KENYA TOP TEN FACTS ABOUT **AGRI-BIOTECH & BIOSAFETY**

FACT 01

Former President Daniel Arap Moi signing the Cartagena Protocol

Kenya was the first country to sign the Cartegena Protocol on Biosafety

1. The former President Daniel Arap Moi signed the international treaty governing the movement of living modified organisms resulting from modern biotechnology from one country to the other during the 5th Conference of Parties in May 2000 at UNEP headquarters, Nairobi. The country ratified the Protocol in 2003.

2. The Protocol's objective is to contribute to ensuring an adequate level of protection in safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health and specifically focusing on trans boundary movements.

3. The Cartagena Protocol on Biosafety to the Convention on Biological Diversity laid down the necessary platform for implementation of National Biosafety Frameworks and establishment of effective biosafety management systems.

You can download the Protocol from:
https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf

FACT
02

Kenya joins six other African countries who have commercialized genetically modified (GM) cotton

1. In December 2019, the cabinet approved open cultivations of Bt cotton. The country now joins six other African countries who have commercialized genetically modified (GM) cotton i.e. South Africa, Sudan, Malawi, Nigeria, Kingdom of eSwatini and Ethiopia.
2. The Kenya Agricultural and Livestock Research Organization (KALRO) is the main agency undertaking cotton research in Kenya. The first application to introduce genetically modified insects resistant cotton (Bt cotton) was made in 2001. KALRO successfully completed the national performance trials for Bt cotton in 2019 after which approval for cultivation was granted.
3. The Kenyan government, through its Big Four Agenda, is banking on Bt cotton to create 50,000 jobs and generate Sh20 billion in apparel export earnings per year. Cotton production has remained very low due to numerous challenges in the country, key among them pests and low quality seed. Introduction of Bt cotton will address some of these challenges.

You can download the Big Four Agenda from:
https://big4.delivery.go.ke/

"I have instructed the ministries of health, agriculture and trade, industry and co-operatives to work together and come up with a quick mechanism to revive the production of cotton - including the possibility of farming Bt cotton"

UHURU KENYATTA
Former President of the Republic of Kenya

FACT 03

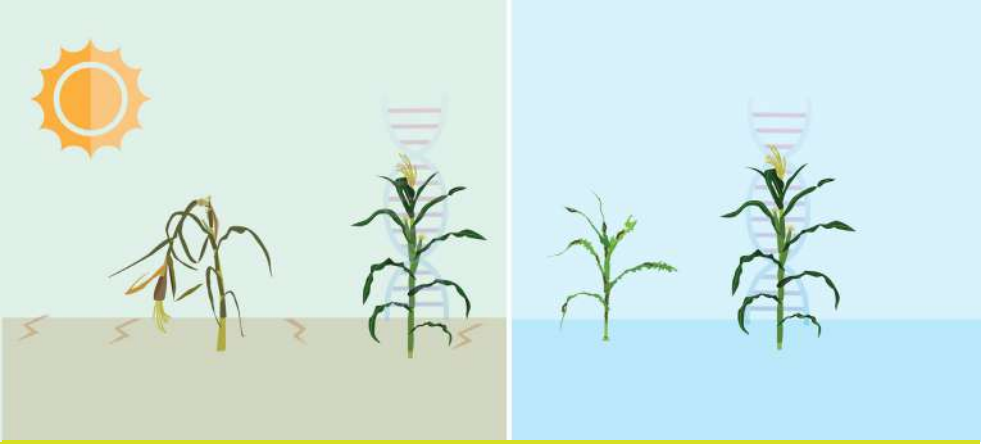
KALRO Director General Dr. Eliud Kireger (in blue coat) during a field visit to a GM cassava experimentation site

Kenya is among four African countries conducting research on genetically modified disease resistant cassava

1. The Virus Resistant Cassava for Africa (VIRCA) Plus project has successfully developed a cassava line with robust and durable resistance to cassava brown streak disease (CBSD), which has been validated over multiple cropping cycles in several locations in Kenya and Uganda.

