



Biosafety News - Issue 7

NATIONAL BIOSAFETY AUTHORITY



Commissioning of the NBA Molecular Biology Laboratory





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Editor's Note

Dear esteemed readers,

With profound pleasure, I welcome you to our 7th Issue of the Biosafety Newsletter. In this Issue, we inform you about the significant strides that the National Biosafety Authority (NBA) has attained toward fulfilling the objective of regulating research and commercial activities involving GMOs. But, first, let me give you a glimpse of what to expect.

To start with, NBA developed and published a guideline document for determining the regulatory process of genome editing techniques. This was done in response to the constant advancement of genome editing technology as one of the modern biotechnologies used to enhance food security.

Thanks to this, Kenya, which only recently approved Bt cotton as its first genetically modified (GMO) crop, now joins Nigeria as the only two countries on the continent to have developed regulatory guidelines for genome editing. In addition, the published guidelines clarify which genome-edited organisms and derived products are regulated under Kenya's Biosafety Act.

Kenya is a party to the Conventional Biological Diversity (CBD) and the Cartagena Protocol on Biosafety. Consequently, NBA conducted a two-day stakeholder engagement workshop for the Sensitization on the 4th National Report on implementing the Cartagena Protocol on Biosafety and the Biosafety Clearing House (BCH). The stakeholders were sensitized to international environmental conventions and were apprised of the 4th National Report on implementing the Cartagena Protocol on Biosafety. The Biosafety Protocol seeks to protect biological diversity from the potential risks of genetically modified organisms resulting from modern biotechnology.

In this Issue, we get to tell you more about the Kenya TradeNet System, a revolutionary tool for GMOs Surveillance. Thanks to the operationalization of the TradeNet System, NBA enjoys automation of its processes. For example, the System has facilitated online applications, approval of import, and export/transit of Genetically Modified Organisms or products as per the underlying NBA approval conditions. Furthermore, through the Trade Facilitation Platform, NBA operations at points of entry/exit have been streamlined, making it easy to monitor and clear cargo in the course of enforcing the core mandate of the Authority. NBA is proud to be among the 38 partner agencies that are integrated into the TradeNet System (National Electronic Single Window System), which has more than 15,000 registered users.

During this quarter, the board and staff members also launched the Strategic Plan 2020-2025. This Strategic Plan provides a planned direction to achieve the Medium-Term Plan III of Kenya Vision 2030 and the Big 4 Agenda.

Lastly, dear readers, we will accept contributions from our strategic partners in future newsletters. To promote transparency and awareness of GMO matters, we gladly welcome any comments and critiques you may have as a reader.

Enjoy the read!

Abook Brian

Message from the CEO

NBA Molecular Biology Laboratory now available Commercially

Dear Esteemed Stakeholders,

Africa is quickly embracing the use of biotechnology. Many biotechnological advances in Africa aim to remove the physiological constraints of the crops and increase crop yield potential. Globally, various transgenic crops have been developed using different agricultural biotechnologies and approved for commercialization. As a result, agricultural biotechnology is becoming critical in crop improvement through scientific techniques for modifying genes conferring resistance to biotic and abiotic stress and improving crop quality.

Kenya has not been left behind either. Over the years, Kenya's national Biosafety System has evolved in response to regulatory challenges and compliance with global requirements. The growth of biotechnology warranted the establishment of the National Biosafety Authority (NBA), under Biosafety Act No. 2 of 2009, to exercise general supervision and control over the transfer, handling, and use of genetically modified organisms (GMOs) in Kenya.

To efficiently discharge its mandates, NBA developed a modern Molecular Laboratory that was officially commissioned by the Principal Secretary, State Department for University Education and Research, Amb. Simon Nabukwesi.

