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Report Highlights:

The Government of Tanzania continues to implement strict liability requirements on the commercialization of genetically engineered products, as outlined in the 2009 Biosafety Regulations. There are no genetically engineered products imported or commercialized in Tanzania. However, applied biotechnology is used for medicine and public health.

EXECUTIVE SUMMARY

Under the Tanzania Biosafety Regulations of 2009, any entity that produces, commercializes, imports, or conducts any activity relating to biotechnology products is strictly liable for a wide-ranging scope of possible direct and indirect harms. This liability requirement has functioned as a *de facto* ban on agricultural biotechnology products in Tanzania and hinders consumer's rights to choose alternative food and feed since 2009.

Frequent relaxation and tightening of restrictions by the government of Tanzania has posed negative impacts on domestic genetic engineering (GE) research. Several sources informed Post about recurring frustrations among prominent researchers and lecturers on doing GE research, and potential use of applied biotechnology in the country. Instructions from the Minister of Agriculture to Tanzania Agriculture Research Institute (TARI) to reinstate GE trials at Makutupora and Mikocheni research stations have not been implemented since they were communicated in September 2022.

In Tanzania, the debate around GE technologies is largely non-science based. Anti-biotech organizations funded by advocacy groups negatively spread controversial messages that target policymakers, consumers, and farmers to discourage and disorient information against the use of agricultural biotechnology. On the other hand, some Tanzanian scientists and policymakers have advocated for a science-based approach to biotech products via the Biotech Society of Tanzania, and the Vice President's Office. The Environment Division under the Vice President's Office is the National Biosafety Focal Point and the competent authority regarding the approval and use of agricultural biotech products.

Tanzania's 2021 National Environment Policy suggests that modern biotechnology is an important tool for research and improved productivity in various sectors, including agriculture and medicine. Commercialization of biotech products, however, remains blocked due to Tanzania's strict liability clause and the lack of specific policy guidance for the safe use and handling of modern biotechnology.

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CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

a) RESEARCH AND PRODUCT DEVELOPMENT

Since 2021, despite numerous public statements from the Minister of Agriculture on lifting the Genetically Engineered (GE) research ban in Tanzania, there are no GE crops under development. The confined field plot at Makutupora and GE laboratories at Mikocheni are currently used for other-than-intended activities, such as animal grazing and non-GE experimentation respectively. Prior to the 2021 ban, researchers from Tanzania Agricultural Research Institute (TARI) made remarkable developments on several GE products, including drought-tolerant maize and brown streak-resistant cassava. Those advances include:

- 1. Development of cassava varieties with durable resistance to cassava mosaic disease (CMD) and cassava brown streak disease (CBSD) at the genetic engineering laboratory at TARI-Mikocheni, Dar es Salaam.***

The TARI-Mikocheni Laboratory was officially opened in 2013. The laboratory was co-funded by the Government of Tanzania, Association for Strengthening Agricultural Research in Eastern and Central Africa, Rockefeller Foundation, and the Bill & Melinda Gates Foundation. The contained GE research funded by the Gates Foundation to develop genetically modified cassava varieties with durable resistance to two devastating diseases was closed in 2018. Since then, there has not been any GE research at the laboratory.

- 2. Testing of drought and insect resistant maize varieties in confined field trials at TARI-Makutupora, Dodoma.***

From 2008 to 2018, the Commission for Science and Technology and TARI implemented the Water Efficient Maize for Africa (WEMA) project in collaboration with national agricultural research institutions from Kenya, Uganda, Mozambique, and South Africa. The project was funded by African Agricultural Technology Foundation through a grant from the Gates Foundation, USAID, and the Howard G. Buffett Foundation. It aimed to develop and deploy drought-tolerant and insect-resistant maize varieties royalty-free to small-scale farmers. Through the WEMA project, Tanzania developed its first ever and only confined field trial at TARI Makutupora Centre. Through this project, Tanzanian researchers have acquired knowledge and expertise to conduct field trials in compliance with the 2009 biosafety regulations and guidelines.