2. VIRCA Plus is a collaborative program between KALRO and several public and non-governmental organisations working in Kenya, Nigeria, Rwanda, Uganda and USA. In Kenya, the project is conducted collaboratively by KALRO, University of Nairobi scientists and ISAAA AfriCenter who provide communications and policy support.

3. KALRO submitted an application for open field cultivation of the GM cassava to the National Biosafety Authority in March 2019. An environmental release approval was granted in June 2021. The approval paves way for conducting national performance trials before registration and release to farmers. Seed multiplication and distribution of disease resistant cassava will follow existing seed delivery systems and will be available at a comparable cost to conventional cassava.



FACT
04

Kenya commenced National Performance Trials (NPTs) of insect resistant (Bt) maize in 2020

1. The Bt maize research is conducted under the TELA project, a public-private partnership coordinated by the African Agricultural Technology Foundation (AATF). The project's aim is to address challenges brought about by destructive insects such as stemborers and is implemented in 7 African countries: Ethiopia, Kenya, Mozambique, Nigeria, South Africa, Tanzania and Uganda.
2. In Kenya, two seasons of Confined Field Trials (CFTs) have produced promising results with the Bt maize recording considerable yield advantage over the conventional counterpart under mild drought and stem borer infestation.
3. National Performance Trials (NPTs) carried out in 6 locations across the country have been completed and 3 varieties recommended to be advanced to commercial release once and when approval decision is granted by National Biosafety Authority (NBA).

A farmer posses for a photo during a visit to Bt Maize CFT site

FACT 05

H.E. William Ruto, President of the Republic of Kenya launching the National BioAWARE Strategy back in 2008

Kenya has a well-structured mechanism for creating awareness on biotech crops

1. The International Service for the Acquisition of Agri-biotech Applications (ISAAA) AfriCenter pioneered awareness creation activities in the nineties. Over the last two decades, AfriCenter in partnership with the Open Forum on Agricultural Biotechnology (OFAB-Kenya) and National Commission for Science, Technology and Innovation continues to be at the forefront in raising awareness on all aspects of agricultural biotechnology and biosafety through various approaches including seeing-is-believing biotech study tours.

2. In September 2006, the African Agricultural Technology Foundation (AATF) launched OFAB, a platform aimed at complementing efforts on the ground to improve public understanding and awareness on agricultural biotechnology and increased media coverage.

3. Other initiatives and organizations involved in awareness creation include the government initiative - BioAWARE, Kenya Agricultural and Livestock Research Organization (KALRO), Africa Harvest, Kenya University Biotechnology Consortium (KUBICO), as well as the mass media and several civil society groups.

FACT 06

Kenya has the Scientific Infrastructure and Human Capacity for Biotechnology

1. Kenya has the infrastructure and capacity needed for research and regulation of biotech crops. Currently, there are over 100 scientists engaged in research and development (R&D) activities countrywide, with 45% of these scientists working in the public sector. Biosafety facilities for modern biotechnology include a Level II Greenhouse at the Kenya Agricultural and Livestock Research Organization (KALRO) and the Plant Transformation Laboratory at Kenyatta University.

2. National universities have established strong research programs for training young scientists on modern biotechnology. They include, among others:
   I. Kenyatta University
   II. Jomo Kenyatta University of Agriculture and Technology
   III. Masinde Muliro University of Science and Technology
   IV. University of Nairobi
   V. Egerton University
   VI. University of Eldoret

3. The country is a host to international research organizations under the One CGIAR working on crop genetic improvement. The research groups are hosted in a world class research facility by provided the International Livestock Research Institute (ILRI).

