GM foods: The battle for Africa

A combination of climate change, population growth and regional conflict has created the worst food crisis across Africa since 1945, according to aid agency World Relief.

In 2018, the African countries suffering the worst food shortages due to declining harvests driven by drought were, in order of severity, Democratic Republic of Congo, Ethiopia, South Sudan and northern Nigeria the Food Security Information Network’s Global Report on Food Crises says.

Although 60% of the world’s untiled, arable land lies on the continent, Africa accounts for just 4% of global agricultural output. Scientists blame low productivity on erratic weather patterns, drought, poor seed quality and outdated farming methods.

Yet producers of genetically modified (GM) seeds – produced from organisms that have had changes introduced into their DNA using the methods of genetic engineering – claim to have the answer. The former CEO of Monsanto, Hugh Grant, says that the only way agricultural output can be doubled by 2050 is through biotech breakthroughs.

On trial
South Africa, Sudan and Burkina Faso are currently the only countries on the continent growing commercial quantities of crops from seeds genetically altered in a lab. Africa’s GM market was estimated to be valued at around $695.4m in 2018, and is forecast to grow around 5% to reach an estimated $871m by 2025. But many African countries, including Kenya, Burkina Faso, Cameroon, Ethiopia, Ghana, Tanzania, Malawi, Uganda, Mozambique and Nigeria, are trialling various strains of GM seeds as the first step in a long approval process.

Kenya has been carrying out trials on biotech maize and cotton engineered to deter pests in a bid to use less pesticides and fertilisers. Kenyan scientists are also conducting field trials with cassava, which is engineered to resist viruses that shrivel and rot the crop. Vitamin-E enhanced sorghum genetically designed to tackle blindness in malnourished children is also undergoing field trials.

Yet such trials are the beginning of a much longer process, says Simon Winter, executive director of Syngenta Foundation, an NGO promoting sustainable agriculture in smallholder African farmers, and partly funded by China-owned seed and agrochemicals firm Syngenta.

“You need several years of evidence from trials, very carefully documented and presented, before you even get a release. And then there’s several steps to having it actually produced in practice,” he says.

Earlier this year Nigeria became the first country in the world to approve a variety of genetically modified (GM) cowpea seeds. The seeds were synthesised to deter attacks by winged pests that can despoil up to 80% of the West African staple every year. Legislation in Nigeria paved the way for the release of four genetically altered cow pea varieties in February, whose strains are now recognised by the regulatory authority as passing tests confirming they can be grown reliably at a certain yield and quality level.

Addressing fears
But overblown fears and myths around potential health risks hold back the sector’s potential, Winter argues. “There’s lots of rumours, fears and myths about possible health effects of GM foods. There’s been a lot of research done on that, and there is absolutely no evidence of any negative health effects of GM foods,” he says.

The risks GM foods pose to health must be assessed on a case-by-case basis, according to the World Health Organisation. GM production carries risks of allergenicity, gene transfer and outcrossing, according to the WHO. Gene transfer from GM foods to cells of the body or to bacteria in the gastrointestinal tract would cause concern if the transferred genetic material adversely affects human health, while seeds drifting from GM plants into conventional crops or related species in another field (referred to as “outcrossing”), or mixed with crops derived from conventional seeds, could indirectly affect food safety and food security, says the organisation.

African countries also fear that GM crops will hamper trade flows with GM-sceptical Europe, their largest export market and main customer, which imported a total of $13.4bn in African agri-food products in 2018. Companies need to comply with strict EU laws to import GM products to the continent. The development of GM foods could even block EU development aid for agricultural programmes, Winter argues.

“A lot of the development initiatives that are going to support improved agriculture in food in Africa...
are being funded by Europeans. The Europeans aren’t going to fund or support any projects developing GM crops or foods.”

Another challenge is intellectual property issues, as many countries don’t have adequate regulation. “There’s a risk that these traits get stolen and copied and sold under different labels by people who haven’t invested in their development. That whole IP issue is a critical issue,” says Winter.

**Sowing seeds of confidence**

In a sign of the enduring stigma of GM in Africa, Kenya’s Ministry of Health recently argued that if there was a severe, life-threatening famine “every effort will be made to source the food from non-GMO sources, failing which emergency GM food may be allowed in.

As part of an effort to assuage fears surrounding GM crops, companies such as Monsanto, now Bayer, launched initiatives to make GM seeds accessible to farmers.

The cowpea genes trialled in Nigeria and other countries across West Africa were donated by Monsanto as part of a project launched by the Rockefeller Foundation in 2016, and funded by the Bill and Melinda Gates Foundation and USAID. Seeds were given to farmers for free, where they previously cost as much as 50% more than conventional seeds.

In another Africa push, Monsanto introduced farmers in Burkina Faso to a genetically modified strain of cotton called Bollgard II in 2000 at a subsidised rate. Burkinabe farmers found the resulting bug-resistant product was lower quality than their home-grown crops, and abandoned the Monsanto crop variety in 2016.

As the farmers struggled to sell the low-quality cotton, the country’s cotton companies lost $85 million over five seasons, according to the Inter-Professional Cotton Association of Burkina (AICB).

**The future of Africa’s GM market**

Winter says that while GM foods are part of the puzzle for solving world hunger, their overarching benefit is pest resistance rather than boosting productivity. GM plants are bioengineered to repel pests, which can reduce or eliminate insecticide use.

The Syngenta Foundation is particularly keen to introduce crops resistant to fall army worm, which costs African economies billion of dollars in crop losses a year, Winter says. But while the current regulatory frameworks persist, new strains could take years to approve.

“From our foundation side we’re not advocating or promoting any GM varieties because we want to see farmers being able to use improved technologies tomorrow, and not have to wait 10 years or longer until the regulatory framework changes.”

With the continent polarised, and governments reluctant to pass controversial laws, the future of the market is difficult to predict.

Even in China, where the government looked ready to lift restrictions on GM food farming in 2016, it has still taken a long time for GM foods to be introduced.

“The whole continent in Africa is more fragmented, so I wouldn’t want to venture to speculate how soon things will change.”
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