Since 2019, TARI-Makutupora has been participating in the TELA project, a follow-up project to WEMA. The name TELA is derived from the Latin word tutela, which means “protection.” According to [the International Maize and Wheat Improvement Center](#), the TELA Maize Project is a public-private partnership led by the African Agricultural Technology Foundation working towards the commercialization of transgenic drought-tolerant and insect-protected maize varieties to enhance food security in sub-Saharan Africa. However, funding for the Tanzania TELA project was suspended pending further amendment of the Tanzania 2009 Biosafety Regulations to adopt fault-based liability instead of strict liability.

3. Tissue Culture and Micro Propagation

The tissue culture techniques have been widely used in Tanzania to develop disease-free planting materials and to speed up crop production. Several public and private institutes like the Mikocheni Agricultural Research Institute in Dar es Salaam; the Mlingano Agricultural Research Institute in Tanga; Uyole Agricultural Research Institute in Mbeya; the Tengeru Horticulture Research Institute in Arusha; the Kizimbani Agriculture Research Station in Zanzibar; the Tanzania Plant Health Protection Authority in Arusha; the Sokoine University of Agriculture in Morogoro; the Tanzania Coffee Research Institute in Kilimanjaro; and the Crop Bioscience Solutions Ltd in Arusha has done tremendous investments in use of tissue culture and micropropagation technologies in Tanzania.

4. DNA Markers and Marker-Assisted Technologies

In Tanzania the DNA markers and marker-assisted technologies are still in infant stages. Very few livestock, human, and agricultural research institutes have invested in DNA marker technology for academic, research and development activities. These institutes are Central Veterinary Laboratory, the Molecular Biology and Biotechnology Department at the University of Dar es Salaam, Ifakara Health Research Development Centre, Mikocheni Agricultural Research Institute, and the Sokoine University of Agriculture.

5. Genomics and Bioinformatics

Tanzania's genomics capacity is still under development. The Sokoine University of Agriculture has established a state-of-the-art genome science center which provides training on functional genomics to postgraduate students. The center has facilities for cDNA work, printing microarrays using a high throughput GENETIX microarray, and four-color scanning arrays.

b) COMMERCIAL PRODUCTION

There is no commercial production of GE crops in Tanzania, due to the strict liability clause in the 2009 Tanzania Biosafety Regulations.

c) EXPORTS

There are no exports of GE crops from Tanzania to any country.

d) IMPORTS

The 2009 Biosafety Regulations is a *de facto* ban on imports of plant biotechnology products. Imports are subject to an arduous approval process and the liability requirements which have together deterred GE imports.

e) FOOD AID

Tanzania is not a significant food aid recipient country. Genetically engineered food and feed assistance introduced into Tanzania must comply with the above-informed consent principle and the notification requirement per Article 8 of the Cartagena Protocol on Biosafety of 2000. Food and feed consignments

involving grain that contain GE products must be milled before distribution to beneficiaries. A person or company transporting GE products through Tanzania to other countries must inform the National Biosafety Focal Point in advance and comply with relevant national requirements relating to containment and transport. Tanzania's strict liability clause also applies to shipments transiting Tanzania, deterring transshipment of GE products.

f) TRADE BARRIERS

The strict liability clause in the Biosafety Regulations of 2009 is a *de facto* ban on the commercialization of GE products for local production or import. Under this regulation, "any person or his agent who imports, transits, makes contained or confined use of, releases, carries out any activity concerning GMOs [sic] or products thereof or places on the market a GMO shall be strictly liable for any harm, injury or loss caused directly or indirectly by such GMOs or their products or any activity concerning GMOs. The harm, injury, or loss includes personal injury, damage to property, financial loss, and damage to the environment or biological diversity and takes into account socio-economic, cultural, and ethical concerns."

The broad scope and open-ended penalties of the regulation reflect a precautionary principle approach to risk management, which puts a priority on anticipating and guarding against hypothetical risks, even if there is no evidence of risk. The potential penalties under the liability clause of the Biosafety Regulations of 2009 effectively stifle research, trade, and production, as it exposes GE-related activity to open-ended legal risks.

