

## **GM crops in Africa – are minds being changed ?**

During 2017 there have been some signs that in parts of Africa commercial application of crop biotechnology is going to take off (*Crop Scene, March 2017*). Acceptance is far from universal across all of the continent but it now looks as if real progress is underway.

Latest reports indicate that a number of countries including Burkina Faso, Cameroon, Ghana, Kenya, Malawi, Nigeria, Sudan and Swaziland are all conducting confined field trials on cotton. In these trials herbicide tolerance and insect resistance are the main traits under investigation. Confined field trials are also being conducted on maize in Kenya, Uganda and South Africa. Other crops being studied in certain African countries include wheat, rice, bananas, cassava, potatoes, sorghum and cowpeas.

Apart from South Africa, which is the most advanced with GM maize crops, Kenya looks to be the furthest ahead. A two year trials programme is underway with both cotton and maize. (*Crop Scene, September 2017*). The Kenyan government's commitment to move ahead with different GM crops was underlined by a recent statement from Willy Bett, cabinet secretary for Agriculture, Livestock and Fisheries. He explained that the government has put in place an act to aid general supervision and control over the transfer, handling and use of GMOs in the country. He said: "We have experts and a competent authority that was established to regulate research and commercial activities involving GMOs with a view to ensuring the safety of humans, animal health and the environment."

It was confirmed that research scientists at the Kenya Agricultural and Livestock Research Organisation (KALRO) are currently conducting open field trials research on maize, cassava and sorghum. Willy Bett announced: "Once the varieties pass the tests, they will be released to farmers for commercial growing."

In Nigeria public hostility towards GM crops and the introduction of GM food has been very active as demonstrated by the marches of civic groups last June.

Nonetheless government officials see the potential with crops such as rice, maize and cassava with the reduction of imported food as a key requirement. Rufus Egbegba, heads up the National Bio-safety Management Agency (NBMA). In a recent interview for a national newspaper he explained that GM crops should be considered purely as improved versions of conventional crops. He also made it known that cowpea and sorghum were presently being tried at the Institute of Agricultural Research in Zaria. The cowpea is being modified for insect resistance and sorghum for improved availability of nutrients.

In the case of sorghum, known locally as 'Guinea corn', the crop naturally contains iron, zinc and protein, but a particular enzyme makes those nutrients unavailable to humans or animals. Dr Egbegba explained that trials were underway with GM sorghum crops which could overcome this limitation. He urged citizens to view genetically modified organisms from a knowledge angle and to ignore statements that paint it as harmful.



Coalition of civic groups on protest march in Nigerian capital city, Abuja

Zambia is much further behind in developing crop biotechnology. However, even though in the past the country refused to import donated maize which was genetically modified, there now appears to be a general recognition that modern biotechnology could have a place.

The National Biosafety Authority (NBA) says the major contributing factors to the lack of progress to date are the absence of appropriate regulations and guidelines, inadequate application of resources as well as out of date research methods and poor containment facilities.

Chairman of the NBA board, Paul Zambezi, speaking at a stakeholders' consultative meeting on biotechnology policy in October said that biotechnology in Zambia should be used as a practical intervention to sustain rural dependency on agriculture and forestry. He said "Some areas have high acidity levels in the soil and others are experiencing drought. We can breed crops that are resistant to drought." He said NBA will ensure that biosafety measures are put in place to ensure the environment is protected.

At the same meeting the minister of Higher Education Nkandu Luo says there is need for Zambia to significantly invest in science. She challenged the NBA to undertake a rigorous awareness campaign for people to accept biotechnology and related issues.

Uganda is one of the most recent African countries to commit to the development of GM crops. The country's parliament has recently voted the long-awaited National Biosafety Act of 2017 into law. This ended years of governmental debate. The 2017 Act will now be forwarded to President Yoweri Museveni. The president, who has on several occasions endorsed biotechnology and expressed frustration over the delay of the bill's passage, is certainly expected to sign off the law, which will become operational immediately.

President Yoweri is clearly a strong advocate of the technology. At a high level pan-African conference, held in Kampala in September, on the application of science and innovation for the

benefit of Africa he called on African states to embrace the use of agricultural biotechnology.

Following the Ugandan parliament vote, it was reported that the mood amongst scientists working on agricultural biotechnology was 'celebratory.' Patricia Nanteza who works with the national banana programme at Kawanda, was reported to be ecstatic. She said "It's exciting, though it feels almost unreal after all the setbacks.... But finally, banana farmers will be able to access varieties of banana resistant to bacterial wilt, and the people, especially children, can finally eat bananas and other foods rich in Vitamin A."



GM sweet potato trials at the National Agricultural Research Organisation in Uganda

The potential application on bananas in Uganda featured in the international documentary film *Food evolution*. ([www.foodevolutionmovie.com](http://www.foodevolutionmovie.com)) The documentary, which was sponsored by the Institute of Food Technologists (IFT), puts the value of crop biotechnology on different crops and in different countries into context and explains that decisions on the adoption of the technology need to be based on science and not through ill-informed emotion.

After a recent showing of the film in Cambridge, Sir David Baulcombe, regius professor of botany at Cambridge University, said that protection against banana wilt in Uganda is one of the most promising new examples of biotechnology.

The challenge is to get people to change their minds about GM crops and because in Uganda bananas are a staple food it is more likely to happen.

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