the export of primary commodities. With IDRC support, the Economics Trends Research Group, a network of economists affiliated with the Congress of South African Trade Unions, is developing strategies to revitalize the industrial sector while redistributing productive capacity and resources to the mass of the population.
- ◆ Under apartheid, even environmental concerns were suspect as environmental concerns were often used to justify forced removal of black South Africans from their land. In response to a request from the democratic movement for assistance in developing a new environmental policy, IDRC helped mount an international study mission this past February.
- ◆ With \$10-million from CIDA, IDRC is managing a project designed to assist the democratic movement as they prepare for their role in a new, democratically elected system of government. Directed by Canadian Al Johnson, the Public Service Policy Project includes training a nucleus of senior civil servants and government officials.

### ***Eastern Europe: Cleaner Water for the Ukraine***

Ukraine is one of the most severely polluted countries in the world due to the excessive use of irrigation, pesticides and herbicides in agriculture, the high degree of industrialization, and the Chernobyl disaster.

The contamination of the water supply is especially serious since only a small quantity of water is available per person. Some 70% of the country's residents depend on the Dnipro River, Europe's third largest river, for drinking water. But the river carries nearly 20 billion cubic metres of untreated effluent each year.

The Ukrainian government has requested international assistance to begin rehabilitating the Dnipro. In late March 1994, the Bureau of Assistance for Central and Eastern Europe in the Department of Foreign Affairs announced that it will make \$5 million available for this purpose. IDRC will manage the grant, bringing together Ukrainian and Canadian institutions to work on this program.

The program aims to strengthen the management capacity of the newly created Ministry of Environmental Protection in Ukraine through training, policy development, improved information systems, and public education. It will also include environmental audits of selected industrial and municipal water treatment plants and follow-up support to improve management practices and test some new technologies. In doing so, it will forge long-term collaborative links between Canadian and Ukrainian public and private sector organizations.

### ***The Middle East: Negotiating for Peace***

The signing of the Peace Accord in Washington in September 1993, was a milestone in the search for peace in the troubled Middle East. Also important to lasting peace have been the results of a series of ongoing multilateral negotiations on five issues of pressing concern in the region: water resources, environment, economic development, arms control and regional security, and — most sensitive of all — refugees.

Launched in January 1992, the Middle East Multilateral Peace Negotiations are intended to complement the bilateral negotiations between the parties directly involved in the Arab-Israeli conflict. They allow other interested countries, including Canada, to help identify problems and find solutions. And because they do so in a practical, technical way, divorced from political concerns, they offer a unique opportunity for the adversaries in the conflict to make the personal contacts needed for progress in bilateral negotiations.

A member of all five working groups, Canada chairs the Refugee Working Group whose mandate is to improve the lives of people displaced by the Arab-Israeli conflict. Two funds were created by the Canadian International Development Agency (CIDA) to assist this peace process. The first, the Canada Fund for Dialogue and Development, promotes cooperation and builds confidence on key development issues. The second, the Expert and Advisory Services Fund, is designed to apply the unique knowledge and ability of Canadian experts and advisors to the search for solutions and supports the organization of seminars and workshops. IDRC manages this project's day-to-day operations under the general guidance of a consultative committee made up of representatives from IDRC, CIDA and Foreign Affairs.

Since the Fund's inception, IDRC has played a pivotal role by providing professional and technical support to the Canadian delegation, as well as by coordinating the activities of consultants, experts and institutions. Because of its expertise in refugee issues, the Centre also helped formulate strategies and generate project ideas. Widely successful have been brainstorming sessions set up with key academics, representing a wide spectrum of opinion. This dialogue not only helped formulate policy, but prompted new and constructive initiatives in support of the working group's activities. IDRC also provides on-site assistance to the Canadian delegation at several Working Group meetings held in Ottawa and abroad, and commissions studies and surveys.

## ***Indochina: Charting a Path to Sustainable Economic Development***

In 1986, after 40 years of Communist rule, Vietnam launched an ambitious economic liberalization program. The move to a market-oriented economy has been rapid and dramatic. In one year, for example, Vietnam moved from being a rice importing country to a rice exporter.

But, as central economic planning erodes, the effects are felt everywhere, especially in rural areas where 80% of the population lives. Education, health and social services are deteriorating as the central government budget shrinks. In cities, unemployment rates have reached 20-30%.