A scientist working in a biotech research lab at the International Potato Center (CIP), ILRI

FACT 07

Former president Mwai Kibaki opening a state of the art GM research lab in the country

Kenya Approved a National Policy on Biotechnology Development in 2006

1. The Kenya government's vision and commitment towards promotion and application of biotechnology is articulated in the National Biotechnology Development Policy that was endorsed by Cabinet in 2006.
2. This policy outlines the government's commitment to safe development and deployment of biotechnology for socio-economic development.
3. The policy charts a vision towards the development and safe application of biotechnology, to guide research and commercialization of modern biotechnology products in the country.

You can download the policy from:
http://en.biosafetyscanner.org/pdf/doc/350_allegato.pdf

FACT 08

Kenya Enacted its Biosafety Act in 2009

1. The Kenya Biosafety Bill was drafted in 2005. After several years of stakeholder consultations and parliamentary debates, the Bill was eventually passed by Parliament in 2008, and enacted into law on 12th February 2009 as Biosafety Act No.2 of 2009.
2. The Act lays down legal and institutional frameworks for governing modern biotechnology in the country. It ensures that Kenya maximizes the benefits of modern biotechnology while safeguarding against any potential risks to human health and adverse effects to the environment.
3. The Act was revised in 2018 to align it to Mwongozo, a Code of Governance for State Corporations aligned to Kenya constitution.

You can download the act from:
http://africenter.isaaa.org/wp-content/uploads/2015/07/Biosafety-Act-No.2-of-2009.pdf

MP Mutunga, Parliamentary Committee on Agriculture & Livestock.

FACT 09

The National Biosafety Authority was Officially Launched in May 2010

1. The National Biosafety Authority (NBA) was established through a provision of the Biosafety Act 2009, as the competent authority to provide overall supervision and monitoring of GMO research and commercialization activities.

2. To achieve its mandate, the authority works closely with eight regulatory agencies:
   I. Kenya Plant Health Inspectorate Service
   II. Directorate of Veterinary Services
   III. Department of Public Health
   IV. Kenya Bureau of Standards
   V. National Environment Management Authority
   VI. Kenya Wildlife Service
   VII. Kenya Industrial Property Institute
   VIII. Pest Control Products Board

3. As of September 2020, the authority had handled over 70 applications in four categories of GMO activities.

DECISIONS ON GMO APPLICATIONS MADE BY NBA SINCE 2010

Status	Lab/ Green-house Trials	Confined Field Trials	Import And Transit	Limited Open Cultiva-tion
Approved	32	14	28	2
Withdrawn	0	0	2	0
Rejected	0	0	0	1
Pending	1	0	0	1
Total	33	14	30	4

FACT 10

The National Biosafety Authority has Published Four Sets of Biosafety Regulations

1. The four regulations as stipulated in the Kenya Legislative Supplements of the Biosafety Act, 2009 are:

I. The Environmental Release Regulations (2011)
II. The Import, Export and Transit Regulations (2011)
III. The Contained Use Regulations (2011)
IV. The Labeling Regulations (2012)

2. The four regulations ensure:

I. Potential adverse effects to human health and environment are addressed upon open cultivation of GM crops.
II. There is safe movement of genetically modified materials in and out of the country.
III. Research on genetic modification is done under containment.
IV. There is efficient tracking of GM products in the food supply chain and information availed to the consumer.

3. To date, the first three regulations of the year 2011 are operational, the labeling regulation of the year 2012 will come into place upon commercialization of GM food crops in the country

Roy Mugiira, CEO National Biosafety Authority.

