

Why Seed Matters: Hunger Grows in a Land of Hybrids

*In southern
Africa, many
farmers plant
hybrid maize.
So why are
they hungrier
than ever?*

In southern Africa, declining soil fertility, climate risks like drought, and a lack of cattle manure or chemical fertilizer mean that once-productive hybrids are now sown in exceptionally harsh settings. Most farmers save seed from their harvests to sow the following year, even though the yield will be lower.

From the second generation onward, hybrid maize becomes genetically mixed. After several seasons, it generally yields less than a good open-pollinated variety (OPV). A good OPV can give better value than even first-generation hybrids in tough environments—say, where yields average 1.5 tons per hectare or less, as typically occurs on small farms in southern Africa. Farmers who plant OPV seed saved from a previous harvest sacrifice less in yield than is the case for hybrids.

Farmers have been asking for more appropriate varieties, and government agencies and CSOs are promoting OPVs. Meanwhile, breeders have found a way to develop hardier varieties. This new “stress-tolerant” maize yields well in years of good rains but can also produce enough grain for household needs in dry years. Most important, it uses no more water or soil nutrients than other varieties.

● **Tough handling turns out hardy strains**

Maize breeders once selected varieties based chiefly on their performance in optimal environments—with adequate water and more than enough fertilizer. Now they also grow their experimental varieties under controlled drought and in poor soils to identify plants that are superior anywhere, anytime.

In 1996 the Southern African Drought and Low Soil Fertility Project (SADLF) brought this “stress breeding” approach to the region and helped hundreds of scientists and technicians to use it. (A joint effort between CIMMYT and national research programs, SADLF is funded by the Swiss Agency for Development and Cooperation and the Rockefeller Foundation.) Stress-tolerant OPVs from this work have been released in Malawi, Mozambique, South Africa, Tanzania, and Zimbabwe, and they are also used in Angola and Zambia.

In trials from Ethiopia to South Africa, one OPV from this effort (ZM521) produced an average 34% more grain than popular improved varieties. A new generation of SADLF maize is 15% more productive than ZM521 or its sister varieties. The SADLF varieties are currently grown on more than 100,000 hectares region-wide, and their coverage is expanding.

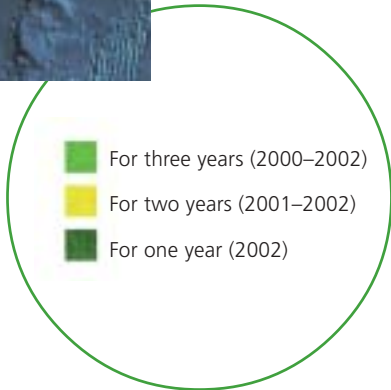
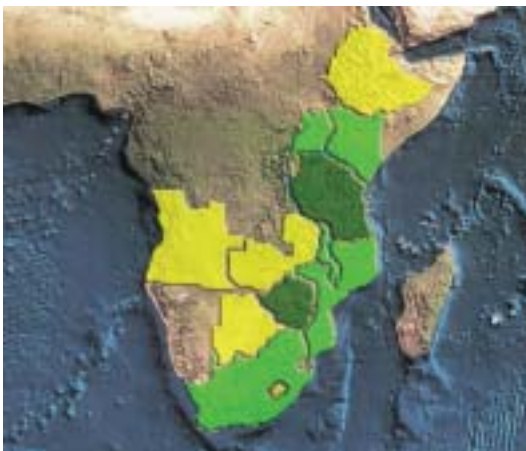
● **More than seed is needed**

Useful maize seed that sits on a researcher’s shelf is of little help to humanity. “To verify the performance of the best varieties under farmers’ conditions and make the seed available quickly, we devised a cost-effective, farmer-centered approach known popularly as ‘mother-baby trials,’” says Mick Mwala, senior lecturer at the University of Zambia and CIMMYT research affiliate. Mwala has been helping partners to implement the trials since 2000 (see next page).

“CIMMYT is fostering the establishment of the trials widely in the region,” says Mwala. “We’re talking 150 mother trials region-wide, with more than 800 baby trials!”



Mother-baby trials implemented in eastern and southern Africa.



Karsto Kwazira and Xavier Mhike from AGRITEX are coordinating mother-baby trials in Zimbabwe. “Our own coordinating unit includes representatives from several CSOs as well as from extension, and there are regional representatives for local implementation,” says Mhike. “This is the first time information is shared like this among national programs, Ministries of Agriculture, CSOs, and private companies. Previously everyone worked somewhat in isolation. Now there is complementarity, with a heightened awareness about the farmer.”

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How do mother-baby trials work?

Mother-baby trials are a farmer-participatory method for testing and evaluating varieties under farmers’ conditions. The trials are 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 handled by schools, colleges, CSOs, or extension agencies. The “babies” are satellite subsets of the mother, comprising maybe 4-6 varieties in the fields of participating farmers under their management.

Researchers and farmers assess the trials, and the data are collected, analyzed, and distributed among multiple stakeholders. For example, some of the trials have links to community-based seed production schemes, some provide feedback on varieties to seed companies, and all of them spread results and seed to partner organizations.

Trials are currently grown throughout eastern and southern Africa.

