

■ OPINION

Government stance will discourage agribusiness' use of new plant-breeding technology

Innovative technology such as new breeding techniques must be allowed to be part of the solution to help meet national commitments to food security

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Picture: 123RF/KOSTIC DUSAN

SA's agricultural sector has thrived on productivity improvement, which has partially benefited from better breeding techniques over the years.

Breeding on its own has been part of human history for thousands of years. The first farmers selected the best wild species in nature and grew them year after year. In the process they selected the best-performing crops and plants to produce seed for the next season. By combining the best characteristics of two or three plants or lines, they developed new and improved varieties with increased yields.

With the knowledge base and better understanding of genetics, new techniques and methods are now available for use. The breeders started using biotechnology, marker-assisted and targeted breeding techniques to produce improved plant varieties with a view to

sustainable food production, nature conservation and environmental protection.

In SA, farmers quickly adapted to the new products derived from these breeding techniques, resulting in the country being one of the most food-secure countries in Sub-Saharan Africa. Being at the forefront of innovation in agriculture, SA was the first African country to cultivate genetically modified crops. Over the past 25 years these crops have been proven to lower production costs while needing fewer inputs and resulting in higher yield gains.

SA regulatory systems were always conducive to innovation and new technology which has allowed yields, especially of maize, soybean and cotton, to increase over the years. For example, before SA started growing genetically engineered maize crops in the 2001/02 season, its average maize yields were about 2.4-tonnes per hectare. Since then, the yields have improved to a national average of 5.9-tonnes per hectare. As a result, SA managed to produce nearly 20% of Sub-Saharan Africa's maize on only about 2.5-million hectares of land, and is a net exporter of the commodity, generating much-needed foreign earnings.

By contrast, the sub-Saharan average maize yield remains below 2-tons per hectare as the region hasn't yet adopted genetically engineered seeds. The yields in SA are mainly evident in major agricultural producers such as the US, Brazil and Argentina. Irrigation does not explain the discrepancy: only 10% of SA's maize is irrigated, the rest of the crop is rain-fed, like in the rest of Sub-Saharan Africa.

Aside from being purely genetically engineered, techniques such as marker-assisted breeding and gene mapping also allowed new, improved varieties that address specific needs, such as tolerance to particular diseases, to reach the farmer quicker. In a world of climate change and hunger, plant breeders contribute to improving and breeding crops so that SA can continue to feed its citizens and those of neighbouring countries.

To encourage and enable plant breeders to be innovative and provide the agricultural industry with improved crops, they should use all the toolsets available to them. Science-based policies are needed to regulate these new technologies and enable the government to seize the opportunities offered by these new developments in the plant

breeding arena to ensure a nation with access to affordable and sufficient amounts of food.

Disappointedly, in October 2021 the department of agriculture, land reform & rural development announced that all products derived from a wide, varied and evolving group of new breeding technologies would be evaluated under the risk assessment framework that exists for GMOs under the Genetically Modified Organisms Act. However, certain of these products will not have any DNA from another organism inserted into its genome. These products are similar to products derived from conventional breeding and therefore should not be regulated as GMOs.

The government's current policy stance will likely discourage SA innovators, plant breeders and agricultural businesses from using the new advances in plant-breeding methods due to cumbersome regulations with expensive risk-analysis processes.

World leaders in agriculture such as Brazil, the US, Argentina, Japan and Israel have exempted products derived by certain new breeding technologies where foreign DNA is not inserted into the plant cells to be classified as GMOs. Kenya, a minor player in global agriculture, will soon follow suit.

SA's decision to regulate all new breeding technique products as if they are GMOs is similar to that of the EU. Yet after Brexit the UK is also in the process of reviewing this decision. Suppose SA regulators follow suit. This would allow SA to remain among the world's leaders in agriculture and ensure that the sector thrives and continues to create much-needed employment in rural areas.

Consider Argentina, which saw a 51% increase in the products developed by Argentinian-owned companies over five years after following a science-based approach and not classifying products bred with new breeding techniques that could have occurred naturally as similar to GMOs. This is a path that SA should follow.

As agricultural challenges expand in the face of climate change, increased pest and disease pressure and a growing global population, innovative technology such as new breeding techniques must be allowed to be part of the solution to help meet national commitments to food security.

- *Dr Cilliers is a policy & research officer at the SA National Seed Organisation, and Sihlobo chief economist at the Agricultural Business Chamber of SA.*

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