UGANDA NATIONAL COUNCIL
FOR SCIENCE AND TECHNOLOGY

Policy Brief

Unlocking the Potential in Agricultural Biotechnology through Robust Regulatory Frameworks in Uganda

Authors: Ronald Jagwe & Linda Amanya

Executive Summary:

Agricultural biotechnology can revolutionize farming practices, ensuring food security, environmental sustainability, and economic growth. From disease free crops, to improved yields and nutritional enhancement, biotechnological innovations provide solutions to numerous agricultural challenges.

It is imperative that Uganda establishes a comprehensive policy framework to regulate the development and uptake of these technologies.

This policy brief highlights the urgent need for regulations that balance innovation with ethical and environmental concerns, ensuring responsible development and deployment of agricultural biotechnology in our nation.

Introduction:

The World Health Organization observes that 'modern methods of biotechnology enable accelerated development of food products with recombined or improved traits with an increased specificity compared with conventional techniques' (WHO, 2005).

Similarly, the African Union Development Agency (NEDAP) calls for African governments to fully integrate biotechnology into Africa's agricultural development agenda to ensure that food and nutrition security is attained across the continent (AU, 2020).

Despite numerous national and international admissions on its benefits, the use and deployment of modern agricultural biotechnology remains low.

Rapid development of biotechnology demands a proactive regulatory approach. Unregulated utilization can lead to unintended environmental consequences, loss of biodiversity, and ethical dilemmas.

Developing and implementing robust regulatory frameworks is essential to harness the benefits of biotechnology while safeguarding our environment and society.

Uganda stands at a critical juncture regarding the regulation of agricultural biotechnology. With the rapid development, deployment and commercialization of biotechnology products in neighbouring countries like Kenya and Rwanda, the absence of a comprehensive regulatory framework poses a significant risk, in terms of unregulated use and delay in penetrating new markets for biotechnology products developed in Uganda.

Figure SEQ Figure ARABIC 1: Bacterial wilt resistant GM bananas at NaCRRI

Crop	Trait	Period of Research	Regulatory Status
Banana	Bacterial wilt resistant	2010 to date	Multi-location CFTs
	Resistant to nematodes	2012 to date	CFT
	Pro-vitamin A enhancement	2011 to date	Multi-location CFTs
	Black sigatoka resistance	2007 to 2010	CFT
Maize	Drought tolerance and insect resistance stack	2015 to 2019	Multi-location CFTs
Cassava	Brown streak disease resistance	2010 to date	Regulatory field trials
Cotton	Herbicide tolerance & resistance to bollworms	2009 to 2010	Multi-location CFTs
Potato	Late blight resistance	2015 to 2019	Multi-location CFTs
Rice	Nutrient and water efficiency	2012 to date	CFT
Soybean	Herbicide tolerance	2016 to date	CFT application

Status of the regulatory framework – Genetic Engineering Regulatory Act (2018):

Uganda has ratified international frameworks such as the Cartagena Protocol and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits. The country has made efforts to establish a fully functioning biotechnology regulatory framework for nearly 26 years, however, no stand-alone law exists to regulate research and development activities using genetic engineering (GE).

The National Biotechnology and Biosafety Bill (2012) – passed into an Act in 2017 and later renamed the "Bill for the Genetic Engineering Regulatory Act (GERA, 2018)," lapsed in the 10th Parliament in May 2021 following a decision to decline assent twice and failure by Parliament to override the President's veto. GERA (2018) addressed agriculture and aspects of human and environmental safety but did not address aspects of human genome manipulation research and regulation.

Currently, a technical committee under the leadership of Office of the Prime Minister has been formed including Uganda National Council for Science and Technology, Ministry of Agriculture, Animal Industries and Fisheries, Ministry of Health, Ministry of Defense and Veteran Affairs, Ministry of Water and Environment, Science, Technology, and Innovation- Office of the President, Private Sector Foundation among others to revise the GERA (2018).
This committee is set to table the revised Act before the cabinet for its approval.

Key Policy Implications:

A biotechnology policy in Uganda need to consider the following:

1. **Sustainable Agriculture:** Biotech crops designed for pest and disease resistance promote sustainable farming practices, reduce chemical usage, and enhance soil health.
2. **Environmental Protection:** Regulation is vital to prevent the unintended spread of genetically modified organisms (GMOs) to non-target areas, safeguarding our natural ecosystems and biodiversity.
3. **Ethical Considerations:** Addressing ethical concerns, including the potential misuse of biotechnology, ensures responsible research and application, fostering public trust and acceptance.
4. **Public Health and Safety:** Regulations will guarantee that biotech products are thoroughly tested for safety before entering the market, protecting public health, and ensuring the quality of our food supply.
5. **Research and Innovation:** A well-regulated environment encourages responsible research, innovation, and knowledge exchange, fostering a culture of continuous improvement in agricultural practices.
6. **International Collaboration:** Aligning our regulations with international standards facilitates collaboration with the global biotechnology community, enhancing our nation's standing in the field.
7. **Innovation and investment:** Clear regulations attract investment and foster innovation. Agricultural biotechnology has the potential to significantly enhance crop yields, reduce pesticide usage and mitigate climate change impacts.
8. **Trade and Economic Competitiveness:** Harmonizing regulations with neighbouring countries fosters regional trade and ensures Uganda's agricultural products remain competitive in the global market.

Recommendations:

1. **Develop a Comprehensive Regulatory Framework:** Establish a multidisciplinary regulatory body comprising scientists, ethicists, policymakers, and representatives from civil society to develop and implement comprehensive regulations for agricultural biotechnology.
2. **Transparency and Public Engagement:** Ensure transparency in the regulatory process and actively engage with the public and stakeholders. Public awareness and understanding are key to fostering acceptance and addressing concerns.
3. **Capacity Building:** Invest in building the capacity of regulatory agencies, research institutions, and farmers to understand, apply, and monitor biotechnological practices effectively.
4. **Monitoring and Evaluation:** Implement a robust monitoring and evaluation system to assess the impact of biotech products on the environment, agriculture, and society. Regular evaluations will inform policy adjustments and ensure ongoing effectiveness.
5. **Stakeholder Engagement:** Involve farmers, scientists, consumer groups and industry stakeholders in the policy making process, ensuring a balanced and inclusive approach.
6. **International Collaboration:** Foster collaboration with international regulatory bodies and organizations to stay updated on global best practices, ensuring our policies remain aligned with international standards.

Conclusion:

The Food and Agriculture Organization of the United Nations (FAO) notes that 'when appropriately integrated with other technologies for the production of food, agricultural products and services, biotechnology can be of significant assistance in meeting the needs of an expanding and increasingly urbanized population…', (FAO, 2000).

With neighbouring countries like Kenya and Rwanda setting regulatory precedents and successfully commercializing some of the technologies, the time is ripe for Uganda to reconsider its policy stance.

Developing and implementing a regulatory framework that balances innovation with ethical and environmental considerations is crucial for the successful integration of agricultural biotechnology into national agricultural practices. By enacting a comprehensive and proactive regulatory policy, Uganda can harness these benefits responsibly and transform Ugandan society from a peasant to a modern and prosperous country.

OPEN FORUM ON AGRICULTURAL
BIOTECHNOLOGY IN AFRICA

UGANDA NATIONAL COUNCIL
FOR SCIENCE AND TECHNOLOGY