



Consultative Group on International Agricultural Research

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HOLD FOR RELEASE UNTIL DECEMBER 4, 2006

Breeding Program Tailored to Poor Farmers Awarded Top Agricultural Science Prize

Researchers, Farmers Partner to Develop Stress-resistant Maize Varieties for Africa

WASHINGTON, D.C. (4 December 2006)—One of agricultural science's most prestigious prizes, the King Baudouin Award of the Consultative Group on International Agricultural Research (www.cgiar.org), was awarded today to the International Maize and Wheat Improvement Center (CIMMYT) for an innovative, ongoing series of maize-breeding projects in Southern and Eastern Africa that have produced more than 50 new varieties planted on at least 1 million hectares.

CIMMYT's projects have not only developed plant types tolerant of drought, low soil fertility, parasitic weeds, and other common plant stresses, they have revolutionized the very way in which new varieties are developed and selected. In a fundamental change from the customary practice of testing new varieties under well-fertilized and -irrigated conditions, CIMMYT researchers, national agricultural research centers, and private sector partners created a network of regional "stress breeding" sites that, for the first time, provide objective information on how well maize varieties perform under conditions faced by poor farmers, especially drought and infertile soils.

By working in partnership with local communities, and by replicating the poor conditions found in farmers' fields, the new approach to breeding is tailored to meet the needs of poor farmers who have not benefited from conventional breeding programs aimed at higher-income farmers and those in favorable environments.

"This program sets the standard for creating crops that can withstand variable and harsh growing conditions," said CGIAR Director Francisco Reifschneider, when announcing the awards at today's CGIAR meeting. "This is the reality for most of Africa's millions of smallholder farmers, who are the backbone of the rural economies in sub-Saharan Africa."

The King Baudouin Award, conferred today at a meeting attended by hundreds of international agricultural researchers and development specialists in Washington, D.C., targets CGIAR initiatives that benefit resource-poor farmers and low-income people, foster sustainable agriculture, use innovative science, and feature outstanding partnerships. It includes a USD 10,000 cash prize. The Award is given once every two years at the CGIAR annual general meeting.

To evaluate the varieties under farmers' conditions, researchers created a series of so-called "mother-baby" trials managed by researchers as well as farmers. The "mother" trial may involve as many as 12 varieties sown under varied researcher-designed treatments. The

mother trial is located close to the community and is managed by schools, colleges, or extension agencies. The “babies” are satellite subsets of the mother trial, comprising approximately four to six varieties in the fields of participating farmers using their own inputs and equipment.

“This mother-baby method allows as many as 200 or more farmers in a country to assess a subset of the most promising new maize varieties,” explains CIMMYT researcher Marianne Banziger. “Farmers and researchers use results from both types of trials to assess a variety’s suitability for different environments and its acceptability to farmers.”

According to a recent CGIAR study, Africa stands to sustain more climate change-induced damage than any other continent. Increases in the mean global temperature and the resulting decrease in rainfall will cause more frequent and longer-lasting droughts, reducing even further soil moisture, moisture storage capacity, and the quality of the soil. Maize varieties that can tolerate drought, low soil fertility, and other stresses—and the systems that develop, select, and deliver these seeds—will help poor farmers adapt to an environment that is becoming even less hospitable to agriculture.

The stress-tolerant varieties developed by the CIMMYT programs provide more grain without using additional fertilizer or water. As stress conditions increase, traditional maize varieties increasingly fail to produce a cob, but they still use scarce nutrients and water. The newly developed, stress-tolerant varieties are efficient: they concentrate the plant’s energy on grain production, while their overall water and nitrogen requirements remain unchanged.

Stress-tolerant varieties result in better harvests and lead to improved environmental stewardship. As fear of crop failure lessens, farmers are more inclined to invest in their maize crop and purchase fertilizer, or initiate steps to improve soil fertility and conserve water.

When farmers sow the new varieties, they not only mitigate the potentially devastating effects of drought, they also conserve their land, as greater yields are possible on smaller plots, allowing farmers to allocate more land and labor to legumes and cash crops, thereby improving incomes and soil quality.

The CIMMYT projects are currently stepping up the development of stress-tolerant varieties that also provide more protein (quality protein maize) and naturally herbicide-resistant seeds coated with a low-dose of the herbicide imidazolinone, which kills *Striga*, a highly-invasive parasitic weed that infests farmland throughout East Africa and causes crop losses in Kenya worth an estimated USD 50 million each year.

The quality protein maize varieties now being cross-bred with the stress-resistant varieties produce 70-100 percent more of two essential amino acids than do traditional varieties of tropical maize. Amino acids are the building blocks of proteins, which are needed by all cells in the body. But because most maize is deficient in these amino acids, maize-dependent diets can lead to malnutrition. According to the United Nations Development Programme, almost 1 billion people living in developing countries are malnourished, and most do not consume enough protein for good health.

The CGIAR is a strategic agricultural research alliance dedicated to generating and applying the best available knowledge to stimulate agricultural growth, raise farmers’ incomes, and protect the environment. It supports 15 research centers worldwide conducting groundbreaking work to nourish the future. For more information, please visit www.cgiar.org.

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