

GM crops in Africa – a new dawn ?

A review published in late 2015 suggested that although biotechnology had the backing of the scientific community in most African countries commercial development of GM crops would at best be 'patchy.' (*Crop Scene, January 2016*). However, according to farmers in West Africa, a number of examples of crop failures could have been prevented if the technology had been available (*Crop Scene, November 2016*).

It would be wrong to suggest that there has been a complete turnaround in all government policies but the fact that trials with GM crops are now reported to be underway in 12 African countries, with several setting target dates for commercialisation, shows definite promise.

South Africa is the only African country where GM food crops, corn and soya beans, are grown. GM insect resistant *Bt* cotton is grown on a small scale in Burkina Faso and is also permitted in Egypt and Sudan. Some reports suggest that 97% of cotton grown in Sudan is GM.

Bt cotton is now under trial in a number of countries. Ethiopia revised its biosafety law in 2015 to allow field tests. These tests are now concluding, and cultivation of *Bt* cotton is expected to begin in 2018. *Bt* cotton trials are also reported to be underway in Cameroon and Malawi. In February, the Kenyan government appeared to reverse its opposition to growing GM crops when it indicated it would approve the commercialisation of *Bt* cotton. "We are fully behind home-grown solutions to food insecurity and therefore support local biotechnology research," said Noor Mohammed, chairman of the Parliamentary Committee on Agriculture, Livestock and Cooperatives. He also said: "Research and trials on other crops like corn, virus-resistant sweet potatoes and virus-resistant cassava should continue unhindered."

Ghana is conducting field trials with *Bt* cotton as well as with *Bt* cowpeas, nitrogen and water-efficient and salt-tolerant rice and nutritionally fortified sweet potatoes. The trials will be completed in 2018. If successful, the government is expected to allow farmers to use them.

Ghana passed a biosafety law in 2011. Eric Okoree, head of Ghana's National Biosafety Authority, said: "With these guidelines, Ghana can be a model in Africa. We are telling the world, and Ghanaians, that we have opened the door and we are making ourselves open and ready to receive and consider applications for GMO use."

One potentially significant change could occur in Nigeria, a country which has lagged in GM development. After passing a landmark biosafety bill, field trials are reported to be underway on: *Bt* cotton; *Bt* cowpea; iron-, zinc-, protein- and vitamin A-fortified and nitrogen-efficient sorghum; and salt-tolerant and water-efficient rice. If the trials are successful, the government hopes to commercialise these crops within three years. So Nigeria could still become a leader in the technology in Africa.

Drought tolerance is an important target market in much of Africa. Five countries are involved in the Water Efficient Maize for Africa (WEMA) project which is a public-private partnership collaboration with Monsanto. Trials are underway in Mozambique, Uganda, Kenya, South Africa and Tanzania.

In Tanzania until recently, researchers were unable to conduct field trials with GM crops due to 'strict liability' legislation. Similar issues, together with the influence of anti-GM activists, contributed to delays in the progress of the WEMA project in Mozambique, Uganda and Kenya. There is hope in Tanzania at least that if the liability regulations of the biosafety law are amended by Parliament then commercial introduction of drought tolerant corn could commence in 2021. Even so pending changes in legislation, crops grown in trials have to be destroyed rather than introduced into the food chain. With the current food shortages due to the drought this is proving controversial. The indications for the future are quite encouraging. Forens Turuka, Tanzanian permanent Secretary of

Agriculture Food Security, was recently quoted as saying: "government intends to revolutionise agriculture by introducing biotech crops to improve the quality of yields... the country has the required capacity for research in GM crops,"



[Visit to trials of GM drought tolerant corn in Tanzania](#)

Dr. Alois Kullaya, technical advisor to the WEMA project in Tanzania, told the Alliance for Science during a recent field visit to the confined field trial site near the capital, Dodoma, that "From the general appearance, we think the genetically modified drought-tolerant hybrids are going to do better than the non-genetically modified.... We can say for sure when we have harvested and the results are out. But it looks very convincing."

The distribution of drought-tolerant maize is particularly urgent in the region because most of eastern and southern Africa is suffering intense drought conditions. As maize is mostly grown as a subsistence crop, poor harvests due to drought can lead directly to hunger and malnutrition for poorer families. Some 95% of the maize grown in Tanzania is produced on small-scale farms.

Under the agreement between Monsanto and the African Agricultural Technology Foundation, who own the WEMA hybrids, they will be offered to farmers royalty-free and at an equivalent cost to conventional hybrids.

While there is optimism that Africa could embrace biotechnology it is not going to be plain sailing. Kenyan Agriculture cabinet s-Secretary Willy Bett has ruled that GM maize trials cannot be grown in the open. He said further research has to be done to address the risk that GM maize may have on the environment before it is released for trials. He was also reported to say in an interview: "Kenya is still one of the countries that still believe we should be a GMO free state."

One positive development came recently when member countries of the African trade organisation the Common Market for Eastern and Southern Africa (COMESA) expressed their readiness for the development and importation of GM products in the region.