Aware that it lacks direct experience in the market-oriented system it is attempting to create, the Vietnamese government has requested assistance to strengthen its policy research capacity while sustaining its economic reforms and natural resource base.

IDRC has been active in the country since 1990, and is supporting a dozen projects, mainly in agriculture and resource management, economic and scientific policy management, and information system support. A major thrust of these projects has been to end Vietnam's isolation by developing linkages with Canadian and Asian institutions and experts.

The Centre's valuable experience in Indochina, combined with CIDA's greater financial resources, have now led to a three-year, \$3.5 million program to help Vietnam and other countries in the Mekong River Basin establish sustainable economic development policies. It will include integrated resource/development studies of regions most severely affected by war, the strengthening of the agri-food industry, and management plans for natural resources. The program will also help carry out reforms of Vietnam's legal system.

The emphasis is being put on strengthening research and policy institutions in Vietnam as well as in Laos and Cambodia. A small office has been set up in Thailand to coordinate the project which will draw on the expertise of many Canadian institutions.

IDRC was also instrumental in establishing the Mekong Development Research Network which is encouraging scientific cooperation between the six Mekong riverine countries: China-Yunnan, Myanmar, Vietnam, Laos, Cambodia and Thailand. In operation since September 1992, the network's members have just completed a study of the current status of the river and its basin. The aim is to increase the scientific understanding in each of the six countries of the river's resources and development constraints so that the trans-boundary ecosystems on which the people of the region depend can be better protected and the quality of people's lives improved. Further studies are planned on trade, tourism and the environment.

The network is developing trust among member countries and is leading to a sharing of knowledge and a willingness to work together on common problems.

## *Leveraging: Partnerships In Research*

Few in the private or public sector would dispute the usefulness of making and maintaining contacts. But researchers have often been isolated, resulting in a fragmented approach and the waste of scarce resources. One way to remedy this situation is through the establishment of coordinating bodies. These provide forums for the exchange of information, present opportunities for training and working with others to enable interaction, and create a critical mass of researchers to address key problems as well as foster a wider utilization of results.

That is the role of three secretariats housed at IDRC's Ottawa headquarters: the Micronutrients Initiative, the Strategy for International Fisheries Research (SIFR), and WETV, the world's first global access television service.

IDRC's pivotal role in the establishment of these secretariats fits well within its role as a catalyst bringing together the people, the knowledge and the organizations needed to enable countries to make informed decisions and formulate sound policies.

### *Fish for the Future*

For Canadians, the closure of Canada's east coast cod fishery this past year was eloquent proof that our fish stocks are declining. But the problem is by no means new nor unique to Canada.

World production of fish now stands at about 90 million tonnes a year, of which about 77 million tonnes are caught in the wild. Capture fishery is at or close to the maximum biological limit. By the year 2000, increased population and increased incomes will boost the world's yearly demand for fish by nearly 27 million tonnes.

Meeting this demand clearly requires new approaches, significant improvements in sustainable ecosystem management, better utilization of harvests, and increased production from aquaculture.

Unfortunately, fishery development projects have met with limited success. To understand why, and to find ways of improving them, donor organizations launched a study of International Fisheries Research in March 1989. It concluded that the level of priority and funding accorded to strategic fisheries research had been inadequate, but that, with appropriate support, fisheries could make great strides.

The research strategy that evolved calls for international collaboration to make more efficient, sustainable use of living aquatic resources. Because of its expertise and impressive track record in the support of fishery research, IDRC was asked to host the secretariat set up to translate the plan into action. The choice of IDRC also recognizes Canada's role in advocating a holistic approach to high seas fishing and coastal zone management at the 1992 Earth Summit.

The **Strategy for International Fisheries Research (SIFR)** secretariat is funded by the United Nations Development Programme (UNDP), the World Bank and IDRC. Its activities are directed by a committee composed of representatives from six major donor agencies.

Becoming involved in this international effort means that Canada and other countries are bound to benefit from research undertaken in the South because this research will lead to solutions, says Brian Davy, IDRC Aquatic Resources Coordinator and a member of the SIFR Executive Committee.



## ***Ending Hidden Hunger***

It is called "hidden hunger" — vitamin and mineral deficiencies which take their toll on the health of millions of people throughout the world. The problem stems from the fact that most vitamins and all minerals cannot be synthesized by the human body and so must be provided in the diet. Because the amounts are generally small, micrograms or milligrams a day, they are called micronutrients.