CROP TRAITS UNDER VARIOUS STAGES OF RESEARCH IN KENYA BY 2023

KEY

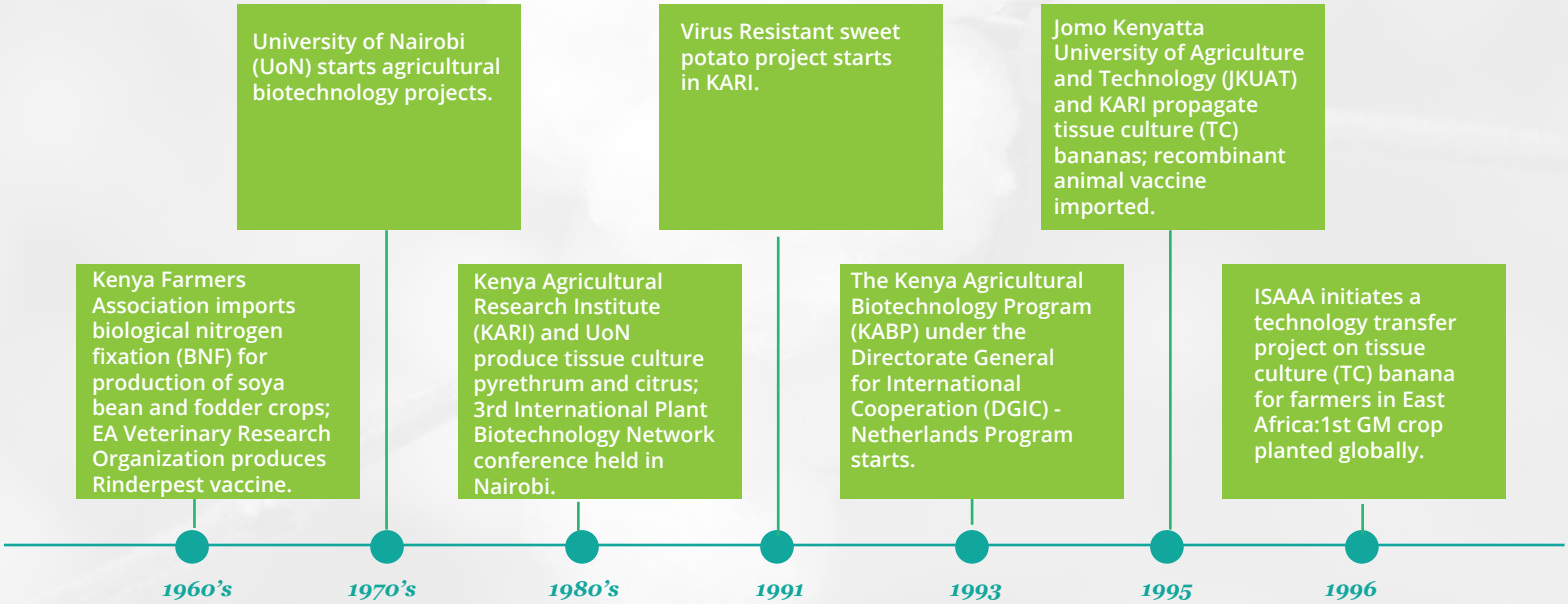
BUSIA, EMBU, KIRINYAGA, KITUI, KISUMU, MERU
Bt cotton on-fam demonstration plots

