

Innovation for Local Food Security



Will hunger become a lasting feature of their future?

Reducing the Footprint of Famine on African Soil

CIMMYT cannot conjure the rains or alter the macro-economic forces that are battering African nations, but its staff are mobilizing partnerships, knowledge, and other resources to restore the future to farm families despite famine and depleted fields.

A single mother in Mbingwa Village, some 100 kilometers northwest of Malawi's capital, Lilongwe, Agness Pungulani cannot produce enough on her half hectare of farmland to feed herself and her children. "My children are not healthy," she says. "Our problems are a lack of food, fertilizer, and sources of income." She sells her labor when she can find fieldwork, but she must weed the equivalent of a 140-meter row in a field, for example, to purchase a single kilogram of maize at the normal market price of 10 kwacha (about US\$ 0.11).

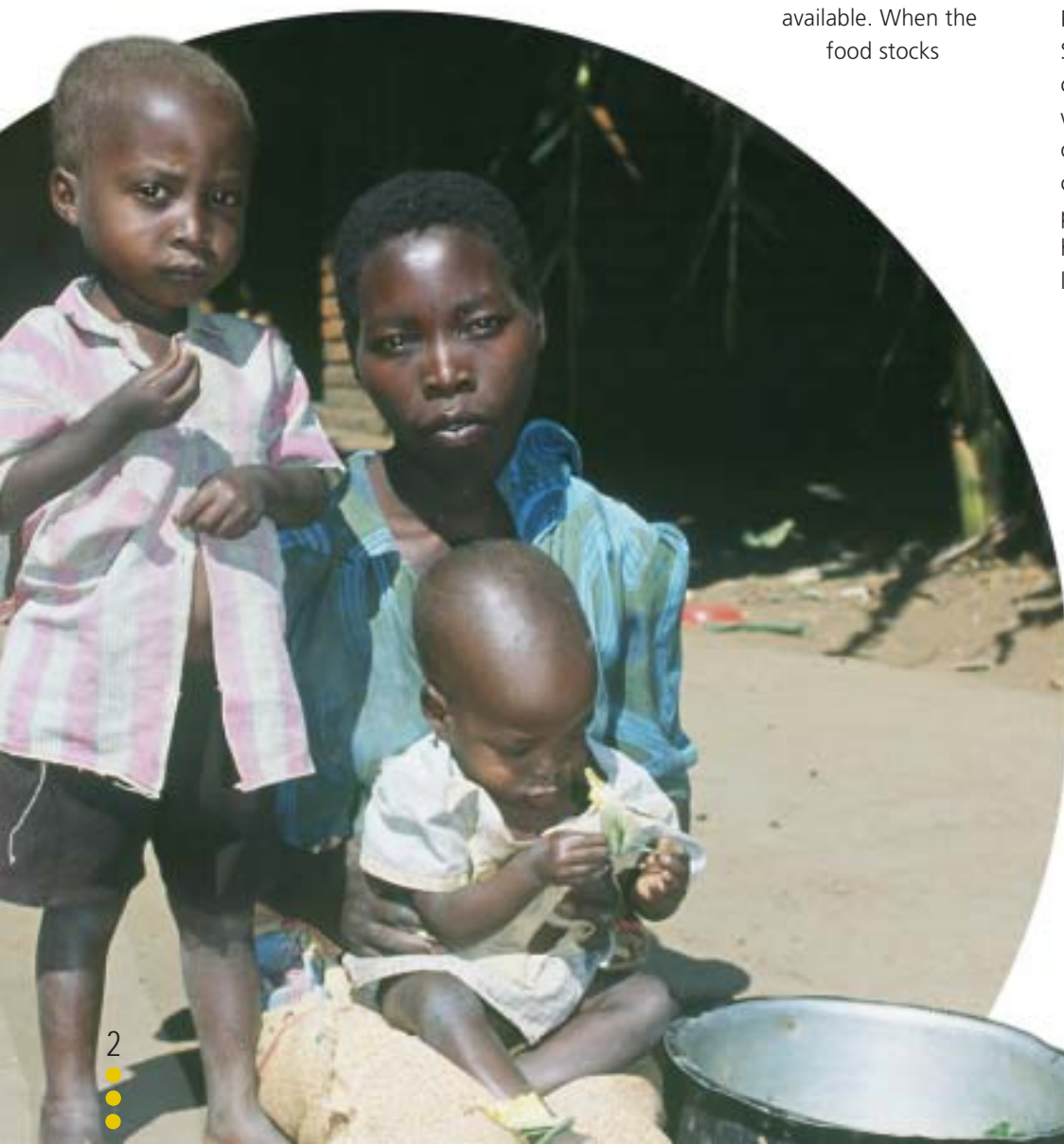
During the 2002 hungry season, markets were devoid of grain, local traders were selling maize at 25 kwacha per kilogram or more, and little fieldwork was available. When the food stocks