Globally, the most common deficiencies are of vitamin A, iodine and iron.

- ♦ Iodine deficiency is the most common preventable cause of mental impairment in the world. Of the more than one billion people who live in iodine-poor environments, 225 million suffer from goitre and 20 million have already suffered brain damage.
- ♦ Lack of vitamin A puts 190 million young children at risk of blindness: some 13 million have already suffered severe eye damage.
- ♦ Iron deficiency causes anemia in one billion people; another billion are iron-deficient.

Eliminating iodine and vitamin A deficiencies and reducing iron deficiency anemia in women to one third by the year 2000, was the target set by the 1990 World Summit for Children. In 1991, representatives from 60 countries met in Montreal to launch a global effort to achieve these goals. To help catalyze this complex undertaking, the **Micronutrient Initiative (MI)** was created in April 1992 by IDRC, CIDA, the World Bank, UNICEF and the United Nations Development Programme (UNDP). The MI is housed at IDRC. Dr Stephen Simon was appointed MI's first Executive Director in April 1993.

The MI supports activities in five areas judged critical to eliminating micronutrient malnutrition: developing appropriate, accessible information systems such as a "hot line" to answer queries from the field; enlarging the pool of technical expertise through such means as associate consultancies and a certification program; expanding support for national control programs; applying appropriate technologies such as food fortification; and providing sufficient intakes of vitamin A to children of 12-24 months of age through innovative delivery modalities and channels.

## ***WETV — Voices from Around the World***

There is widespread agreement that our attitudes must change if we are to survive. But it is difficult to change attitudes when the only views heard globally are those of the northern industrialized countries.

A forum is now being established for the unheard voices of the world. A unique, alternative satellite broadcasting service, **WETV** offers a vehicle for the expression of Southern — as well as Northern — ideas, issues and cultures. Launched in April 1993, it aims to foster free and balanced cultural expression worldwide to create a deeper understanding of the critical issues of sustainable development and environment.

WETV's service will begin in 1996 with a three- to four-hour block of programs to partner national or regional broadcasters. Offering alternative forms of programming, from children's programs, drama and music, to critical examinations of world issues, it will be multilingual and favour the work of independent producers.

The need for a service like WETV has been expressed in many forums over the years, most recently by the southern countries themselves at an international symposium on

communications and development held in Montreal in 1992. There, participants clearly expressed the need to make the global flow of information more democratic to permit greater South-North and South-South exchanges. Recognizing the power of communications, the Earth Summit in Rio de Janeiro also called for new and innovative uses of the mass media to bring about a global understanding of the critical issues facing the world. WETV, which was initiated by IDRC and an international group of private and public sector agencies, is a response to these demands. WETV Secretariat is directed by David Nostbakken.

## ***Environment and Development: Some Success Stories***

**I**n March 1993, IDRC's Board of Governors approved a program which will allow the Centre to make the most effective contribution to achieving the goals of Agenda 21. The program is based on two convictions:

1. That a degraded environment hinders the development of communities and countries; and
2. That people victimized by underdevelopment are ill equipped and little motivated to preserve the environment.

As the following examples show, Centre-supported projects have already met with considerable success:

### ***Building a Better Bean***

Despite the widespread use of chemical pesticides, Mexico's bean crop is being decimated by insect pests and diseases. The problem stems from modern methods of plant breeding that concentrate on breeding uniform plants containing a single gene which protects against a specific parasite. The plant's resistance — called vertical resistance — breaks down as soon as a new strain of the parasite appears.

Using an alternative method of plant breeding that yields an entirely different kind of resistance, researchers from the Colegio de Postgraduados in Chapingo, Mexico and the University of Guelph, Ontario are developing high-yielding beans that resist parasite and pest attacks without pesticides. This "horizontal resistance" is conferred by many genes that work together to protect the plant against most major pests and diseases.

The research has so far resulted in the selection of 360 new pure lines of beans, the best of which are being multiplied for tests in farmers' fields. Each breeding cycle will yield new pure lines that are superior to those of the previous cycle. And because farmers themselves will choose the cultivars they prefer, genetic diversity will be preserved.

Within 10 years, the researchers expect to have many new bean cultivars that are permanently resistant to all major pests and parasites. This project could also yield important methods for improving beans cultivated in other parts of the world, including Canada.