Having a modern molecular lab places Kenya at the focal point of research, development and commercial activities related to GMOs in Africa. The Molecular Laboratory is responsible for developing and performing molecular diagnostic tests. Molecular methods have been used increasingly over the past decade to improve the routine diagnostic's sensitivity, specificity and turn-around time. This laboratory will, among other services;

- a) Support the government to safeguard the safety of human and animal health against the backdrop of the government's ban on the importation and consumption of GM foods.
- b) Contribute to implementing the Cartagena Protocol on Biosafety provisions effectively, given that the NBA is Kenya's National Focal Point.
- c) Enhance surveillance of GMO products to curb the potential breach of security through the use of biological agents by hostile non-state actors currently active in the Horn of Africa.
- d) Testing of products of emerging biotechnologies such as genome editing, among others; and
- e) The lab will contribute to training and capacity building for students and scientists in research and higher learning institutions.

Many of our high-throughput molecular tests are now available commercially to the public and other commercial entities at a reasonable bench fee.

For more information, kindly contact us on **0713854132** OR **020 267866**. You can also send a mail to info@biosafetykenya.go.ke

By,

Dr Roy Mugiira,
Acting Chief Executive Officer,
National Biosafety Authority

Appointment of Acting Chief Executive Officer



Dr Roy Mugiira, the acting CEO (Left) presenting a gift to Prof Dorington Ogoyi during the handover ceremony at the NBA Headquarters, Nairobi.

On Tuesday, 22nd February 2022, the NBA board of directors appointed Dr Roy B. Mugiira as the acting Chief Executive Officer (CEO). He takes over from Prof Dorington O. Ogoyi.

Dr Roy B. Mugiira joined the National Biosafety Authority (NBA) in August 2021 as the Director of Technical Services (DTS). He holds a PhD in the diagnosis of plant viral infections based on the alignment of their DNA sequences. In addition, he has research experience in cloning viral DNA genomes into gene silencing vectors for application in functional genomics.

Dr Mugiira played a key role in developing Kenya's Biotechnology Development Policy and the Biosafety regulatory framework for Genetically Modified Organisms. He is a member of the Biosafety Risk Assessment Panel of Experts for the Cartagena Protocol on Biosafety and served as the Acting Chief Executive Officer of the NBA at its formative stages.

He has a broad experience in policy advisory for the governance of Science, Technology and Innovation (ST&I) generally and Biotechnology Development specifically. Previously, he served as the Director of Research, Ministry of Education – Kenya and Director, Scheduled Sciences at the National Commission for Science, Technology and Innovation (NACOSTI).



Launch of NBA Strategic Plan 2020-2025



NBA board members and the acting CEO, Dr Roy B. Mugira, during the NBA 2020-2025 Strategic Plan launch.

The board members and staff members of NBA launched the Strategic Plan 2020-2025 on April 2022 at Sarova Panafric Hotel. The chief guest of the ceremony was Dr Joseph Chavutia, Chair, NBA board.

During the ceremony, the board members assured their unwavering support to the NBA staff members as they endeavoured to achieve the objectives of the Strategic Plan.

"Together, we will be a part of making a lasting impact in accomplishing the mandate of the Authority and realizing its vision", the chair echoed. He further added that NBA would seamlessly achieve the goals in the remaining years with the combined efforts of staff members and the organization's strategic partners.

This Strategic Plan provides a planned direction to achieve the Medium-Term Plan III of Kenya Vision 2030 and the Big 4 Agenda. It had set the vision, mission, goals and specific strategic objectives for 2020-2025. So far, these objectives and guidelines have provided a blueprint that has enabled our organization to achieve its mission of assuring the safe development, transfer, handling and use of genetically modified organisms in Kenya.

"Together, we will be a part of making a lasting impact in accomplishing the mandate of the Authority and realizing its vision",

Genome Editing

Commissioning of the NBA Molecular Biology Laboratory at the NBA Headquarters



Amb. Simon Nabukwesi officially commissioning the Molecular Biology Laboratory at the ribbon-cutting ceremony.

Amb. Simon Nabukwesi, the Principal Secretary, State Department for University Education and Research (SDUER)- Ministry of Education, officially Commissioned the NBA Molecular Biology Laboratory. The laboratory will be the National GMO reference laboratory in Kenya since NBA is the national focal point on matters of GMO regulation.

