

## Genome Editing in Agriculture - International Perspectives and Lessons for Regional Alignment

The world of plant biotechnology is rapidly evolving, and these new innovations and technologies are becoming key in assisting farmers to meet the global food demand of a growing population. One of these promising technologies is genome editing, which in some instances differs from genetic modification in that only a small, controlled change is made to the organism's existing DNA similar to changes that are introduced through conventional plant breeding. The challenge, however, arises in how these new technologies should be regulated and more importantly, working towards global regulatory harmonisation to ensure that these innovations are not stifled and that policies disproportionate to safety concerns, are not implemented.

For this reason, CropLife South Africa hosted a webinar on 25 May 2021, to provide a platform where stakeholders in South Africa and the region could gain a better understanding of genome editing technology, get insight into best practices regarding policy in various regions, as well to encourage alignment in policy approaches.

The event was moderated by Ben Durham, the chief director of bio-innovation at the Department of Science and Innovation, and subsequently opened by the US Department of Agriculture's Chargé d'Affaires, Todd Haskell, who set the stage by describing the long-standing relationship between the US and South Africa. He indicated that in 2020 alone, over \$8 Million was achieved in bilateral agricultural trade between the two countries. He continued by describing how South Africa's adoption of proven scientific approaches in biotechnology has paved the way for its farmers to increase maize production exponentially over the past 20 years, resulting in South Africa being the continent's leader in plant biotechnology and a reliable supplier of maize across the region, and in the world.

Dr Julian Jaftha, the chief director of plant production and health at the Department of Agriculture, Land Reform and Rural Development, explained the considerations of regulating genome editing in South Africa in terms of the GMO Act of 1997. He acknowledged that developing this framework was still a work in progress and that one of the main questions that needed to be answered was whether or not genetically edited products or techniques should be regulated under the same Act, and if so, what kind of risk assessment route needed to be followed. At present, he said, a two-tiered approach is being considered, where the first tier would encompass the core information required to perform a basic risk assessment and the second would, if needed, include supplementary information based the characteristics or unintended use of the genetically modified organism. To date however, no formal application for registration under the GMO Act, 1997 for a genetically edited product has been received in South Africa.

Shedding some light on the responsibilities for the regulatory framework in Nigeria, was Dr Rufus Ebegba, the chief executive officer at the National Biosafety Management Agency. He illustrated the process map used in Nigeria that assists in deciding whether a product is considered genetically modified or not. Some of the considerations include whether there is a transgene or foreign DNA present, if the product uses the transgene temporarily and if the final product is free of the transgene. Alejandro Hernandez, the regional director of biotechnology for CropLife Latin America, followed with an informative presentation about the regulation approaches in Central and South America. He highlighted that some legislation discriminates between genome edited and genetically modified products by analysing whether the final product can result from conventional breeding, mutations or natural intervention. He emphasised the importance of definitions and specific wording contained in the regulations and provided examples from countries such as Honduras, Brazil, Chile, Colombia and Argentina, who follow the same consultation approach regarding whether the final product is considered a GMO or not.

Dr Donald Mackenzie, the executive director at the Institute for International Crop Improvement concluded the day by suggesting that conversations around genome editing and plant breeding

innovations should be rooted within the historical context of plant breeding and crop improvement. He further explained that the vast majority of market-oriented plant breeding innovations are mutations that are indistinguishable from the kinds of mutations produced using classical mutation breeding. He concluded by suggesting that the science should be followed and the learnings of more than three decades of regulating GMOs, should be captured.

The next webinar in this series will be hosted on 22 June 2021 and will focus on how genome editing in agriculture can enable opportunities for agricultural innovation in South Africa.

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**Note to Editor:**

CropLife South Africa is a non-profit industry association that serves and represents responsible manufacturers, suppliers and distributors of sustainable crop protection and plant biotechnology solutions in South Africa. It strives to enable its members to be providers of environmentally compatible solutions that ensure sustainable, safe and affordable food production, and therefore food security.