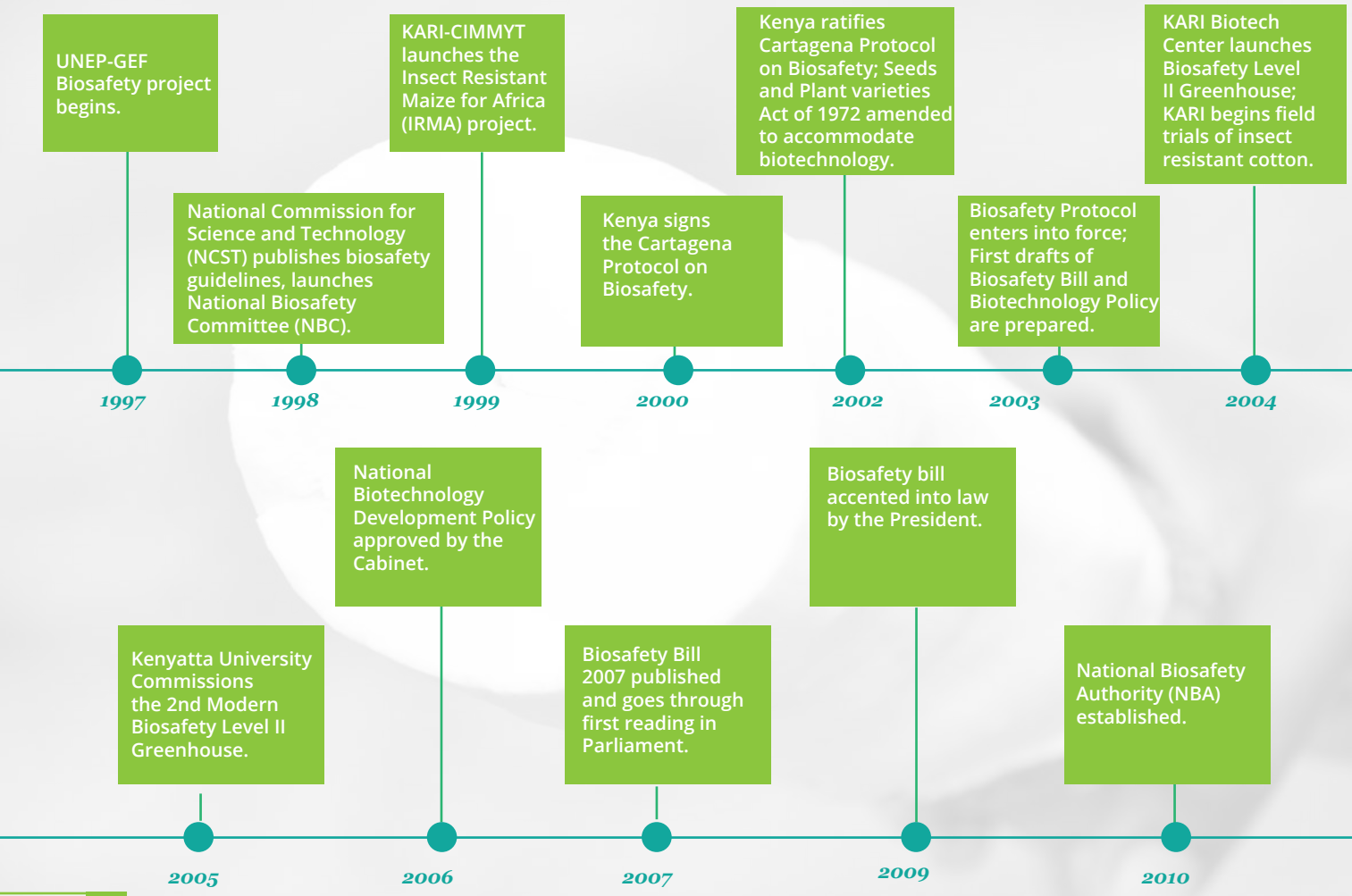
BUSIA – ALUPE, KILIFI – MTWAPA, MURANGA – KANDARA (THIKA)
Cassava Brown Streak (CBD) introgressed into Cassava Mosaic Disease (CMD) tolerant background materials