## ***An Ecological Banana***

This past February, IDRC announced the breeding of the first ever banana variety that could replace the standard Cavendish dessert banana now eaten throughout the world. Known as Goldfinger, the new hybrid is the result of decades of breeding at the Honduran Foundation for Agricultural Research (FHIA) in La Lima, Honduras.

Goldfinger could save the world banana export industry from collapse. In fact, the popular Cavendish banana is now threatened with extinction as fungal diseases such as Black Sigatoka decimate plantations around the world. Controlling the disease by chemical fungicides is prohibitively expensive for all but multinational companies. And the massive applications of fungicides, as well as of chemical fertilizers, are taking an environmental toll.

Resistant to Black Sigatoka and to other diseases, Goldfinger doesn't require pesticides. It grows well in cooler temperatures and on marginal soils. In addition to being delicious ripe as a dessert banana, it is also great green, as a cooking banana. Green bananas are, like potatoes for us, a staple food throughout Asia, Africa and Latin America. What's more, Goldfinger does not turn brown when cut, making it ideal for fruit salads or purees.

While Goldfinger may save the banana export industry, the main beneficiaries will be millions of small growers and consumers throughout the world for whom the new banana promises a reliable food source. IDRC contributed almost \$1.3 million to FHIA over the past decades for banana and plantain improvement.

## ***Battling Malaria***

The most deadly of all tropical diseases, malaria kills more than one million people each year, most of them children. Some 2.2 billion people are at risk in 95 countries. And malaria is on the rise due to the proliferation of drug-resistant strains of the parasite and changes in environmental conditions.

According to the World Health Organization, prevention is key to controlling the spread of the disease. IDRC has supported a number of projects enabling communities to better control the spread of the disease:

In Benin, West Africa, McGill University's Centre for Tropical Diseases is experimenting with local production of insecticide-impregnated bednets from screening produced by a small Quebec company.

The process is simple. Once or twice a year, the screening which protects people from being bitten while sleeping during the night when the mosquitoes are active, is dipped in insecticide and dried. This makes the bednets lethal to mosquitoes that come into contact with the nets, and repels others nearby. The synthetic pyrethroid insecticides used are safe for humans and animals.

Other IDRC projects are evaluating the bednets' effectiveness in Bangladesh, Tanzania and Sri Lanka.

In Brazil, the government agency responsible for malaria surveillance and control has developed a microcomputer software package that provides a quick picture of the disease's incidence by city or region. Knowing if the disease is on the increase, where, and by how much, allows authorities to be on alert for an epidemic and take action. Developed with IDRC funding, the

SIG-MALARIA geographic information system is now also being tested in Sri Lanka and expansion into Africa is being explored.

### ***The World's First Fish Gene Bank***

Overfishing, pollution, and habitat loss to dams and industry have led to the disappearance of many species of fish worldwide. This leads to lower catches and a loss of genetic material for fish farms and hatcheries.

Following the Earth Summit, the first International Fisheries Gene Bank was created in British Columbia to solve the problem. The techniques that make the bank possible were developed by MTL Biotech Ltd of Victoria, B.C. The equipment consists of portable freezing and storage containers that allow workers to go out to remote locations to freeze fish sperm on site, and then transport it to permanent gene banks. Banked sperm has many advantages: it is easier to transport than live fish, avoids disease transmission problems, and can be used at any time.

In a project supported by IDRC, the technology is being transferred to the Shuswap Nation Tribal Council in Kamloops, British Columbia, which is collecting genetic material from four species of wild salmonids in the Deadman and Barrière Rivers. MTL is also training technicians in Colombia and Venezuela to collect and freeze sperm.

Gene banking is an ideal tool for sustainable development because banking genetic diversity from threatened stock today provides a broad genetic base for fisheries development in the future.

In January, 1994, the International Fisheries Gene Bank joined forces with the Vancouver Aquarium in a partnership that will make Canada a world leader in aquatic conservation.

### ***Protecting the Rainforest***

A management plan developed by a multidisciplinary team of researchers from the Universidad Nacional Autonoma de Mexico (UNAM) and Carleton University in Ottawa could preserve Mexico's last remaining rainforest. The northernmost tropical forest in the Americas, the Sierra de los Tuxtlas, has a wide variety of soils and climates, 3,000 plant species and more than 1,000 animal species. Many are unique. Some are also endangered.

