

USDA Foreign Agricultural Service

# GAIN Report

Global Agricultural Information Network

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**Date:** 12/1/2016

**GAIN Report Number:**

## Tanzania

### Agricultural Biotechnology Annual

### 2016 Tanzania Agricultural Biotechnology Report

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**Report Highlights:**

Tanzania planted its first genetically engineered (GE) maize research trials on October 5, 2016, in Dodoma region, a semi-arid area in the central part of the country. Tanzania's progress comes a year after the country revised a strict liability clause in the Environment Management Biosafety Regulations.

The Government of Tanzania (GOT) has not banned importation of GE products.

#### SECTION I: EXECUTIVE SUMMARY

In August 2016, the Tanzania Commission for Science and Technology (COSTECH) and the Division of Research and Development (DRD) of the Ministry of Agriculture, Livestock and Fisheries (MALF) under a partnership with the African Agricultural Technology Foundation (AATF), were officially permitted to start a Confined Field Trial (CFT). The CFT, a pre-cursor to commercialization, will demonstrate the effectiveness and safety of a drought-tolerant GM maize hybrid developed by the Water Efficient Maize for Africa (WEMA) project.

The WEMA project is a public – private partnership that is managed and coordinated by the grantee – AATF. Other parties involved include National Agricultural Research System Institutions from Kenya, Uganda, Mozambique, South Africa and Tanzania, the International Maize and Wheat Improvement Institute (CIMMYT), and Monsanto.

## **SECTION II: PLANT AND ANIMAL BIOTECHNOLOGY**

### **CHAPTER 1: PLANT BIOTECHNOLOGY**

#### **PART A: PRODUCTION AND TRADE**

##### a) PRODUCT DEVELOPMENT

Tanzania is still in an early stage of product development. There are various biotechnology research projects on agriculture in Tanzania:

	<b>Crop</b>	<b>Trait</b>	<b>Institutions Involved</b>	<b>Stage of Development</b>
1	Cassava	Development of varieties tolerant to Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD)	Mikocheni Agricultural Research Institute (MARI) and MALF	Contained research (Genetic transformation in the laboratory)
2	Maize	Drought tolerant (WEMA)	COSTECH, DRD-MALF AATF, USAID, CIMMYT and Monsanto Company	Confined Field Trial (CFT)
3	Maize	Insect/pests Resistant	COSTECH, DRD-MALF, AATF, USAID, CIMMYT and Monsanto Company	Preparing application for CFT permit

##### b) COMMERCIAL PRODUCTION

There is no commercial production of GE crops or GE seeds.

##### c) EXPORTS

Tanzania does not export GE crops to the United States or any other country since there is no legal authorization for GE commercial production.

##### d) IMPORTS

Government of Tanzania (GOT) has never banned the importation of GE food or products. A GE food importer has to follow existing food importation laws plus the sections in the Environment Act which governs the importation of GE Food. As stated in the National Biosafety Framework (NBF) of Tanzania, 2004, no person shall import, transit, carry out the contained use of, or release of, or place on the market, a “GMO” or a product thereof without an Advance Informed Agreement (AIA) or the explicit written approval of the National Biosafety Focal Point (NBFP)

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National\\_Biosafety\\_Framework.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National_Biosafety_Framework.pdf&directory=9.Biosafety&). The Party of export shall notify, or require the exporter to ensure notification to, in writing, the NBFP in Tanzania, prior to the importation of GMOs and products thereof into Tanzania including those that are intended for direct use as food, feed or for processing. The application form must be completed and submitted by regular mail or courier delivery to the NBFP. NBFP shall, through the media or Biosafety Clearing House (BCH), provide a forum of public participation before decisions on applications are made.

e) FOOD AID

Tanzania is a food aid recipient country; movement of GE food aid products is permitted under the environmental regulations governing handling of GE products on transit

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Manuals%20on%20Procedures%20for%20handling%20Requests%20and%20Inspection%20of%20GMOs\\_signed.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Manuals%20on%20Procedures%20for%20handling%20Requests%20and%20Inspection%20of%20GMOs_signed.pdf&directory=9.Biosafety&) .