disappeared, Pungulani and many others foraged, drank tea from wild occra leaves in place of evening meals, and pounded banana tree roots into a crude flour approximating their preferred maize staple, *nsima*. The head of a neighboring household, which also fared badly, says, "This flour tastes sour, but we eat it because we have no choice."

The hungry season normally arrives during January-February in this part of Malawi, but lately families have run out of grain as early as September and must survive until the March harvests. World Vision and other CSOs are distributing foodstuffs to needy villagers like Pungulani, but others have starved. Similar levels of hunger have been common in Zimbabwe of late, and will probably worsen before the end of 2003. An entire generation of children is suffering the debilitating physical and social effects of chronic hunger. Will famine become a lasting feature of their future?

● Empty soils, stomachs, and pockets

Most of the region's inhabitants live in rural areas, farm for a living, and eat large amounts of maize when they can get it. Poor soils, drought, conflict, malnutrition, and disease—particularly malaria and HIV/AIDS—are daily hardships. But of all their troubles, the one farmers mention most is a lack of fertilizer for depleted soils.



"In Zimbabwe, for example, people used to apply lots of fertilizer and cattle manure, but they've suffered many droughts and lost cattle," says Shephard Siziba, CIMMYT research associate and economist from the University of Zimbabwe. He has surveyed farmers in Malawi, Mozambique, Zambia, and Zimbabwe to understand the economics of soil fertility issues. "Subsidies have been removed. Traders pay the least they can for harvests and sell the grain back at premium prices during the hungry season. Farmers cannot afford fertilizer. Soils are becoming more acidic, less fertile. What farmers really need is help in leveraging their meager soil and water resources."

● From dialogue to development

Siziba, his CIMMYT colleagues, and the partners mentioned above are helping farmers find new ways to care for and get more out of their soils through an organization known as Soil Fert Net.

The network fosters communication and teamwork among hundreds of researchers and institutions—ministries of agriculture, extension agencies, universities—nationally and internationally. "Soil Fert Net helps avoid duplication of effort and keeps the focus on the real-world concerns of small-scale farmers," says Stephen Waddington, network coordinator and CIMMYT regional agronomist. "Soil scientists and agronomists, extensionists, CSOs, anthropologists, economists, and policymakers all take part." Soil Fert Net also links with a complementary project to help smallholders cope with agricultural risk (see "Risk Management in Maize Systems," p. 5).

Among Soil Fert Net's accomplishments are "best bet" options for improving soil fertility, technical input for agricultural policy decisions, improved fertilizer use recommendations, training for private input dealers, and support for thousands of smallholder farmers to test and adopt new practices they might otherwise never have tried.

● Knowledge to nurture soils

Inhabitants of Chihota Communal Area have the good fortune to live only 50-80 kilometers from Zimbabwe's capital, Harare. They sell tomatoes, onions, peas, greens, and other produce to Harare markets, growing it on carefully tended and fertilized plots known as or "dambo" or "vlei" land, normally adjacent to rivers. In contrast, on their acidic, sandy, upland plots, they sow a range of maize hybrids, typically obtaining very low yields. In 1999, with support from Soil Fert Net, extension staff of the Zimbabwe Agricultural Research and Extension Agency (AGRITEX) helped hundreds of farmers to test liming—a chemical treatment that reduces soil acidity—as well as green manures and rotations of various crops in maize fields. ►

About Soil Fert Net

The network's formal name is the Soil Fertility Management and Policy Network for Maize-based Farming Systems in Southern Africa. With technical support and coordination from CIMMYT, Soil Fert Net conducts targeted research and extension activities, fosters regional partnerships, and advocates appropriate policies to help farmers in Malawi, Mozambique, Zambia, and Zimbabwe. Soil Fert Net was established in 1994 with Rockefeller Foundation support.