Cattle ranching, commercial coffee production, logging, fires and colonization have reduced the forest by 80% to a mere 30,000 hectares. In the process, the Sierra's 50,000 inhabitants, mainly indigenous peoples, have been displaced and local food self-sufficiency has been disrupted. The land has also been degraded and water supplies depleted.

To ensure the forest's survival, the team of anthropologists, sociologist, biologists and geographers have proposed activities such as green manuring agriculture and the marketing of organic rainforest products from the forest core as well as alternative, sustainable agriculture on the forest's edge.

Supported by IDRC, the project is unique in that the local populations helped define the strategies for the management and use of the preserve. The strategy could become a model for solving similar problems in the rest of Mexico.

## ***Clean Drinking Water — For North and South***

When the community of Split Lake in northern Manitoba needed to find a solution to its water quality testing problems, it turned to simple technologies perfected in developing countries with IDRC funding and the assistance of the National Water Research Institute, part of Environment Canada. The tests can be used in the field, without sophisticated laboratories. They proved reliable and easy to use by village technicians trained in the course of the project.

A further phase is now underway, this time in Chile where preliminary studies have shown that existing drinking water sources are contaminated by harmful bacteria. With the help of the state water facility and a nongovernmental organization, the Split Lake technicians are now training Mapuche counterparts to run a water testing program.

## ***Bountiful Fog***

In May 1992, the Chilean Minister of Agriculture turned on a water tap in the coastal village of Chungungo, bringing water to the parched town and ending the community's reliance on water trucks. The water that flowed was the result of more than seven years of work by Chilean and Canadian researchers who had learned how to draw water from the coastal mountain fog.

The technology that made this possible is quite simple: large polypropylene nets are stretched across the mountain slopes to catch the fog and trap its life-giving moisture. The fog beads up on mesh fibres and runs into collection troughs that lead into a 100,000 litre tank. A pipeline carries the water down the mountain to the chlorination tank connected to the houses' distribution pipeline. The village now has 75 nets producing 11,000 litres of fresh water a day, making it the largest fog-water catchment system in the world.

Environment Canada developed the equipment and participated in the IDRC-funded project which has attracted the attention of many arid regions of the world. In 1993, the project was expanded to Peru. According to researchers, 47 locations covering every continent could turn local fog into reliable sources of clean water.

## ***Using Census Data***

An inexpensive software package developed in Chile is helping developing countries extract information from national census figures for analysis, planning and decision-making at the levels of towns, cities, villages, or even city blocks. Designed and implemented by the United Nations Latin American Demographic Centre (CELADE) and the University of Waterloo for IBM-compatible PCs, REDATAM (REtrieval of DATa for small Areas by Microcomputer) provides a simple means of storing and accessing large amounts of data.

Funded by IDRC, REDATAM is now being used in more than 30 Latin American and Caribbean countries and is being reviewed in Africa, Asia and Canada. The University of Waterloo is also testing REDATAM-based software for planning and implementing social and economic development projects. These include, for example, an assessment in St Lucia of the effect of tourism development on local environment and population with special regard to small-island developing countries.

### ***Aquaculture — Preparing for the Blue Revolution***

A "blue revolution" — a genetic revolution in aquaculture comparable to the Green Revolution in agriculture of the 1960s — is about to begin. But as was the case for its land-based predecessor, it is feared that the genetic diversity of aquaculture species will decline as new, improved breeds of fish are spread worldwide.

That could be averted, thanks to Canadian leading edge genetic identification probe technology developed for the management of fisheries and aquaculture. With financial assistance from IDRC, Dalhousie and Saint Mary's Universities in Halifax are collaborating with researchers in China, Indonesia and Thailand to both improve and conserve the region's best fish species. Drawing on ten years of IDRC-funded aquaculture research in Asia, the project is unique in that it integrates genetics technology with economics and sociology, then applies the results at the village level.

The work seeks to balance the conservation of biodiversity with the need to produce more food. Breeds of fish that have economic, social, cultural or genetic value for local populations will be maintained, not as frozen sperm in gene banks, but as live, productive stocks on farms. This differs from conventional approaches which presented an either/or choice: retain breeds as they are to conserve genetic biodiversity or replace them with new, high-yielding breeds.

All countries with an aquaculture industry, including Canada, should benefit from the new management tools for decision-making developed in this project.

May, 1994