f) TRADE BARRIERS

Not applicable

## **PART B: POLICY**

a) REGULATORY FRAMEWORK

Tanzania developed its National Biosafety Framework (NBF) in February 2007,

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National\\_Biosafety\\_Framework.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National_Biosafety_Framework.pdf&directory=9.Biosafety&). The Environment Division under the Vice-President’s Office is the National Biosafety Focal Point and the National Competent Authority (NCA); it provides the BCH with required data for the Cartagena Protocol. The NBF includes national policies related to biosafety and the regulatory regime; administrative, decision-making and monitoring; and mechanisms for public awareness, education, and participation. In 2010 the Ministry of Education Science and Technology established the National Biotechnology Policy (NBP) by the Environment Management Act of 2004

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Tanzania\\_Biosafety\\_Regulations\\_2009.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Tanzania_Biosafety_Regulations_2009.pdf&directory=9.Biosafety&). This policy ensures that Tanzania has the capacity and capability to capture the proven benefits arising from health, agriculture, industry and environmental applications of biotechnology while protecting and sustaining the safety of the community and the environment. Other legal framework consists of Plant Biosafety regulations, 2009, Biosafety Guidelines and Standard Operating Procedures

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=national\\_biosafety\\_guidelines\\_2004.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=national_biosafety_guidelines_2004.pdf&directory=9.Biosafety&).

The institutional framework consists of:

- National Biosafety Focal point (NBFP),
- National Biosafety Committee (NBC),
- National Biotechnology Advisory Committee (NBAC),
- Ministerial Competent Authorities,
- ABSAC, Plant Biosafety CoE, Tropical Pesticides Research Institute (TPRI), [http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National Biosafety CoE %202012.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=National_Biosafety_CoE_%202012.pdf&directory=9.Biosafety&) and
- Institutional Biosafety Committees (IBC).

Figure 1: The institutional structure as per NBF:

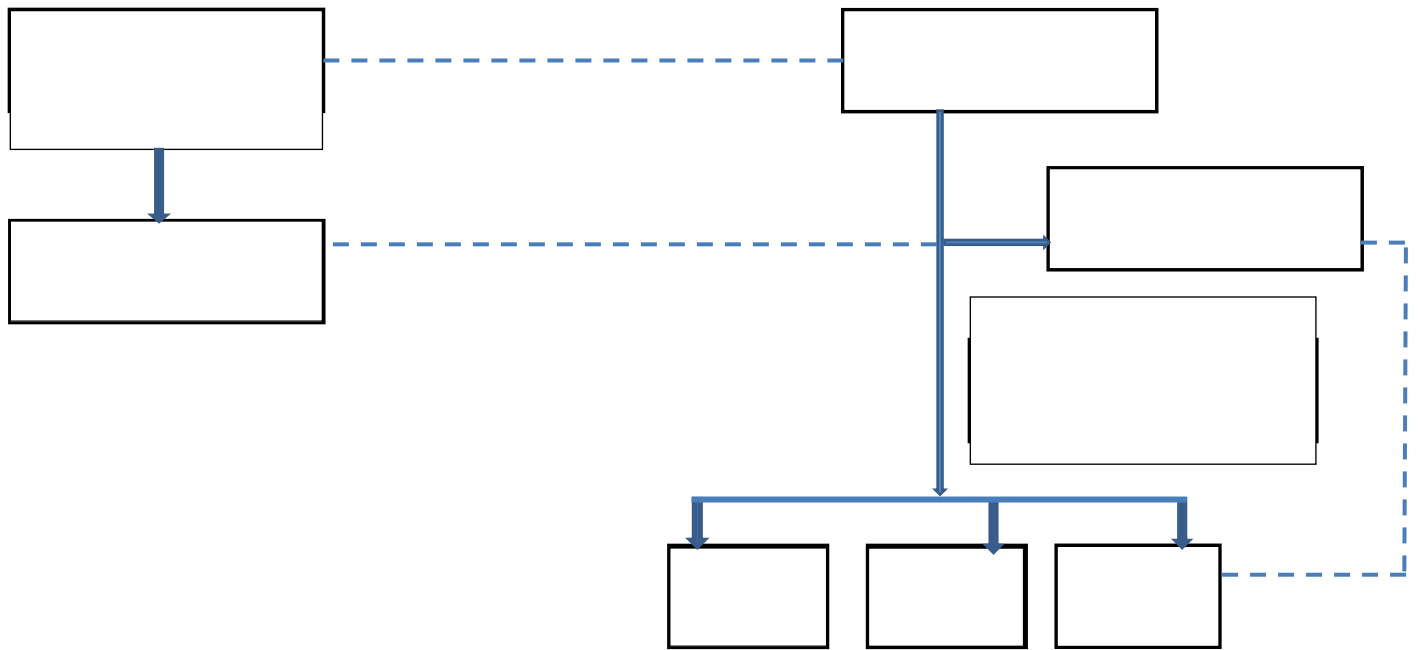
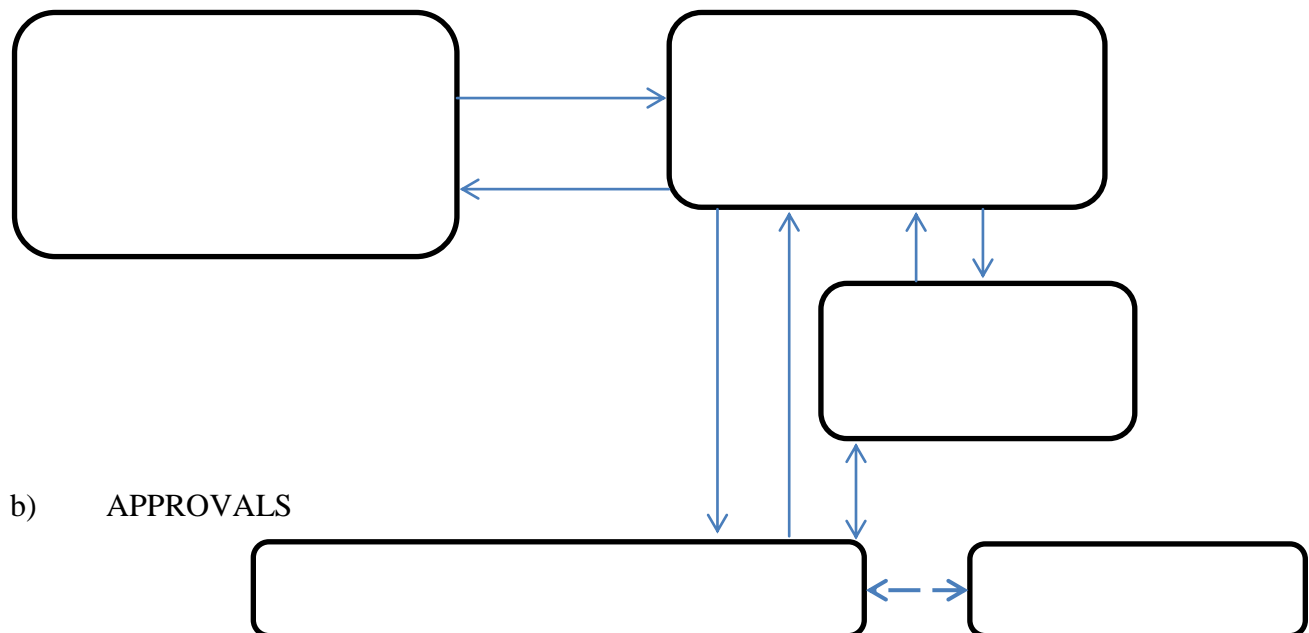


Figure 2: Decision making structure



No plants are registered for cultivation, import or export in Tanzania

c) STACKED EVENT APPROVALS

No stacked products that need approvals in Tanzania

d) FIELD TESTING

Tanzania has allowed CFTs for GE corn (WEMA). The trial is on a 2 ha plot at Makutupora research station, Dodoma Tanzania. No GE crop trial is done in farmers'

fields. [http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Manual%20for%20confined%20field%20trial\\_April%202010\\_signed2.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Manual%20for%20confined%20field%20trial_April%202010_signed2.pdf&directory=9.Biosafety&)



A team of Agriculturalist at the Makutupora CFT at Makutupora research station, Dodoma Tanzania.

e) INNOVATIVE BIOTECHNOLOGIES

The application of biotechnology in Tanzania is considered in the context of the country's need for food for the nutrition and survival of its people. However, besides food, biotechnology has been applied in medicine and public health, industry and environment. The following are some of the main biotechnology applications in Tanzania.

1) Tissue Culture and Micro propagation

The application of tissue culture techniques to address constraints of disease-free planting materials and rapid improvement in crop production is now routinely applied in several institutions in Tanzania.

Institutes conducting tissue culture in Tanzania are: Mikochei Agricultural Research Institute (MARI) in Dar es Salaam; Agricultural Research Institute (ARI) Mlingano in Tanga; ARI Uyole, Mbeya; Horticulture Research Institute-Tengeru (Arusha); Kizimbani Agriculture Research Station (Zanzibar);

TPRI, Arusha; Sokoine University of Agriculture (SUA); and Tanzania Coffee Research Institute (TACRI).