PART B: POLICY

a) REGULATORY FRAMEWORK

[Tanzania published its Environmental Management Regulations in 2009](#). These regulations apply to the import, export, deliberate release, confined use, contained use, transit, and commercialization of GE products. In the Vice President's Office, the Environment Division is the National Biosafety Focal Point and the National Competent Authority. It provides the Biosafety Clearing House with required data for the Cartagena Protocol. The National Biosafety Focal Point manages national policies related to biosafety and the regulatory regime; administrative, decision-making, and monitoring responsibilities; and mechanisms for public awareness, education, and participation.

The regulatory regime for the application of Modern Biotechnology in Tanzania is guided by the following principles:

- i. *Precautionary principle*: This is implemented through the decision-making system, particularly in accordance with the procedure for risk assessment, risk management and evaluation of socio-economic risks.
- ii. *Preventive principle*: Prevention of adverse effects of GE events on environment and human and animal health.
- iii. *A balanced approach*: Such approach recognizes both the potential benefits and risks of modern biotechnology to human and animal health, agriculture, biological diversity and the environment.

- iv. *Prior informed consent*: The exporting party shall notify the National Biosafety Focal Point prior to the first intentional transboundary movement of GE products. A failure to acknowledge receipt of a notification should not imply consent to importation of these products.
- v. *Strict liability*: A person who imports, arranges transit, makes contained use of releases or places on the market a GE product shall be strictly liable for any harm caused by such product. The harm shall be fully compensated.
- vi. *Socio-economic and ethical considerations*: the social, economic and ethical considerations shall be taken into account in biosafety decisions.
- vii. *Transparency and Public Participation*: Any decision taken under the National Biosafety Framework (NBF) shall be arrived at in a transparent and participatory manner. All relevant stakeholders shall have appropriate access to information and an opportunity to participate in biosafety decision-making process.
- viii. *Duty to protect the environment*: Every person living in Tanzania shall have a stake and a duty to safeguard and enhance the environment and to inform the relevant authority of any activity and phenomenon that may affect the environment significantly.

Tanzania's Approval Process for GE Products

To import, commercialize, environmentally release, or cultivate a GE product under contained use, the following steps must be followed to obtain approval from the [National Biosafety Focal Point](#) and the Minister of State for the Environment:

- i. Any person who intends to import, export, transport, release, use in contained condition, confined condition, or place on the market GE products shall submit an application in writing to the National Biosafety Focal Point. The application should contain:
 - General information;
 - Information relating to the product;
 - Information relating to the conditions of release, contained use, or commercialization and, where appropriate, the receiving environment;
 - Information on the interaction between the GE product and the environment;
 - In case of an application for contained use, an impact assessment setting out the consequences of unintentional release of the GE product;
 - A report on the impacts and risks posed by the product to human and animal health, biological diversity, and the environment;
 - Information on results from deliberate release in the country and internationally of the product previously or currently carried out by the applicant;
 - Information on previous approvals or rejections of the product by any other country, where approval is sought;
 - Information on where and for what purposes the GE product will be marketed, together with detailed instructions for use and proposed labeling and packaging, and
 - Other information as may be required by the National Biosafety Focal Point.

- ii. Public feedback must be solicited and considered:
- The National Biosafety Focal Point shall, upon receipt of the application, make the application available to the public.
 - Any person may, within three months or such other period as may be specified, make comments on the application to the National Biosafety Focal Point.
 - The National Biosafety Focal Point shall also provide public consultation through the national media or the Biosafety Clearinghouse before the decision is made.
 - The National Biosafety Focal Point shall also undertake consultations with expert bodies that are concerned with the preservation of the natural environment, human and animal health, and representatives of the farming industry.
 - Any comment made by the public according to the preceding provisions of this regulation shall be considered by the National Biosafety Focal Point before making its decision.
 - The National Biosafety Focal Point shall promote and facilitate public awareness, education, and participation concerning the safe transfer, handling, and use of GE products.
- iii. The Government of Tanzania must disclose the following information to the public:
- Information on all GE products that have received or been denied authorization for import, deliberate release (including the location of the release), placing on the market or contained use, and the risk assessment for products. To see all the disclosed information, please visit the [National Clearing House website](#).

