

Genetics News

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Body announces plan to develop drought-tolerant maize for Africa

By Henry Neondo

The African Agricultural Technology Foundation (AATF) announced recently in Kampala, Uganda a public-private partnership to develop drought-tolerant maize varieties for Africa through gene manipulations-a marked difference from the stand taken by the Alliance for a Green Revolution in Africa.

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The long-term goal of public-private partnership, according to AATF, is to reduce crop failure, alleviate hunger and poverty.

The partnership, known as Water Efficient Maize for Africa (WEMA), was formed in response to a growing call by African farmers, leaders, and scientists to address the devastating effects of drought on small-scale farmers and their families.

Frequent drought leads to crop failure, hunger, and poverty. Climate change will only worsen the problem. AATF announced the effort at the end of a two-day planning meeting that included representatives from each of the countries participating in the project: Kenya, Uganda, Tanzania, and South Africa.

And in a marked difference with the Kofi-Annan-led Alliance for a Green Revolution in Africa, AGRA, which advocates non-biotechnology grain development, the AATF partners will use marker-assisted breeding and biotechnology to develop African maize varieties with the long-term goal of making drought-tolerant maize available royalty-free to African small-scale farmers.

The benefits and safety of these maize varieties will be assessed by national authorities according to the regulatory requirements in each country.

"This partnership fits well with the AATF mandate of facilitating innovative public/private partnerships that bring to smallholder farmers in Africa the tools needed to increase productivity for better food and income security", said Mpoko Bokanga, Executive Director AATF.

AATF will work with the non-profit International Maize and Wheat Improvement Center (CIMMYT); the private agricultural company, Monsanto; and the national agricultural research systems in the participating countries.

The new drought-tolerance technologies have already been licensed without charge to AATF so they can be developed, tested, and eventually distributed to African seed companies through AATF without royalty and made available to smallholder farmers.

Bokanga added that the project will involve local institutions, both public and private, and in the process expand their capacity and experience in crop breeding, biotechnology, and biosafety.

The Bill & Melinda Gates Foundation and the Howard G. Buffett Foundation contributed a total of \$47 million to this effort. The Uganda's Director General of the National Agricultural Research Organisation Dr. Dennis Kyetere said that the project will help address drought and contribute to food security in Africa.

"Drought is a source of suffering and food insecurity for many people in Uganda and it is recognised as a challenge by the government. Drought causes up to 100 percent crop failure in Uganda in some instances", said Dr. Kyetere.

Africa is a drought-prone continent, making farming risky for millions of small-scale farmers who rely on rainfall to water their crops.

Maize is the most widely grown staple crop in Africa: more than 300 million Africans depend on it as their main food source.

It is severely affected by frequent drought. In the next five years, the partnership will develop the new maize varieties, incorporating the best drought-tolerance technologies available internationally.

The International Maize and Wheat Improvement Centre, CIMMYT will provide conventionally developed drought tolerant high-yielding maize varieties that are adapted to African conditions and expertise in conventional breeding and testing for drought tolerance. Monsanto will provide proprietary germplasm, advanced breeding tools and expertise.

Additionally, representatives from Monsanto and BASF said they will provide without royalty drought-tolerance transgenes that they have developed through their collaboration.

The national agricultural research systems, farmers' groups, and seed companies participating in the project will contribute their expertise in breeding, regulatory issues and will be responsible for country-specific implementation including project governance, testing, germplasm evaluation, seed production and distribution.

The Bill & Melinda Gates Foundation has funded an independent program at the McLaughlin-Rotman Centre for Global Health (University of Toronto) to assess and monitor social, cultural, ethical and commercial issues related to the WEMA Project.

The independent organization will conduct annual audits of WEMA and serve as an additional communication channel for stakeholders.

According to eminent scientist Professor Calestous Juma, who is the Director of the Science, Technology and Globalisation Project at Harvard University, the WEMA project is a powerful signal

of the relevance of biotechnology to African agriculture.

The collaboration between CIMMYT and national agricultural research systems has already yielded excellent gains in drought tolerance through conventional breeding.

The partners in the WEMA project expect the combination of advanced breeding and biotechnology to bring even greater gains. The partners estimate that the maize products developed over the next 10 years could increase yields by 20 to 35 percent under moderate drought, compared to current varieties.

This increase would translate into about two million additional tons of food during drought years in the participating countries, meaning 14 to 21 million people would have more to eat and sell.

The first conventional varieties developed by WEMA could be available after six to seven years of research and development.

The transgenic drought-tolerant maize hybrids will be available in about ten years. Risk of crop failure from drought is one of the primary reasons why small-scale farmers in Africa do not adopt improved farming practices. A more reliable harvest could give farmers the confidence to improve their techniques.

Good soil health, improved training and support, pest and disease management, and access to markets to sell their surplus are all necessary for small-scale farmers to boost their yields and incomes.

To date, the Bill & Melinda Gates Foundation has invested more than \$660 million as part of a broad agricultural development strategy that includes efforts in all of these areas so small-scale farmers could have access to the tools and opportunities they need to build better lives.

The African Agricultural Technology Foundation (AATF) is an African-led charity designed to facilitate and promote public/private partnerships for the access and delivery of appropriate proprietary technologies with potential to increase the productivity of resource-poor smallholder farmers in Sub-Saharan Africa.

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