#### 2) DNA Markers and Marker Assisted Technologies

The use of DNA marker technology which simplifies the genetic improvement and disease diagnostics is carried out by MARI, SUA- the Faculty of Veterinary Medicine, Central Veterinary Laboratory (CVL), Molecular Biology and Biotechnology Department (DMBB), University of Dar es Salaam (UDSM) and Ifakara Health Research Development Centre.

#### 3) Developing Genomics and Bioinformatics capacity in Tanzania

SUA has established a state of the art Genome Science Centre, which supports research and postgraduate training in the area of functional genomics and bioinformatics. The Genome centre has facilities for cDNA works, printing microarrays using a high throughput GENETIX microarray and 4-colour scanning of arrays.

#### 4) Genetic Engineering

- The first GE research is being conducted at ARI, Mikocheni on cassava in a contained environment.
- Confined Field Trial (CFT) on Water Efficient Maize (WEMA) at Makutupora in Dodoma.

#### f) COEXISTENCE

Tanzania does not have a policy on coexistence between GE and conventional crops. Once GE crops are released for commercialization, there will likely be challenges in managing coexistence with non-GE crops.

#### g) LABELING

Any “GMO” or product thereof should be clearly labelled and packaged in accordance with national biosafety guidelines for Tanzania annex V part C

([http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=national\\_biosafety\\_guidelines\\_2004.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=national_biosafety_guidelines_2004.pdf&directory=9.Biosafety&)), and shall comply with such further requirements, if any, imposed by the NBFP and competent authority, to indicate that it is, or has been derived from, a “GMO”, and, where applicable, whether it may cause allergies or pose other risks.

#### h) MONITORING AND TESTING

NBFP is responsible for approving imports of GE products, while the Tanzania Food and Drugs Authority (TFDA) and Tanzania Bureau of Standards (TBS) monitor and test agricultural commodity and food product imports at ports of entry. However, the Tanzanian government has limited personnel and testing facilities for evaluating agricultural products for GE content.

[http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=GMO%20testing%20ManualFinal%20April%202010\\_%20signed%20doc.pdf&directory=9.Biosafety&](http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=GMO%20testing%20ManualFinal%20April%202010_%20signed%20doc.pdf&directory=9.Biosafety&)

i) LOW LEVEL PRESENCE POLICY

Tanzania has no low level presence policy.

j) ADDITIONAL REGULATORY REQUIREMENTS

Not Applicable

k) INTELLECTUAL PROPERTY RIGHTS

Tanzania is a member of the Trade Related Intellectual Property (TRIPS) Agreement. Tanzania does not have a National Intellectual Policy (NIP). However, there are number of institutions that are currently dealing with and promoting IP issues. They include:

- ✓ Business Registrations and Licensing Agency (BRELA) <http://www.brela.go.tz/index.php/trade/about>
- ✓ Commission for Science and Technology (COSTECH). <http://www.costech.or.tz/>
- ✓ Copyright Society of Tanzania (COSOTA). <http://www.cosota-tz.org/>
- ✓ Fair Competition Commission (FCC) <http://www.competition.or.tz/>
- ✓ Fair Competition Tribunal (FCT) <http://www.fct.or.tz>
- ✓ Ministry of Agriculture (Plant Breeders Rights - PBR) <http://www.kilimo.go.tz/legislation%20and%20regulations/legislations/PLANT%20BREEDERS%20RIGHTS%20Act,%202002.pdf>
- ✓ Tanzania Bureau of Standards (TBS). <http://www.tbs.go.tz/>
- ✓ Tanzania Food and Drugs Authority (TFDA) <http://www.tfda.or.tz/index/>
- ✓ Tanzania Revenue Authority – Customs (TRA) <http://www.tra.go.tz/>
- ✓ Commercial Court (High court of Tanzania) <http://www.comcourt.go.tz/comcourt/>
- ✓ University of Dar es Salaam (UDSM) [https://udsm.ac.tz/sites/default/files/UDSM\\_IntellectualPropertyPolicy2008\\_Prelims.pdf](https://udsm.ac.tz/sites/default/files/UDSM_IntellectualPropertyPolicy2008_Prelims.pdf), Sokoine University of Agriculture, (SUA) <http://www.suanet.ac.tz/>, and Nelson Mandela African Institution of Science and Technology (NM-AIST) <http://www.nm-aist.ac.tz/>
- ✓ National Institute of Medical Research(NIMR) <http://www.nimr.or.tz/>
- ✓ Tropical Pests Research Institute(TPRI) <http://www.tpri.or.tz/>