Risk Assessment of GE Products in Tanzania

Applicants who wish to introduce GE products into Tanzania, at their own cost, must assess the impacts and risks posed by the GE products to human and animal health, the environment, and biological diversity. The applicant must prepare and submit this assessment to the National Biosafety Focal Point. Before any deliberate release of GE events into the environment, a thorough study on the impacts of the following will be conducted:

- Ethical and social-economic impact on the local population;
- Traditional market and export earnings;
- Health;
- Production systems;
- Ethical, moral, and social considerations; and
- The economic value of traditional species likely to be affected by the introduction of product must be estimated by the competent authority.

Decision Making Procedure

According to the [Biosafety Regulations of 2009](#):

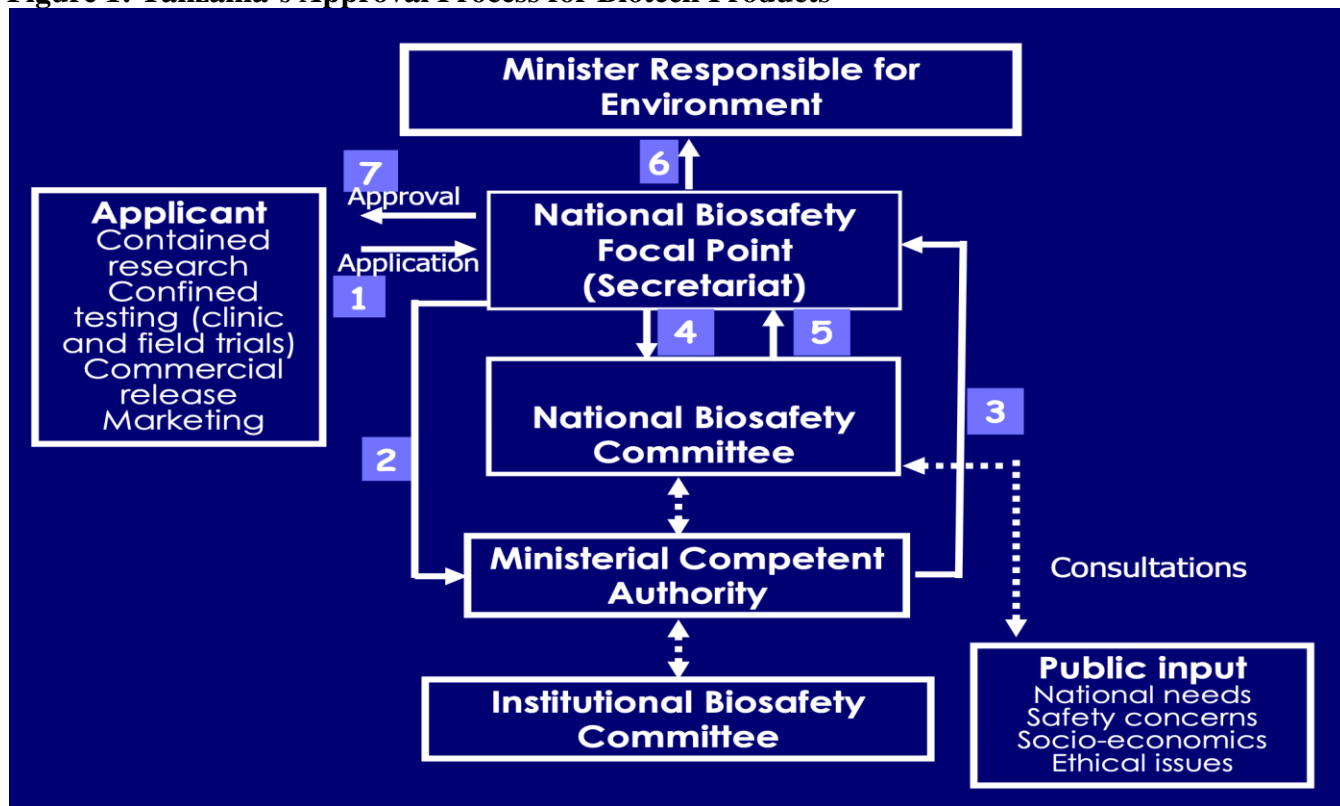
- The National Biosafety Focal Point shall appoint a Competent Authority (currently the Tanzania Bureau of Standards) to evaluate GE products. The National Biosafety Focal Point shall inform

the applicant in writing of its decision that the import, export, transit, release, commercialization, or contained or confined use of the product is:

- approved;
 - approved with such conditions as it may specify; or
 - refused.
- Approval shall be given where there is firm and sufficient evidence that the products pose no risk to human and animal health, the environment, and biological diversity.
 - The National Biosafety Focal Point may direct that the activity approved shall be carried out step-by-step so that an assessment of risks may be conducted at each step.
 - The National Biosafety Focal Point may, in appropriate cases, where it is satisfied that no risk is posed to human and animal health, biological diversity, and the environment dispense with the step-by-step introduction of the GE products.
 - Any approval for release or contained use shall require the applicant to carry out monitoring and evaluation of risks after the products have been imported, released, used in conditions, or placed on the market.
 - The National Biosafety Focal Point shall, as a condition for approval, require the applicant to take out an insurance policy against liability to pay compensation for damages.
 - The applicant shall not carry out any activity with GE products until approval for doing so has been obtained under these regulations.
 - Any approval given shall either be revoked or subjected to conditions in addition to those originally imposed if, in the opinion of the National Biosafety Focal Point, new information or a review of existing information about the product establishes risks to human or animal health, biological diversity or the environment, based on the precautionary principle stated by the Biosafety Regulations of 2009.
 - If any approval is revoked, the National Biosafety Focal Point may also, where applicable, order the destruction of any growing organisms and the sterilization of the soil in which they are being grown, in whatever way it deems appropriate.
 - No compensation shall be payable as a consequence of the revocation of approval or order for sterilization.
 - The applicant shall immediately notify the National Biosafety Focal Point when new information becomes available on the possible risks to human or animal health, biological diversity, or the environment, as well as taking into account socio-economic, cultural, and ethical concerns after the approval has been granted.
 - Any person who is aggrieved by any decision of the National Biosafety Focal Point under this part may at any time within thirty days beginning from the date on which communication of notification of the decision was made can appeal to the Minister of the Environment. A person who is aggrieved by the decision of the Minister may within thirty days following that decision, appeal to the Environmental Appeals Tribunal in such manner as may be prescribed by the Tribunal.

More information can be found in Government of Tanzania websites <https://tz.chm-cbd.net/en/guideline-and-manuals> and <https://tz.chm-cbd.net/sites/tz/files/2022-06/national-biosafety-framework.pdf>

Figure 1: Tanzania’s Approval Process for Biotech Products



Source: National Clearing House Mechanism

Common terms used in Tanzania’s Biotechnology:

Table 1 shows common terms used in Tanzania’s regulatory framework in biotechnology. These terms can be found in the following legal documents:

1. The Environmental Management (Biosafety) Regulations, 2009.
2. The National Biotechnology Policy of 2010.
3. The Tanzania National Biosafety Framework, 2004.
4. The National Environmental Policy, 2021.
5. The Environmental Management Act (Cap. 191).

Table 1: Legal Terms Used in Tanzania’s Regulatory Framework

Legal Term in English / Official Language	Legal Definition in English
Advance Informed Agreement (AIA)	A consensual agreement based upon full disclosure of all relevant information and the full responsibility by the supplier for its accuracy and completeness before any activity is undertaken.
Adventitious presence of “GMOs”	The threshold levels set by the Vice President’s office as mandated by Regulation 45 of the 2009 Biosafety Regulations.
Applicant	A person or country applying for approval to make, import, export, use under containment, use under confinement, release, or place on the market any “GMO” or any product of any “GMO.”
Biosafety	The avoidance of risk to the environment and human and animal health,

