

Food security and nutrition

Secure access to nutritious food

Since 1970, IDRC has helped small farmers and food-processing businesses prosper in a sustainable manner as they produce nutritious food that people can afford. Research to feed the poor has improved plant varieties, made farming practices more efficient, preserved environments, and brought technological innovation to small producers.

Better cassava boosts food security

Efforts to improve one of the world's most resilient staples — cassava — have paid off, with lasting and, in some instances, dramatic benefits. Plant breeding has increased this starchy root's nutritional value and disease resistance, saving countless lives.

IDRC has long recognized cassava, also known as manioc, as an important but neglected food crop. Drought tolerant and able to remain intact in dry soil until harvested months or even a year later, cassava is critical to the survival of more than 800 million of the world's poorest people.

In the mid-1970s, IDRC funded a university researcher and plant breeder, Nagib Nassar, who collected wild species of cassava, mostly in northeastern Brazil. The wild relatives of cultivated cassava, he reasoned, were a rich source of new genes to improve the traits of the cultivated varieties.

"The living collection I established with the help of IDRC continues to this day to support my breeding work," explains Nassar, now 72 and professor emeritus at the University of Brasilia. Farmers in Brazil's Federal District cultivate some of his more nutritious and drought-tolerant varieties.



PANOS: GIACOMO PIROZZI

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Higher protein content

Nassar was able to cross some high-protein wild species with cultivated varieties and produce hybrids with higher protein content. This was an important step forward because, unlike staple grains such as rice and wheat, cassava contains very little protein.

Resistance to disease

Nassar also used the wild species he collected to breed hybrids that are resistant to cassava mosaic disease, which is caused by a virus transmitted by whiteflies.

"My hybrids were then used by the International Institute of Tropical Agriculture [IITA in Nigeria] to develop the family of cultivars called MS. These have since been adopted and planted by millions of farmers in sub-Saharan Africa," Nassar says. Without these cultivars, Nigeria, the world's leading cassava producer, would have suffered greatly from mosaic disease.

Disease-resistant cassava also saved lives in Uganda, where a virulent form of the cassava mosaic virus began devastating crops in the late 1980s. About 80% of the country's 500,000 hectares planted to cassava were affected, and several thousand people died of starvation.

With IDRC support, scientists led by the government's Cassava Research Program at Namulonge developed new high-yielding varieties resistant to the Ugandan strain of the mosaic virus. Mosaic resistance from IITA's cassava lines were incorporated into these new varieties. The program was a major success. It improved national food security and slowed the spread of the new mosaic strain to other cassava-producing countries of the region.



Hybrid bananas, known as “Goldfinger,” show high yields and high resistance to disease.

More nutritious bananas resist disease

Disease-resistant, high-yielding banana hybrids are bringing food security and higher incomes to small farmers. With IDRC support in the 1980s and 1990s, the Honduran Foundation for Agricultural Research (FHIA) developed hybrids that resist Black Sigatoka and Fusarium Wilt — diseases that have devastated banana crops in several parts of the world.

The first breakthrough was the creation of the FHIA-1 hybrid — a.k.a. “Goldfinger.” Although its taste fell short of the Cavendish banana available in supermarkets around the world, Goldfinger showed “that it’s possible to have a

hybrid with high yields and high resistance to disease”, says the foundation’s Juan Fernando Aguilar.

Goldfinger’s “brother”, FHIA-18 — also developed with IDRC support — was tastier. Farmers adopted it in Brazil, where Black Sigatoka had broken out, and Cuba, where farmers couldn’t afford fungicides to protect their bananas against the disease.

Recently, in trials in southern Nigeria, two hybrids (FHIA-17 and FHIA-23) were among the preferred varieties. Their wide-scale introduction promises a significant contribution to food security in banana-growing regions.



Milkfish account for about half of the Philippines’ farmed fish production.

Breakthrough supplies young fish to a hungry industry

Fish farmers in the Philippines have a larger, more reliable supply of milkfish seed stock, or fry, to raise in their ponds than they did 30 years ago. They also have better rearing methods for the popular, affordable milkfish, which accounts for about half of the Philippines’ farmed fish and is vital to its food security.

The improvements came thanks to pioneering research by a multinational team of scientists at the Southeast Asian Fisheries Development Center (SEAFDEC). During the 1970s and 1980s, IDRC provided significant funding and technical

support for this work.

In 1978, SEAFDEC first spawned milkfish in captivity. The breakthrough made the industry’s growth possible in Southeast Asia. At the time, the Philippines produced 200,000 tonnes of milkfish a year. Artisanal collection provided income for many coastal fishers, but could not supply fry year-round.

In 2009, the Philippines produced 350,000 tonnes of milkfish. Fish farmers now buy fry from four Filipino hatcheries, Indonesian and Taiwanese hatcheries, as well as wild fry gatherers.



Women in rural Lebanon are part of a food-security strategy promoting local plants and healthy food.

Wild plants spark revival in traditional foods

In rural Lebanon, women are spearheading a return to healthy, affordable food by promoting local plants. Since 2005, a dozen women in the northern village of Al-Kwakh have gathered daily in a communal “healthy kitchen.” They prepare dishes using wild plants such as water parsnip and wild fig, which they also sell in a Beirut market and at an eco-lodge that they run.

These nutrition ambassadors, in Al-Kwakh and other villages, are spreading knowledge about native plants. Their kitchens are part of a food-security strategy

designed by researchers at the American University of Beirut, using IDRC funds.

The country’s long civil war, combined with cheap food imports, led to a decline in agriculture. More people relied on processed foods. Poverty made things worse.

The researchers studied more than 40 wild plants and traditional dishes made from them. The research, which now involves the University of Ottawa in Canada, continues to focus on local ecosystems’ ability to sustain healthy diets.

About Canada’s International Development Research Centre

IDRC supports research in developing countries to promote growth and development. IDRC also encourages sharing this knowledge with policymakers, other researchers, and communities around the world. The result is innovative, lasting local solutions that aim to bring choice and change to those who need it most.

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