

to 900,000 beneficiaries.⁴⁵ Despite this increased investment, the reach of FISP is limited. Approximately 10 percent of Zambia's 1.4 million farmers cultivating less than 20 hectares receive fertilizer and seed through FISP.

In 2015, the Zambian government announced that it will begin phasing out FISP and transitioning to an e-voucher system that will enable beneficiaries to purchase fertilizer and seeds from the private market.⁴⁶ Farmers will receive a "credit card" loaded with ~\$160 (50 percent is contributed by the beneficiary) to be used for input purchases. The goal is to improve input delivery, provide flexibility and reduce the market-distorting impacts of government fertilizer and hybrid seed purchases. Still, many rural agro-dealers do not have the capacity to process credit card payments, making it difficult for them to supply beneficiaries in more isolated regions. A pilot program targeting 214,000 recipients in 13 districts has been announced for the 2015/2016 growing season.

Replacing FISP with a more cost-efficient input support system frees up resources for high-return investments such as research and development, agricultural extension and education, or transportation and irrigation infrastructures.

THE NEED FOR SEEDS

FISP also distributes hybrid maize seed to its beneficiaries. Small-scale farmers use a combination of hybrid and local maize seed, but the hybrid seed accounts for 90 percent of their production. This is consistent with studies in Kenya that have shown hybrid maize increases yields by 7 to 9 percent over open pollinated varieties (OPVs) and by 67 to 76 percent over local landraces. Zambian producers using hybrid seeds are 15 percent more likely to sell maize and increase the quantities sold by 64 percent.⁴⁷ In addition to increasing yields and sales, hybrid seeds are a scale-neutral technology that reduces risk, stimulates off-farm markets and plays a critical role in helping farmers adapt to climate change and weather shocks.



PANNAR SEED, an affiliate of DuPont Pioneer, operates test fields and provides advisory services for Zambia's small-scale and emerging producers. Janet Mandela (above) is part of a farmer cooperative that is cultivating 3.2 tons of maize per hectare with hybrid seed. Photo source: Barbra Muzata, DuPont Pioneer

Investments are needed in the research and development of plant breeding and seed systems, particularly varieties that improve yields and reduce risk for smallholders. Expanding agricultural extension and advisory services will help farmers maximize the benefits of hybrid seed technology.

While Zambia does not currently allow genetically modified crops, the government has signed the **Seed Trade Harmonization Act** for the **Southern African Development Community (SADC)**. The Act will create a consistent regulatory framework for seed trade in southern Africa, giving Zambian farmers access to a wider variety of hybrid seeds and stimulating investment in the development of hybrid seed varieties that are tailored to meet the needs of farmers in the region.⁴⁸

DROUGHT TOLERANT MAIZE SEED FOR AFRICA

Maize is the primary source of calories for more than 300 million Africans, but frequent droughts and rising temperatures are threatening this vital food source, as well as the livelihoods of farmers across the region. The **Water Efficient Maize for Africa (WEMA)** partnership* is developing and delivering hybrid maize seed that uses water more efficiently and resists insects and pests to small-scale farmers who rely on maize for food and income. As a leading WEMA partner, **Monsanto** shared 600 elite parental lines of maize seed, along with technical plant breeding know-how and biotech drought-tolerant and insect protection traits. Monsanto also leveraged the expertise of local research partners to develop locally adapted hybrid maize.

The first harvest of WEMA white hybrid maize seed took place in Kenya in February 2014. Farmers experienced improved grain yield under both optimal and drought stress conditions, harvesting 4.5 tons per hectare compared to 1.8 tons per hectare harvested in the first farmer-managed demonstration trials.

WEMA is now delivering conventional seeds under the brand DroughtTEGO™ with 40 new hybrids approved for commercial release and more in the development pipeline. Seed licenses are available, royalty-free, to all seed companies, and more than 20 seed companies have made these seeds commercially available to African farmers. **The WEMA project is the largest tropical white maize breeding program in sub-Saharan Africa**, and DroughtTEGO™ branded hybrids are expected to enable farmers to harvest 20–35 percent more grain under moderate drought conditions compared to the seed they have historically planted.

*Water Efficient Maize in Africa (WEMA) is led by the African Agricultural Technology Foundation (AATF), and funded by the Bill and Melinda Gates Foundation, the Howard G. Buffett Foundation and the United States Agency for International Development (USAID). Key WEMA partners include the National Agricultural Research Institutes in Kenya, Mozambique, South Africa, Tanzania and Uganda, the International Maize and Wheat Improvement Center (CIMMYT) and Monsanto. DroughtTEGO™ is a registered trademark of AATF.