Egypt poised to again lead Africa in agricultural biotechnology innovation

When will Egypt again lead Africa in agricultural biotech innovation? That question kept running through my mind when I visited the North African country late last year to participate in the United Nation's annual biodiversity conference.

Egypt has a rich history and has always led social and technological advancements in the world. It's believed to be one of the two places on earth where civilization — defined as the process of human beings taking charge of their natural environments and carefully developing them into planned societies with clear cultural and social structures — began before spreading to the rest of the world.

Egypt is also one of the areas where commercial agricultural production was born as ancient occupants of the land developed irrigation facilities along the River Nile to grow wheat, barley and other staple crops. And Egypt's history of applying innovation to ensure food security dates to biblical times, when it stored more than enough food for its own citizens and was able to feed the rest of the world during famine.

GMO maize in Egypt

Even in modern days, Egypt continues to lead the world in agriculture and innovative food production. In 2008, Egypt's Ministry of Agriculture approved the domestic cultivation of genetically modified corn. Two years later, Egypt became the second African country, after South Africa, to allow the commercialization of GMO foods (Bt maize). Its Bt maize, known as Ajeeb-YG, resulted from the genetic modification of a local corn variety. It showed almost 100 percent resistance to three main corn borer pests, and yielded better than conventional varieties.

Egypt's scientific community hailed the move and hope grew that the nation that exported civilization to the rest of the world would embrace agricultural biotechnology and lead the rest of Africa in that direction. Thousands of hectares of the new GMO corn variety were grown in 10 provinces in Egypt. But in 2012, the Egyptian government suspended the planting of GMO corn, citing the absence of a biosafety law governing the production and commercialization of such products. All other GMO focused works were halted and Egypt has not returned to the technology.

Hope not lost yet

But on my visit to Egypt, I saw and heard a few things that indicated Egypt could soon take its rightful place and lead the continent once more in ag biotech. First, a law on GM foods that was drafted in 2016 awaits introduction in parliament for approval so that work on GMOs can resume.

Secondly, I observed that Egypt faces such enormous climate challenges that it's going to need to adopt advanced science and technological innovations in order to continue growing food. Egypt is a desert, and more than 86 percent of the land is classified as dry. In fact, the ministry of agriculture estimates only about 4 percent of their land is perfectly suitable for food production. But the population continues to grow and more mouths need to be fed. As the old saying goes, necessity is the mother of invention, and GMO

technology like Water Efficient Maize for Africa (WEMA) that can rapidly produce drought-resistant crops will likely become increasingly attractive to Egyptians.

GMO wheat

In the mid-2000s, scientists at the Cairo Agric Genetic Engineering Research Institute inserted a gene from barley into a local wheat variety, making the latter drought-tolerant and requiring just one seasonal watering, compared to the usual eight. The variety was developed to do well in the desert with limited rainfall but it never got into the hands of farmers.

“The gap between supply and demand makes GM drought-tolerant wheat very important for increasing cultivation in areas where sub-optimal conditions such as water deficit, salinity or high temperature prevail,” Ahmed Bahieldin, a plant geneticist who worked on the variety, told SciDev.Net.

As Dr. Margaret Karembu, director of the International Service for the Acquisition of Agri-Biotech Applications (ISAAA) AfriCenter, told me when I met her in Egypt: “GMO technology can play a crucial role in helping communities deal with the challenges of everyday agric production. When you have drought-tolerant crops, farmers will be able to get more from their fields and ensure food security. And also Bt crops help reduce pesticide use on farms.”

Youth leading the way

But what really convinced me that Egypt will sometime soon re-introduce GMO crops was the love that the youth who know the technology have for it. At the International Congress Center in Sharm El-Sheik, I chanced on a seminar on GMOs organized by some students from Damanhour University. The students educated participants, including me, about the role GMOs can play in helping boost agricultural production in Egypt.

“We can use GMO for the development of our country and for developing our economy,” student Ahmed Belai told me. “We can talk about Bt cotton. We have a problem in Egypt with cotton, so we need to talk about how it is in India. Insert the gene from another plant to develop our local cotton to develop our economy. This (GMO technology) will prevent the larvae from destroying our crops and our cotton. Maybe it can help the farmer, so we don’t have to use pesticides on crops. Egypt can come back to exporting cotton. It will come back to give farmers benefits from crops. It will come back to help our clothing industry and our lives.”

Added Habiba Zaineleden, a student at the Faculty of Agriculture at Damanhour University: “GMOs decrease our release of pesticides into the environment. That is why it’s very special. It will protect the environment from many things, like pollution. Like the Bt cotton and Bt corn, these crops will be very important crops in Egypt. I think it’s about time that Egypt adopts GMOs. It doesn’t have any harmful effect on the environment. Adopting it will help our crops get back to specializing and be exported all over the world.”

What is clear is that there is both the need and passion to re-introduce GMO crops in Egypt, allowing that country to again lead Africa in agricultural innovations. The only outstanding point is “when.”

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