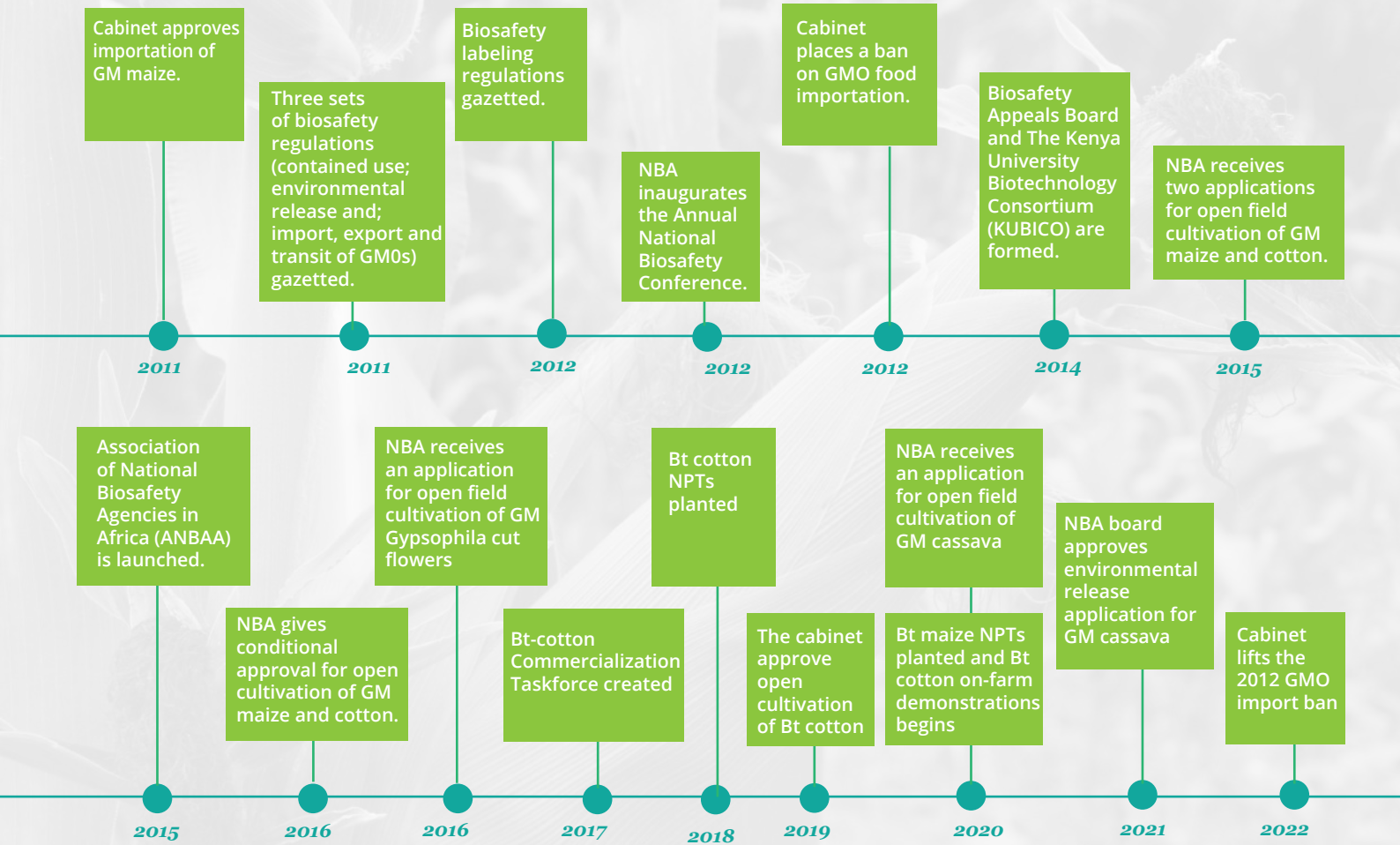
MAKUENI – KIBOKO
Insect resistant maize

KAKAMEGA AND KITALE
Insect resistant maize

MILESTONES IN AGRICULTURAL BIOTECHNOLOGY AND BIOSAFETY DEVELOPMENT IN KENYA



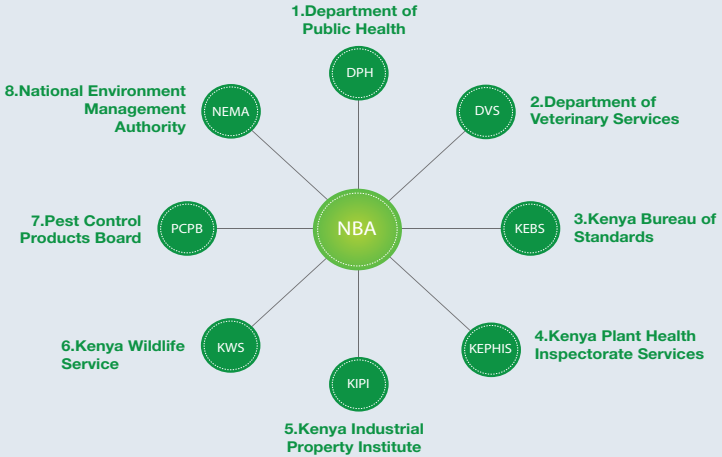

UNEP-GEF Biosafety project begins.
1997
National Commission for Science and Technology (NCST) publishes biosafety guidelines, launches National Biosafety Committee (NBC).
1998
KARI-CIMMYT launches the Insect Resistant Maize for Africa (IRMA) project.
1999
Kenya signs the Cartagena Protocol on Biosafety.
2000
Kenya ratifies Cartagena Protocol on Biosafety; Seeds and Plant varieties Act of 1972 amended to accommodate biotechnology.
2002
Biosafety Protocol enters into force; First drafts of Biosafety Bill and Biotechnology Policy are prepared.
2003
KARI Biotech Center launches Biosafety Level II Greenhouse; KARI begins field trials of insect resistant cotton.
2004
Kenyatta University Commissions the 2nd Modern Biosafety Level II Greenhouse.
2005
National Biotechnology Development Policy approved by the Cabinet.
2006
Biosafety Bill 2007 published and goes through first reading in Parliament.
2007
Biosafety bill accented into law by the President.
2009
National Biosafety Authority (NBA) established.
2010


Cabinet approves importation of GM maize.
2011
Three sets of biosafety regulations (contained use; environmental release and; import, export and transit of GM0s) gazetted.
2011
Biosafety labeling regulations gazetted.
2012
NBA inaugurates the Annual National Biosafety Conference.
2012
Cabinet places a ban on GMO food importation.
2012
Biosafety Appeals Board and The Kenya University Biotechnology Consortium (KUBICO) are formed.
2014
