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NEW DAWN FOR SUSTAINABLE BIOTECH INNOVATION IN SOUTH AFRICA

Participants in the second National Biosafety Symposium, organised by Biosafety South Africa in Pretoria on Thursday, 14 March, agreed that recently developed genome editing and other biotechnologies hold great potential for South Africa when products are developed and used within a framework that ensures their sustainability.

The Symposium offers a unique opportunity for the whole spectrum of role players, required for sustainable biotech innovation, to engage. Sustainability in the biotech context refers to products that adhere to the minimum prescribed standards for food and environmental safety, as well as those for socio-economic viability. Biotech innovators, regulators, sustainability researchers and science communicators therefore have to collaborate closely to ensure the sustainability of biotech products.

The focus topic of this year's symposium was **genome editing** - a technology that enables the accurate introduction of specific changes in gene sequences, which in turn result in desirable change(s) in the organism's characteristics. Examples of local research discussed by Dr Victoria Maloney from the University of Pretoria included disease and pest resistant crops, trees with improved pulping characteristics and the production of high-value compounds in plants.

Prof Michael Pepper, also from the University of Pretoria, addressed the ethical, legal and social implications of **human** genetics research and innovation in the keynote address and presented the recommendations of a recent, analogous study commissioned by the Academy of Science of South Africa. These include practical interventions such as incorporating these topics in school curricula to improve public understanding and refining consent models for patients to ensure responsible use of genetic technologies. However, he also challenged the audience with more philosophical concepts. Suggesting, for example, that one should rather consider oneself as a custodian of your genetic material than being the owner of it. This means one cannot make decisions regarding your genetics, including diagnosis of genetic diseases and germ line interventions without considering or even consulting, where possible, with one's relatives, descendants and even genetically related community.

A group of environmental sustainability researchers from North-West University presented research results on the invasion potential and damage risk of Fall armyworm, the invertebrate biodiversity in soybean fields and the uniformity of the soil microbial diversity in GM and non-GM maize fields.

The Department of Health's Food Control Unit presented their findings of a recent study on residue levels of GMO-associated herbicides in maize products - finding that residues are mostly undetectable and even when detectable, they are more than two orders of magnitude below the national maximum allowable residue levels.

Ms Leah Bessa, co-founder of the start-up biotech company, Gourmet Grubb that is developing insect-based foods, discussed the regulatory and acceptance challenges faced by entrepreneurs involved with such disruptive innovation. She also appealed to regulators to develop formal consultation opportunities for start-up companies.

Biotechnological developments offer great potential for innovation, but technical, financial, regulatory and other hurdles can be significant. Innovators therefore have to consider these pro-actively to design and develop their products accordingly. A policy environment conducive to sustainable innovation, as envisaged in the Bioeconomy strategy, and a multi-disciplinary approach to biotech innovation is therefore critically important to ensure success and sustainable growth in the South African biotech sector.



Biosafety South Africa is a national service provider under the auspices of the Department of Science and Technology, with the mandate to enable safe, sustainable and compliant research, development, production, use and application of biotechnology. www.biosafety.org.za

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