	resulting from use for research or commerce of “GMOs”.
Biotechnology	Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.
Confined use/Contained use	Any operation in which “GMOs” or their products are produced, grown, stored, destroyed, or used in some other way in a closed system in which physical barriers are employed, either alone or together with chemical and/or biological barriers, to effectively limit their contact with and their impact on the general population, biological diversity, and the external environment.
Competent Authority	The ministerial competent authority designated as such under Regulation 11 of the 2009 Biosafety Regulations.
Deliberate Release or Release	Any intentional introduction into the environment of a “GMO” or a product thereof. This includes releases for commercial purposes; food aid; import; export; transport; research purposes in field experiments; and use of “GMOs” in greenhouses and livestock and aquaculture facilities, unless the facility is approved for contained use as part of an approved laboratory or other installation.
Genetically Modified Organism (“GMO”)	Any biological entity capable of replication or transfer of genetic information created and propagated using cell or gene technology in which the genetic material has been altered in a way that does not occur naturally. This includes plants, animals, bacteria, cell cultures, viruses, plasmids, and all other kinds of vectors and microorganisms.
Gene Technology	Techniques that involve the isolation, characterization, modification, and introduction of DNA into living cells or viruses.
Cell Technology	Techniques for the production of living cells with new combinations of genetic material by the fusion of two or more cells.
Import	Intentional transboundary movement of “GMOs” and “GMO” products into Tanzania from another country.
Importer	Any person who imports or arranges for the importation of a genetically modified organism replicating genetic material including sterile biological entities, viruses, viroids, and plasmids.
Inspector	An environmental inspector appointed or designated as such under the provisions of the Biosafety Regulations of 2009.
Modern Biotechnology	The application of: a) In vitro nucleic acid techniques including recombinant deoxyribonucleic acid (rDNA) and direct injection of nucleic acid into cells or organelles, or b) The fusion of cells beyond the taxonomic family.
National Biosafety Focal Point	The Office of the Vice President.
National Biosafety Framework (NBF)	A combination of policy, legal, administrative, and technical instruments that are set in place to address safety for the environment and human and

	animal health in the context of modern biotechnology.
Notification	The provision of information to, and where appropriate, the lodging of samples, with the NBF or competent authority.
Person	Legal entities and local communities.
Placing on the Market	Supplying or making available to third parties a “GMO” or a product thereof, whether there has been a monetary exchange or not, including food aid.
Product thereof / product of “GMO”	Any material derived by processing, or howsoever otherwise, from any ‘GMO’ or a product of a “GMO.”
Public Awareness	The process of imparting relevant information to stakeholders about biotech issues.
Public Participation	A process of encouraging all interested and affected parties to contribute to solving social problems and taking on responsibilities for action. Public participation in the context of the NBF, aims to encourage the public and interested stakeholders to be aware of, and contribute to, the research, development, implementation, and monitoring of the policy framework.
Risk	A function of the probability of harm and the severity of that harm, consequential to the transport, handling, use, or disposal of a “GMO.”
Risk Assessment	The evaluation of the direct and indirect risks to human and animal health, the environment, biological diversity, and the socio-economic conditions and ethical values of the country or its populace which may be posed by the import, contained use, deliberate release or placing on the market of “GMOs” or products thereof. This includes the evaluation of secondary and long-term effects.
Socio-economic Impact	The direct or indirect effects on the economy, social or cultural practices, livelihoods, indigenous knowledge systems, or indigenous technologies as a result of the import, release, contained use, handling, or placing on the market of “GMOs” or their products.
Transboundary Movement	The movement of a “GMO” to or from a territorial jurisdiction of Tanzania.
Transit	The transportation, by whatever means, of a “GMO” into Tanzania from any other jurisdiction to convey such a “GMO” to any third jurisdiction.
Unintentional Release	A release that takes place without authorization under the Biosafety Regulations of 2009 and takes place as a result of the adventitious presence of “GMOs” with non-“GMO” shipments imported for direct use as food, feed, or for processing, excluding accidents.

Source: Tanzania National Clearing House Mechanism

b) APPROVALS

No GE plants are approved for cultivation, import, or export in Tanzania.

c) STACKED EVENT APPROVALS

No stacked events are approved for cultivation, import, or export in Tanzania. Stacked events are subject to case-by-case reviews. Depending on the character of the trait, the National Biosafety Committee may require extra information for approvals. Tanzania is in the process of developing relevant regulations on stacked events.

d) FIELD TESTING

In 2016, The Government of Tanzania allowed the Tanzania Agricultural Research Institute to conduct field testing of drought tolerant GE corn. The trials were implemented for five years. In 2021 the Government of Tanzania banned the testing. Currently, there are no GE field trials in Tanzania. The 2016-2021 trial was on a two-hectare confine field plot at Makutopora research station, Dodoma Tanzania.

