



## The CIMMYT Maize Program

Increasing the productivity of maize  
and maize farming systems in developing countries.

Protecting the natural resources on which future productivity depends.

### The CIMMYT Maize Program...

- Provides a broad array of **high yielding maize varieties, hybrids, and inbred lines** targeted to developing country settings and able to withstand major environmental rigors such as infertile soils, drought, insect pests, and diseases.
- Conducts **crop and natural resource management** research to exploit the full potential of improved seed and to preserve or enhance farmers' soil and water resources (in concert with the CIMMYT Natural Resources Group).
- Generates and shares **knowledge and techniques** that make our research and that of partners more effective. This includes technical information and expertise in research planning, execution, and financing.
- Offers a rich assortment of **training** opportunities in maize breeding and crop management research, including in-service courses, visiting scientist appointments, and post-doctoral fellowships. Helps establish and support myriad global, regional, and national training initiatives (courses, workshops, conferences, etc.).
- Maintains and fosters the use of extensive collections of **maize genetic resources** for the benefit of humanity and helps others involved in this work.

### A Global Research Program

The Maize Program comprises three subprograms, each focusing on a major maize production ecology (the lowland tropics, the subtropics and midaltitude regions, and the highlands), plus specialized research units (entomology, pathology, physiology, international testing, genetic resources) which provide cross-Program support. About half our staff are based at CIMMYT headquarters and several research stations in Mexico; the rest are posted to offices in the chief maize-producing regions of the developing world and work directly with research partners in the countries we serve.

**Guatemala City, Guatemala** -- Research focusing on hillside and lowland tropical maize systems of Central America and the Caribbean.

**Cali, Colombia** -- Work to develop and disseminate varieties and hybrids for acid savannas and hillsides of South America, Africa, and Asia; research on major diseases of maize in Latin America.

**Addis Ababa, Ethiopia** -- Developing hybrid-oriented maize for the highlands of Eastern Africa.

**Nairobi/Njoro, Kenya** -- Research on crop management strategies to fully exploit the potential of improved germplasm for Eastern Africa; the development of lowland tropical maize that resists maize streak virus; support to a crop management research training center for maize specialists of Eastern and Southern Africa.

**Harare, Zimbabwe** -- Work to develop and disseminate streak resistant varieties and hybrids for Southern Africa; participation in major networks for distributing improved varieties and hybrids, developing locally adapted drought- and low-nitrogen tolerant maize, and providing maize farmers with alternatives for

sustainably managing low-fertility soils.

**Bangkok, Thailand** -- Research on maize that resists downy mildew and meets the growing demand for improved varieties and hybrids for Asia; support to a crop management research training center for maize specialists of the region.

### Hallmarks and Priorities

The CIMMYT Maize Program's earliest work focused on collecting, characterizing, and preserving samples of native maize seed from Mesoamerica. Beginning in 1966 and continuing through the 1970s, the Program...

- Established experiment stations in Mexico to represent the major maize growing ecologies in developing countries.
- Formed broad-based genetic pools of maize for the tropics.
- Launched a worldwide network for testing and distributing experimental seed.
- Regionalized efforts to address local needs more effectively.
- Conducted research to develop high-protein maize varieties known as "quality protein maize" (QPM).

During the 1980s hybrid research was begun in response to the growing demand for such products from our partners. In the 1990s, the Program has strengthened these efforts, sought innovative partnerships for developing and delivering products, and explored the potential of biotechnology to facilitate breeding and tap new sources of genetic diversity.

Among our more recent research advances are the discovery of sources of resistance to stored grain pests and incorporation of this trait into breeding stocks. Parallel selection under both optimal and controlled stress conditions, an approach tested by the physiology unit to develop drought- and low-nitrogen tolerant maize, is now applied in crop improvement work throughout the Program and is being promoted with research partners, particularly in sub-Saharan Africa. Finally, our current priorities reflect several broad concerns of each major maize-producing region...

**Asia** -- Cropping intensification and an explosion in the demand for maize (mainly for animal feed).

**Sub-Saharan Africa** -- Marginal production conditions and a rising demand for maize as human food.

**Latin America** -- Cropping intensification and a resulting increase in disease incidence.

### Genetic Resources: Nurturing Tradition, Unleashing Potential

Under the terms of a 1994 agreement with the FAO, the Maize Program preserves and makes available some 14,000 collections of seed of maize and related species in CIMMYT's Wellhausen-Anderson Genetic Resources Center (GRC), built in 1996 with funding from Japan, and works with research partners worldwide to foster the conservation and use of maize genetic resources...

- With funding from USAID and USDA, Program staff have helped researchers in seed banks of 13 countries in Latin America and the Caribbean to rescue more than 7,000 endangered samples of farmer-developed maize varieties, many of them irreplaceable.
- In a partnership with researchers from the Mexican National Institute for Forestry, Agriculture, and Livestock Research (INIFAP), CIMMYT economists and sociologists, and smallholders in southeastern Mexico, Maize Program staff are piloting a farmer participatory approach for the *in situ* conservation of local maize varieties. The government of Mexico, the International Development Research Centre (IDRC), Canada, and the International Agronomic Research Commission, France, are providing financial support.
- Our staff ship hundreds of packets of bank seed to dozens of countries each year, in response to requests from researchers worldwide.

- Our initiatives in maize genetic resource conservation form part of the CGIAR System-wide Genetic Resources Program (SGRP) and are consistent with the principles of the Convention on Biological Diversity.

### **Seed Distribution Policy**

The Program distributes maize, teosinte, and *Tripsacum* seed for the benefit of producers and consumers in developing countries. This seed is freely available to researchers worldwide, so that it reaches as many farmers in the developing world as possible.

The chief means of distribution is an international testing program in which experimental seed is sent to hundreds of cooperators in dozens of countries each year. CIMMYT also ships considerable seed in response to requests from the scientific community.

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