In Africa, Kenya is at the forefront of research, development and commercial activities of GMOs. In this regard, efforts have been made to develop capacity in detecting approved GMO events and aiding in surveillance to assure the public and build confidence in the safety of introduced GMOs.

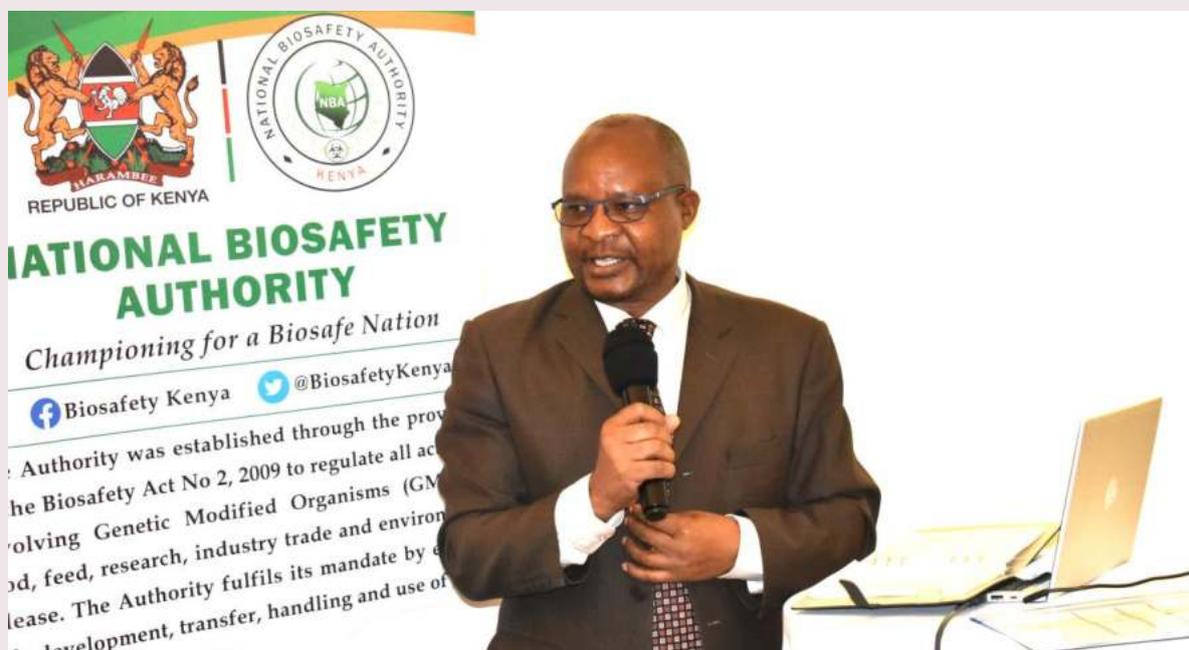
This laboratory will, among other services;

- a) Support the government to safeguard the safety of human and animal health against the backdrop of the government's ban on the importation and consumption of G.M. foods.
- b) Contribute to implementing the Cartagena Protocol on Biosafety provisions effectively, given that the NBA is Kenya's National Focal Point.
- c) Enhance surveillance of GMO products to curb the potential breach of security through the use of biological agents by hostile non-state actors currently active in the Horn of Africa.
- d) Testing of products of emerging biotechnologies such as genome editing;
- e) Contribute to training and capacity building for students and scientists in research and higher learning institutions.

These services will be available at a reasonable bench fee.

Kenya Becomes Second African Country to Publish Genome Editing Regulations

By Abook Brian, Eric Kivuti, Ann Waithera and Susan Githaiga



Dr Roy Mugiira, the acting CEO, making a presentation during a stakeholder's sensitization workshop in Sarova Panafric Hotel, Nairobi- Kenya.

By 2050, it is projected that Africa's population will have doubled, making food security an overriding challenge. Thus, sustainable agriculture in Africa is critical to achieving food and nutritional security while addressing the rising climate change concerns. Genome editing has the potential to increase yields, improve nutrition and develop climate-resilient crops while reducing the use of inputs such as fertilizers and pesticides.