Table 2: Genetic Engineered Trials in Tanzania (2016-2021)

Plant	Trait	Developer	Stage	Number of trials
White maize/corn	Drought tolerant	Bayer	CFT	4
White maize/corn	Stack (Drought tolerant and insect resistant)	Bayer	CFT	3
Cassava	CBD/CMD resistant	TARI	Lab	0

Source: Tanzania Agricultural Research Institute (TARI)

e) INNOVATIVE BIOTECHNOLOGIES

At the time of writing this report, there are no regulations or policies specific to innovative biotechnologies in Tanzania.

f) COEXISTENCE

The Government of Tanzania has issued GE handling guidelines regarding the coexistence between GE and conventional crops. If GE crops are commercialized, smallholder farmers will likely require assistance to comply with these guidelines.

g) LABELING AND TRACEABILITY

Labeling is required for bulk shipments, raw materials, packaged food or feeds, or other products derived from and/or containing ingredients from GE plants. Currently, there are no legal GE products on the market.

h) MONITORING AND TESTING

Monitoring for GE products is required in supermarkets and at points of entry. The Tanzania Bureau of Standards (TBS) monitors and tests agricultural commodities and food product imports at ports of entry. The Tanzanian government has limited personnel and testing facilities for evaluating agricultural products for GE content.

i) LOW-LEVEL PRESENCE POLICY

Tanzania has no low-level presence policy.

j) ADDITIONAL REGULATORY REQUIREMENTS

Genetically engineered crops and products are subject to national laws that apply to conventional products such as the Tanzania Food and Drug Act, regulations covering the release of new crop varieties, and other relevant regulations.

k) INTELLECTUAL PROPERTY RIGHTS

Tanzania is a member of the World Trade Organization (WTO), Agreement on Trade-Related Intellectual Property Rights (TRIPS). Tanzania does not have a national intellectual property policy . However, several institutions play a role in intellectual property issues including:

- The Business Registrations and Licensing Agency.
- The Commission for Science and Technology.
- The Copyright Society of Tanzania.
- The Fair Competition Commission.
- The Fair Competition Tribunal.
- The Ministry of Agriculture through the Plant Breeders Rights Regulation.
- The Tanzania Bureau of Standards.
- The Tanzania Food and Drugs Authority.
- The Tanzania Revenue Authority.
- The Commercial Court (under the High Court of Tanzania).
- The University of Dar es Salaam.
- The Sokoine University of Agriculture.
- The Nelson Mandela African Institution of Science and Technology.
- The National Institute of Medical Research.
- The Tropical Pests Research Institute.

l) CARTAGENA PROTOCOL RATIFICATION

The Cartagena Protocol on Biosafety was ratified by the National Parliament of Tanzania on March 16, 2003. The protocol came into force on September 29, 2003 after being adopted on January 29, 2000 as a protocol of the Convention on Biological Diversity. The National Biosafety Focal Point is Tanzania's focal point of the Cartagena Biosafety Protocol and shares data with the Biosafety Clearing House, a mechanism set by the Cartagena Biosafety Protocol to facilitate information exchange on GE product development and to assist member countries in complying with their obligations under the protocol.

m) INTERNATIONAL TREATIES AND FORA

Tanzania is a member of several international organizations that deal with plant protection and plant health, including the International Plant Protection Convention, the International Treaty on Plant Genetic Resources for Food and Agriculture, Codex Alimentarius, the World Trade Organization, the World Intellectual Property Organization, and the African Regional Intellectual Property Organization. Tanzania has ratified the International Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Cartagena Protocol on Biosafety.

n) RELATED ISSUES

Tanzania adopted the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety (Cartagena Protocol COP/MOP 5, October 2010, Nagoya, Japan) on January 19, 2018. The agreement gives Tanzania flexibility to implement legislative, administrative, or judicial rules and procedures relevant to liability and redress issues.