NBA receives two applications for open field cultivation of GM maize and cotton.
2015
Association of National Biosafety Agencies in Africa (ANBAA) is launched.
2015
NBA gives conditional approval for open cultivation of GM maize and cotton.
2016
NBA receives an application for open field cultivation of GM Gypsophila cut flowers
2016
Bt-cotton Commercialization Taskforce created
2017
Bt cotton NPTs planted
2018
The cabinet approve open cultivation of Bt cotton
2019
NBA receives an application for open field cultivation of GM cassava
Bt maize NPTs planted and Bt cotton on-farm demonstrations begins
2020
NBA board approves environmental release application for GM cassava
2021
Cabinet lifts the 2012 GMO import ban
2022

REGULATORY AGENCIES

In Kenya, regulation of Genetically Modified (GM) foods is a mandate of the National Biosafety Authority (NBA).

The National Biosafety Authority was established under Kenya Biosafety Act No. 2 of 2009. To achieve its mandate, NBA works closely with eight regulatory agencies.



COPIES OF THIS FAQ CAN BE OBTAINED FROM:

ISAAA AfriCenter
ILRI Campus, Old Naivasha Road,
P.O.Box 70-00605,
Uthiru, Nairobi, Kenya.
Tel: +254 20 4223618,
Email: africenter@isaaa.org
Website: www.africenter.isaaa.org

AATF
ILRI Campus, Old Naivasha Road,
P.O.Box 30709-00100,
Nairobi, Kenya.
Tel: +254 20 422 3700,
Email: ofab@aatf-africa.org
Website: www.aatf-africa.org

National Commission for Science,
Technology and Innovation (NACOSTI)
Upper Kabete Road, Off Waiyaki Way
P.O. Box 30623-00100, Nairobi-Kenya
Tel: +254-020-400-7590
Website: https://www.nacosti.go.ke

Karembu M. et al., Top Ten Facts about Agri-biotech and Biosafety in Kenya.
International Service for the Acquisition of Agri-biotech Applications (ISAAA AfriCenter), Nairobi Kenya.