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Scientists Prepare for Confined Field Trials of Life-Saving Drought-Tolerant Transgenic Maize

If successful, Water Efficient Maize for Africa would be available royalty-free to the region where over 300 million people depend on a crop routinely crippled by droughts

DES MOINES, IOWA (14 October 2010)—Crop specialists in Kenya and Uganda have laid the groundwork for confined field trials to commence later this year for new varieties of maize genetically modified to survive recurrent droughts that threaten over 300 million Africans for whom maize is life, according to a speech given today by the head of the African Agricultural Technology Foundation (AATF) at the World Food Prize Symposium.

Scientists working with AATF believe it's important to explore the potential of biotechnology to maintain and increase food production in Africa, given the large number of families dependent on maize, and warnings that maize yields could drop dramatically as climate change increases drought frequency and severity across the continent.

There is preliminary evidence that the Water Efficient Maize for Africa (WEMA) varieties, which were developed through a public-private partnership, could provide yields 24–35 percent higher than what farmers are now growing.

The process for testing the WEMA varieties has been informed by a series of “mock trials” conducted in 2009 in Kenya and Tanzania. The mock trials carefully simulated field conditions, procedures, and regulatory oversight that will occur in the actual trials.

“The mock trials have provided an opportunity for researchers working on the WEMA project to fine-tune the procedures of carrying out the actual transgenic trial in 2010,” according to Daniel Mataruka, executive director of AATF.

The mock trials were supervised by national biosafety committees in both countries and adhered to all requirements that will apply to transgenic plants.

“Everything we have seen in the simulated trials shows that we can safely test transgenic maize varieties in carefully controlled and confined field trials in Africa and evaluate their potential to produce high yields in drought conditions,” said Dr. James Gethi, the WEMA-Kenya country coordinator.

Drought is the most important constraint to African agricultural production, and its effects are particularly severe on maize, which is the most widely-grown staple on the continent. For millions of small-scale farmers who rely on rainfall to water their crops, risk of crop failure from drought is a major barrier to the adoption of improved farming practices.

A more reliable harvest could give farmers the confidence to invest in improved techniques that could further boost their yields and incomes.

The push to develop drought-tolerant varieties has been given added urgency by threats likely to come from climate change. A study by scientists at the Consultative Group on

International Agricultural Research (CGIAR) warns that by 2050, climate change could make droughts more frequent and intense, potentially causing maize yields to drop by 20 percent or more in parts of East Africa, including northern Uganda and southern Sudan, and semi-arid areas of Kenya and Tanzania. The Food and Agriculture Organization of the United Nations (FAO) has acknowledged biotechnology as a powerful tool in the effort to develop drought-tolerant crops.

The drought-tolerant WEMA varieties are being developed under a partnership involving AATF, the International Maize and Wheat Improvement Center (CIMMYT), Monsanto, and the national agriculture research systems in Kenya, Tanzania, Mozambique, South Africa and Uganda. CIMMYT has provided high-yield maize varieties adapted to African conditions, while Monsanto has provided proprietary genetic resources (germplasm), advanced breeding tools and expertise, and drought-tolerant transgenes developed in collaboration with BASF.

According to AATF, experience has shown that the gains possible through advanced breeding and biotechnology are greater and faster than those that can be achieved through breeding alone.

“There have already been positive gains made in drought tolerance using traditional breeding methods by our partners,” said Mataruka. “WEMA is working to further increase those gains in drought tolerance in hybrids adapted to eastern and southern Africa through both advanced breeding techniques and biotechnology.”

If the transgenic corn is found to be safe and successful, the new varieties will be made available to smallholder farmers royalty-free. Under its agreement with its partners, any approved varieties would be licensed to AATF, which would then distribute to farmers through local seed supplies at a price competitive with other types of maize seed. The project partners expect that pricing will not be influenced by the requirement to pay royalties, as none of the partners will receive any royalty payment from seed companies for the drought tolerant lines/transgenic trait incorporating their intellectual property protected technology.

Pending regulatory approval, at least 12 WEMA varieties will be tested in confined field trials (CFTs) in Kenya, Uganda, Tanzania, South Africa and Mozambique. After the trials, the transgenic corn produced in the CFTs will be destroyed in compliance with the regulations in the respective countries.

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The African Agricultural Technology Foundation (AATF) is a not-for-profit organisation that facilitates and promotes public/private partnerships for the access and delivery of appropriate proprietary agricultural technologies for use by resource-poor smallholder farmers in Sub-Saharan Africa (www.aatf-africa.org).