PART C: MARKETING

a) PUBLIC/PRIVATE OPINIONS

General Public opinion in Tanzania regarding biotechnology, particularly genetically engineered crops, is quite mixed and influenced by various factors:

- 1. Support for Biotechnology:** Some Tanzanian scientists and agricultural experts advocate for the use of biotechnology to improve crop yields, enhance food security, and combat malnutrition. They highlight the potential benefits of GE crops in addressing agricultural challenges such as pest resistance and drought tolerance.
- 2. Opposition and Concerns:** There is significant opposition from anti-biotech organizations and some segments of the public. Concerns include potential risks to human health and the environment, ethical issues, and the fear of dependency on multinational biotech companies. These groups often engage in negative messaging to influence policymakers, consumers, and farmers.
- 3. Regulatory and Ethical Challenges:** The regulatory framework in Tanzania is still evolving, and there are ongoing debates about the ethical implications of genetic modification. Public perception is also shaped by cultural norms and socioeconomic factors, making it a complex issue to navigate.

Overall, the public opinion in Tanzania is divided. Efforts to harmonize regulations and address ethical concerns are crucial for the broader acceptance of biotechnology in the country.

b) MARKET ACCEPTANCE/STUDIES

No any market acceptance studies

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

a) PRODUCT DEVELOPMENT

No animal biotechnology products are currently in development.

b) COMMERCIAL PRODUCTION

No animal biotechnology products are approved for commercial production in Tanzania.

c) EXPORTS

Tanzania does not export genetically modified animals as there is no commercial production.

d) IMPORTS

Post is unaware of any import activity. The strict liability clause of the Biosafety Regulations of 2009 effectively blocks imports.

e) TRADE BARRIERS

The same trade barriers that apply to plant biotechnology products including liability requirements apply to animal biotechnology products.

PART E: POLICY

a) REGULATORY FRAMEWORK

The National Biosafety regulations cover both plants and livestock, but no regulations have been developed specifically for animal biotechnology.

b) INNOVATIVE BIOTECHNOLOGIES

Tanzania does not have any regulations or policies specific to innovative biotechnologies.

c) LABELING and TRACEABILITY

The same labeling and traceability requirements for plant biotechnology products apply to animal biotechnology products.

d) INTELLECTUAL PROPERTY RIGHTS

Animal biotechnology products are subject to the same intellectual property rights protections as plant biotechnology products.

e) INTERNATIONAL TREATIES and FORUMS

Tanzania has been a member of the World Organization for Animal Health (OIE) since December 14, 1961.

f) RELATED ISSUES

Not applicable

PART F: MARKETING

a) PUBLIC/PRIVATE OPINIONS

The same opinions that apply to plant biotechnology largely apply to animal biotechnology.

b) MARKET ACCEPTANCE/ STUDIES

Information on animal biotechnology market acceptance is not available.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

a) COMMERCIAL PRODUCTION:

There is no commercial production of microbial GE products in Tanzania.

b) EXPORTS:

Tanzania does not export microbial GE products to any country as there is no commercial production.

c) IMPORTS:

Tanzania does not import microbial GE products from any country. There is no authorization for trade in microbial biotechnology products.

d) TRADE BARRIERS:

The same trade barriers that apply to plant biotechnology products including liability requirements apply to microbial biotechnology products.

PART H: POLICY

a) REGULATORY FRAMEWORK:

The National Biosafety regulations cover microbial biotechnology. No regulations specific to microbial biotechnology have been developed.

b) APPROVALS:

The same approval process for plant biotechnology products applies to microbial biotechnology products.

c) LABELING and TRACEABILITY:

The same labeling and traceability requirements for plant biotechnology products apply to microbial biotechnology products.

d) ADDITIONAL REGULATORY REQUIREMENTS:

Not Applicable

e) INTELLECTUAL PROPERTY RIGHTS (IPR):

The same intellectual property rights protections and structure for plant biotechnology products apply to microbial biotechnology products.

f) RELATED ISSUES:

N/A.

PART I: MARKETING

a) PUBLIC/PRIVATE OPINIONS

No studies of opinions regarding microbial biotechnology are available. The same opinions regarding plant biotechnology likely apply to microbial biotechnology.

b) MARKET ACCEPTANCE/STUDIES:

Information on market acceptance of microbial biotechnology is not available

Attachments:

No Attachments