Several hundred local farmers have picked up the improved soil management practices, and many continue to experiment. Mary Munemo grew maize for three seasons on a field to which she had applied lime in 1999 and noticed a big yield improvement. "It's difficult and expensive to get lime and sometimes the quantities are not enough for everyone," says Munemo, but now she and her peers have begun pooling resources to purchase inputs in bulk.

Venancio Gotami, an AGRITEX supervisor who has worked in the district since 1989, says Soil Fert Net empowers farmers to experiment with more complex, knowledge-based practices. "The value of the land has even gone up," says Gotami, "because farmers see the benefits of maize production using the new practices."

In Mozambique, Soil Fert Net participants are helping the country's recently established maize research program to conduct a widespread program of on-farm trials involving intercrops of maize and grain legumes and rotations of maize and cassava. These practices maintain soil fertility and provide food.

● Long-term land care

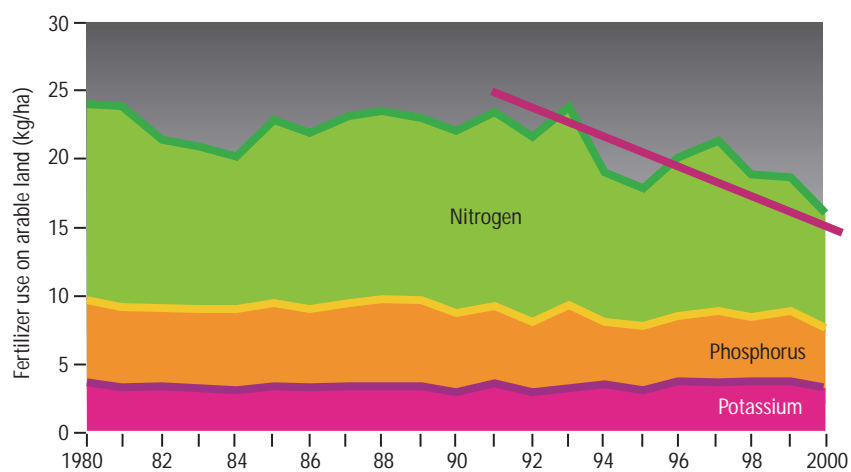
Farmers in southern Africa need multiple coping strategies, if they are to build up resources for the future. "Even with the use of fertility management practices, maize farming in southern Africa is basically extractive," says Waddington.

Convincing farmers to diversify might help, according to Siziba. "In Manica Province, Mozambique, for example, 50-60% of the area is devoted to maize, but there's also sorghum, millet, legumes, cassava, and fruits,"

he notes. "In Zimbabwe, where people sow 80% of their land to maize, there's nothing to eat when the crop fails."

Conservation agriculture also holds promise. It includes practices that reduce tillage and recycle crop residues to save labor, enrich the soil, and capture and retain moisture. In May 2003, representatives from CIMMYT, Malawi, Tanzania, Zambia, Zimbabwe, the African Conservation Tillage Network, the University of Hohenheim, the Regional Land Management Unit based in Kenya, German Technical Cooperation (GTZ), and Sasakawa Global 2000 met to design a conservation agriculture project for eastern and southern Africa.

In June, Soil Fert Net members and representatives from the International Center for Tropical Agriculture (CIAT), World Forestry Center, and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) met with John Lynam, associate director of the Rockefeller Foundation Food Security Program, with special responsibility for soil fertility. A major outcome was an undertaking to develop a consortium on soil fertility research and development to enhance food security in southern Africa. "The idea is to broaden participation, bringing more resources to bear on these important problems, and to coordinate and focus everyone's efforts," says Waddington.



Fertilizer use continues to fall in Africa.



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