l) CARTAGENA PROTOCOL RATIFICATION

Tanzania acceded to the Cartagena Protocol on Biosafety on March 16, 2003. It was adopted on January 29, 2000 as a supplementary agreement to the Convention on Biological Diversity and entered into force on September 1, 2003. The international regulatory agreement requires countries to address environmental safety and human health by ensuring safe handling, transport, and use of GE products. NBFP is Tanzania's focal point of the Cartagena Protocol on Biosafety and shares data with the Biosafety Clearing house, a mechanism set by Cartagena Protocol on Biosafety to facilitate information exchange on GE product development and to assist member countries in complying with their obligations under the protocol.

m) INTERNATIONAL TREATIES/FORA

Tanzania is a member of several international organizations that deal with plant protection and plant health, including the International Plant Protection Convention (IPPC), International Treaty on Plant Genetic Resources for Food and Agriculture, Codex Alimentarius, World Trade Organization (WTO), WIPO, and ARIPO and has ratified the International Convention on Biological Diversity (CBD), Plant genetic Resources for Food and Agriculture (IT-PGRFA). and the aforementioned CPB.

n) RELATED ISSUES

The Government of Tanzania (GOT) has not banned importation of GM food. Any person who wishes to import, transit, or place on the market a “GMO” intended for direct use as food or feed, or for processing, shall submit an application in writing with a reference to the information on the item found in the BCP, to the NBFP for approval.

<http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Application%20for%20use%20of%20GMO%20Food%20products%20for%20Nutritional%20Test%20for%20Infants%20in%20Mara%20Region.pdf&directory=GMO%20Application&> .Tanzania adopted the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety. It gives Tanzania flexibility to implement legislative, administrative or judicial rules and procedures relevant to liability and redress.

## PART C: MARKETING

a) PUBLIC/PRIVATE OPINIONS

The debate on biotech crops and bioengineered foods remains contentious and political. Some non-governmental organizations have exposed Tanzanian consumers to negative messaging, while Commission for Science and Technology (COSTECH) and VPO and other non-governmental organizations continue to provide balanced messaging.

b) MARKET ACCEPTANCE/STUDIES

Recent studies conducted by GOT (VPO), UNEP and GEF revealed limited understanding of genetic engineering, and products thereof, among Tanzanians except for a small section of elites with a tertiary level of education. Most Tanzanians see GMOs and modern biotechnology as disadvantageous and consider Health and Agricultural sectors to be the most affected

<http://www.vpo.go.tz/modules/environment/index.php?action=downloadfile&filename=Report%20of%20Survey%20on%20GMOs%20Public%20Awareness.pdf&directory=9.Biosafety&>.

The study was carried out in three out of seven designated agro-ecological zones in the country. Selected study areas were Central Zone (Dodoma - arid land/ drought prone), Eastern zone (Morogoro - high rainfall and fertile soil with many high learning institutions) and Northern zone (Same - semi arid with lots of farming communities). Respondents in the Eastern zone were relatively more informed than the Central and Northern zones. Higher learning institutions are believed to have played a major role into such awareness. Male respondents were more knowledgeable of the “GMOs” than female counterparts.



## **CHAPTER 2: ANIMAL BIOTECHNOLOGY**

### **PART D: PRODUCTION AND TRADE**

- a) **PRODUCT DEVELOPMENT**  
Not applicable
- b) **COMMERCIAL PRODUCTION**  
Not applicable
- c) **EXPORTS**  
Not applicable
- d) **IMPORTS**  
Not applicable
- e) **TRADE BARRIERS**  
There are no trade barriers related to biotechnology in Tanzania.

### **PART E: POLICY**

- a) **REGULATORY FRAMEWORK**

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

- b) **INNOVATIVE BIOTECHNOLOGIES**  
Not applicable
- c) **LABELING AND TRACEABILITY**  
Not Applicable
- d) **INTELLECTUAL PROPERTY RIGHTS**  
Not Applicable
- e) **INTERNATIONAL TREATIES/FORA**  
Not Applicable
- f) **RELATED ISSUES**  
Not applicable

### **PART F: MARKETING**

a) PUBLIC/PRIVATE OPINIONS  
Not Applicable

b) MARKET ACCEPTANCE/ STUDIES  
Not Applicable