

Risk Management in Maize Systems

As a complement to Soil Fert Net, CIMMYT coordinates the Risk Management Project. The project combines crop modeling and products from Soil Fert Net to help farmers at three locations in Malawi and Zimbabwe that typify the region's drought-prone conditions.

"Erratic rainfall makes maize yields swing like a yo-yo," explains CIMMYT research affiliate Zondai Shamudzarira, who coordinates Risk Management work with about 80 farmers in 4 villages in Zimbabwe. "Over the last 20 years, maize harvests in sub-Saharan Africa have ranged from 15 to 28 million tons. Over the same period, the region's population has increased by 200 million."

To help farmers deal with high risk and evaluate new practices, the project uses a model to simulate the performance of different practices across many seasons, gauging the extent and frequency of losses in bad seasons. Farmers help assess model results and develop rules of thumb on the conditions (land type, soil type, farmer category) under which a particular strategy is most attractive. The same approach is used to study topics such as the residual effects of legumes, or the best time during the crop season to work legume residues back into the soil.

Says Dowa Moses, chairman of a farmer group in Chikato Village, Zimuto Communal Area, with whom the project began working in 1999: "When CIMMYT came, they offered something new, bringing farmers together to test the use of legumes that regenerate soils. We have serious problems with soil fertility, so we accepted."

Moses had sown a series of project trials on a plot that had been abandoned since 1983 because of its poor fertility. He was pleased with the

results of the trials, and said he would like to intercrop maize with soybean, pigeonpea, or *Crotalaria grahamianan* in the future.

One promising topic of research is the targeted use of small amounts of fertilizer. "We are working on this with farmers in Maranda Village, Zimbabwe, and Kamphenga, Malawi," says Shamudzarira. "In a year of good rains, you apply a little more fertilizer. If the rains are bad, you stop applying it, a simple sort of response-farming strategy that is nearly always cost-effective."

Shamudzarira and his associates share findings with CSOs, Soil Fert Net members, and others who are promoting improved soil fertility management practices.