



Contact:

Kristyn Ebro
Tel: 202-458-2736

For release Monday, May 21, 2001

South Africa – CGIAR Partnership Results in New Maize Varieties With 30 to 50 Percent Higher Yields

An intense collaboration between scientists of the Consultative Group on International Agricultural Research (CGIAR) and their South African counterparts has resulted in the development of two new maize varieties that can have 30 – 50 percent higher yields than traditional varieties grown by smallholder farmers in South Africa's drought-prone, nutrient-depleted soils.

The release of the two new varieties – dubbed Grace and Zm521 – was announced today at a special ceremony at Cedara Agriculture Centre in Pietermaritzburg as part of "Agricultural Research Week."

"Maize is one of the most important staple foods in South Africa," said A. T. Didiza, South African Minister of Agriculture and Land Affairs. *"The success of this South Africa-CGIAR partnership effort shows that there is an enormous potential to improve agriculture and rural livelihoods for the poorest farmers in South Africa. This scientific breakthrough shows the enormous benefits from South Africa's investment in national and international agricultural research."*

The release is significant as it specifically targets the needs of the previously disadvantaged group of smallholder farmers in South Africa. Maize (or corn) is a vital crop for human diets in South Africa, and a mainstay of the region's economies. Maize accounts for more than 40 percent of total cereal production in Sub-Saharan Africa.

"Higher maize yields mean more food and income for poor farmers," says Ian Johnson, Chairman of the CGIAR and World Bank Vice President *"The hardier maize plants will help prevent agricultural expansion in already-stressed fragile ecosystems."*

The new maize varieties were developed by scientists at the International Maize and Wheat Improvement Center (known by its Spanish acronym CIMMYT) as part of a region-wide effort to develop maize varieties and hybrids that are better adapted to smallholder farming systems in southern Africa. CIMMYT, located in Mexico, is one of 16 Future Harvest Centers supported by the CGIAR.

“We are very proud of the results of our collaborative research,” says Timothy Reeves, Director General of CIMMYT. “The products are the result of a farmer- and South African-led development strategy that is helping to make a positive impact in the lives of thousands of poor farmers who have been bypassed by modern technology.”

CIMMYT’s South African counterparts included those working at the Northern Province Department of Agriculture and Environment, the Lowveld Research Unit of the Mpumalanga Department of Agriculture, and the Grain Crops Institute.

Hedge Against Hunger

The two varieties—Grace and Zm521—have characteristics that are specifically valued by smallholder farmers.

Grace matures earlier than traditional maize varieties and can be eaten as green maize. This makes a vital difference in the economic and social well-being of small farmer families. In subsistence agriculture, time between plantings and harvests is a precarious period. Food supply on farms is at the lowest right before harvest – causing a ‘hunger gap’ to the extent that many families may only be able to eat one meal a day. In addition to having a new harvest earlier, smallholder farmers can bolster their income with “Grace” because green maize commands a higher market price.

Zm521 was specifically bred to yield more under drought and low soil fertility conditions. Many maize growing environments in southern Africa are drought-prone and crop failures are common. Farmers are hesitant to use costly fertilizers because the returns are not guaranteed. In trials stretching across a wide swath, from Ethiopia to South Africa, Zm521 has shown to yield 34% more than currently grown varieties, and its advantage under stress conditions was as high as 50%. Farmers in the Northern Province of South Africa—where drought is recurrent, striking almost every year—are very impressed with the yields of Zm521 under these adverse conditions.

Maize is the dominant staple food in southern Africa. Per capita consumption in the region surpasses 100 kilograms. Originally, maize was a crop for colonial settlers in eastern and southern Africa. By the 1930s, it became a critical food and cash crop for poor farmers. Currently, the vast majority of maize farmers in southern Africa are poor, eking out a living from small farms with an average size of between half-a-hectare to 3 hectares. Only five percent of farmers in the region grow maize commercially on farm sizes exceeding 50 hectares.

New Maizes Target Poverty Better

One of the major pro-poor advantages of the new maize varieties is that they are open pollinated, and their seed is cheaper compared to commercially available hybrids. Because of cash constraints, smallholder farmers often resort to planting saved maize grain from their previous harvest. If they do this with saved grain from hybrid maize, they experience considerable yield reduction compared to plants grown from fresh seed. Planting saved grain of open-pollinated varieties does not result in such yield losses, and poor farmers may be better off by growing improved open-pollinated varieties – particularly in view of Zm521’s dramatic yield increases over traditional open-pollinated varieties.

Research Partnerships

CIMMYT is an international, non-profit agricultural research and training center dedicated to helping alleviate poverty by increasing the profitability, productivity, and sustainability of maize and wheat farming systems. These two crops are vitally important to food security, and provide about 25 percent of total food calories consumed in low-income countries. CIMMYT began working with national research programs in Africa in 1966. Today, CIMMYT spends about 40% of its budget in this region, amounting to \$14 million per annum.

CIMMYT already has a considerable record of success in maize and wheat research with South Africa. For example, in 1997, over 70% of South Africa's wheat area was sown to spring bread wheats derived from CIMMYT experimental varieties.

The research to develop the new maize varieties involved collaboration with the South African National Department of Agriculture, the Departments of Agriculture of the Northern and Mpumalanga Provinces, the Broadening Agricultural Services and Extension Delivery Programme (BASED), the Grain Crops Institute of the Agricultural Research Council (GCI-ARC), the South African National Seed Organization (SANSOR), universities and agricultural colleges in the Northern Province, and Eco-Link Mpumalanga, an NGO.

What Is in a Name?

In recent years, modern plant breeding has made enormous strides, producing new crop varieties of staple crops such as maize, rice, and wheat whose yields are high, the plants are resistant to a range of biotic (insect pests and diseases) and abiotic (drought, infertile soils) stresses, grow with lower amounts of fertilizers, and perform well in adverse agro-climatic conditions.

Frequently, the "Achilles heel" of a successful plant breeding effort has been the unavailability of seed, in sufficient quantities. This is particularly true for open-pollinated varieties.

To overcome this constraint, Ms. Grace Green, associated with a non-governmental organization, EcoLink, worked hard to make seed supply available in sufficient quantities. The farmers were so impressed they decided to name one of the new varieties "Grace" to honor her efforts. And the name has stuck, and is welcomed by thousands of farmers for whom the Grace variety is a reliable source of food and income.

This year, EcoLink is setting up a public benefit company, EcoLink Seeds, owned by farmers trained in seed production techniques so that the age-old constraint of seed supply can be overcome and sufficient quantities of seed of the new variety will be available to all.

#####