

New technologies like gene editing have the potential to unlock more innovation and entrepreneurship in the agricultural sector than ever. But while scientists around the world are urging governments to relax regulation of manipulated crops, South Africa has instead opted to retain laborious and expensive regulatory processes. This could hinder both food security and climate change mitigation.

Last year the Department of Agriculture, Land Reform and Rural Development classified genome-edited (GE) plants as genetically modified (GM), meaning that they would be regulated under the Genetically Modified Organisms Amendment Act of 2006. Scientists and the food industry fear the move will hinder scientific innovation in South Africa, saying it is not in tandem with global practice around embracing new technologies that do not use genetic modification.

The act regulates the development and use of GMOs, defining them as “an organism, genes or genetic material which has been modified in a way that does not occur naturally through mating or natural recombination or both”. Based on this interpretation, the Executive Council of the GMO Act classified all new breeding technologies (NBTs) that include GE as part of GMO, carrying the same risk.

SPEEDING UP NATURAL PROCESSES

While GM crops insert foreign DNA to get desired characteristics like disease resistance or higher yields in plants, GE crops do not contain foreign DNA. Rather, these crops mimic changes that would occur through natural breeding and selection, albeit far faster since the DNA is edited directly in a laboratory. Because the final product is as natural as any other conventional crop, the global move has been to regulate them as conventional crops.

South Africa, alongside New Zealand and the EU, has classified GE products as GMOs while 20 other countries have put regulations in place to distinguish between selected GE products and GMO products. In Africa, Nigeria and Kenya have published regulatory guidelines on GE that make the distinction. Malawi and Ethiopia are considering similar systems.

Chantel Arendse, plant biotechnology lead at CropLife South Africa, describes the decision by the South African government as misaligned with international trends. “This decision is a problem because the blanket approach to have all products derived from NBTs regulated as GMOs has widespread implications in terms of cost, as well as the time it will take to have products registered



COULD SOUTH AFRICA'S GENE-EDITING REGULATIONS DECREASE LOCAL FOOD SECURITY?

According to some experts, South Africa's gene editing legislation is extremely short-sighted and doesn't bode well for food security concerns, reports BUSANI BAFANA

and approved in South Africa. It will also discourage the use of GE technology and investment in its use to develop specific products for the country.”

RISK VS REWARD

Scientists, and the food industry in particular, feel the legislation is short-sighted and that the government should have taken a science-based approach rather than a precautionary one, particularly because the legislation has far-reaching consequences for food security.

Some gene-edited crops are already on the market globally, with more nutritious tomatoes developed in Japan and a healthier soybean in Canada.

“If the South African government revised the regulations to exempt gene-edited crops that have no foreign DNA, this would lead to cheaper seeds, which would greatly benefit smallholder and subsistence farmers,” says Dave Berger, professor in the Department of Plant and Soil Sciences at the University of Pretoria.

Berger adds that if a pest- or disease-resistant maize cultivar was produced by gene editing with no insertion of foreign DNA, this would mean small or large scale farmers would not need to go to the expense or create the environmental impact of spraying pesticides.

The decision to regulate GE crops is touted to favour foreign multinationals more than local researchers and innovators who cannot afford to pay the regulatory burden. This is a problem for food security, as the seed companies could be forced either to abandon GE crops in South Africa or to pass on the high costs of regulatory approval for their GE seeds to farmers and consumers.

Dr Hennie Groenewald, CEO of Biosafety South Africa, says he would prefer to see “GMO” clearly defined on a product basis. “We should focus on the product and on its possible associated risks – this is why we have regulations – to manage concrete risks. We need to amend the act to accommodate GE sensibly as this technology reduces the bio-innovation barriers, including those of cost, technical and risk. What we need to do now is to reduce the regulatory barriers in a similar way.” ■

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