Genome editing technology is an option to supplement existing interventions to achieve the African Union Agenda 2063. As genome editing tools become more refined, it is anticipated that the proposed applications for genome editing technology for basic research, conservation, agriculture, public health and other purposes will expand.

In response to the constant advancement of genome editing technology, NBA developed and published a guideline document for determining the regulatory process of genome editing techniques. The published guidelines clarify which genome-edited organisms and derived products are regulated under Kenya's Biosafety Act.

Speaking during the stakeholder consultations and regulatory review meeting, Dr Roy Mugiira, the acting CEO, stated that the guidelines are meant to lead applicants and reviewers on the approach to take while submitting and reviewing applications.

During the development of the genome editing regulatory framework, there were extensive stakeholder consultations. Additionally, there were reviews of other regulatory mechanisms

in countries where such technology has been used. Furthermore, the regulatory framework incorporates the aspects of essential testing pathways and implementation strategies in Kenya while considering all the possible socio-cultural and ethical issues.



In response to the constant advancement of genome editing technology, NBA developed and published a guideline document for determining the regulatory process of genome editing techniques



Worldwide, Asia is among the top continents having close to five countries that have published these regulations successfully. In Africa, however, Nigeria was the only country to have published a genome editing regulatory framework. Publishing the guidelines makes Kenya the second country in Africa to do so- marking a significant step for the continent

Current Approval Status of GMOs

Development of GMOs in Kenya

By Ann Muia

The National Biosafety Authority regulates activities involving GMOs in food, feed, research, industry, trade and environmental release to ensure the safe development, transfer, handling and use of genetically modified organisms.

GMO development is a multifaceted process that starts with discovering and verifying a potentially beneficial gene. This is followed by proof of concept and multi-level testing of the gene/ trait to ensure that it functions as anticipated. During these research phases, the National Biosafety Authority ensures that all GMO-related work is performed within assigned containment/ confinement levels with appropriate protective measures.

Once a product has been developed and a researcher applies for environmental release, NBA, with select experts and other relevant regulatory agencies, embarks on food and environmental safety assessment. If the product is deemed safe for release into the environment and human and animal consumption, an approval for limited environmental release is given to allow for National Performance Trials (NPTs) and Distinctiveness, Uniformity & Stability (DUS) testing. The final stage in the approval process is variety evaluation and registration, which precedes one cultivation and market release.



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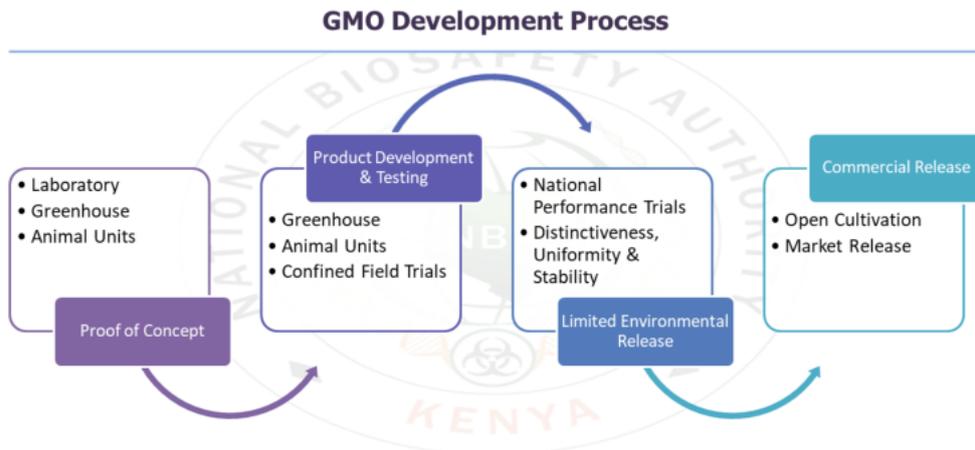


Figure 1: The pathway to GMO Development

The following is a summary of the number of Research Approvals the NBA has given so far:

Status	Contained use (Lab / Greenhouse)	Contained use (CFTs)
Approved	39	15
Rejected/ Withdrawn	0	0
Pending	1	0
Total	40	15

The latest approval by NBA for confined field trials is for testing bioengineered potato varieties for late blight (L.B.) resistance. The National Biosafety Authority received an application to conduct a confined field trial to test bioengineered potato varieties for late blight resistance on 5th January 2022 from Kenya Agricultural and Livestock Research Organization (KALRO), working in collaboration with International Potato Centre (CIP). The application was reviewed by the NBA, three independent expert reviewers and one relevant regulatory agency (KEPHIS) as required by the biosafety law. There was no objection to the project's approval.



Figure 2: CFT site for testing of bioengineered potato varieties for late blight (L.B.) resistance

The confined field trial aims to test transgenic potato plants from 5 varieties (Desiree, Asante, Tigona, Shangi, and Jalene) which have been genetically modified to contain 3 R genes from wild potato relatives to confer resistance to the L.B. disease. Testing of transgenic events conducted in the Lab and greenhouse in Kenya and more than a dozen confined field trials in Uganda demonstrated complete resistance to L.B. disease. The R genes have been used in conventional breeding as single genes, but resistance has been rapidly overcome by new strains of *Phytophthora infestans* responsible for L.B. disease. The stack of 3 resistance genes ensures that resistance to late blight is more durable than single gene resistance. R proteins (products of R genes) trigger the natural plant defence mechanism against pathogens; they are not toxins killing the pathogens.

Three projects have so far progressed to Environmental release, as summarized below:

Application/Project	Status
Bt maize	NPTs were successfully completed in Embu, Mwea, Kandara, Kibos, Kakamega & Alupe
Bt Cotton	Commercialized
Modified colour Gypsophila flower	Rejected
Virus resistant Cassava	NBA conditional approval (for NPTs) was granted in June 2021

Multi-location NPT sites for Virus resistant Cassava have already been identified.

Opinion

Regulatory perspective of G.M. food and feed safety in Kenya

Dr Billy Ratemo

The concept of food and feed safety, particularly concerning the perceived impact of genetically modified products on human, animal health and the environment, is of profound concern in Kenya. Food and feeds are deemed safe if there is a certainty that no harm will result from their consumption.

National Biosafety Authority employs a robust regulatory process to assure the safety of G.M. food/feed. However, it is essential to note that we do not have G.M. food/feed currently sold in the Kenyan market.

The Authority applies four principles to determine safety via risk assessments. First, the process is based on science – sound and transparent; second, it is done on a case-by-case basis; third and fourth are that G.M. food/feeds must have a history of safe use and the concept of substantial equivalence – risks posed by G.M. food / feeds should both be at the same level with their conventional counterparts respectively.

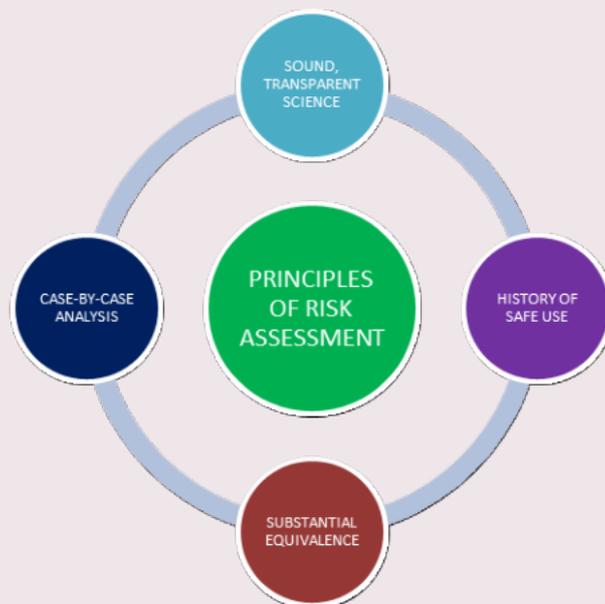


Figure 3 – Principles of food and feed safety risk assessment

The developer submits a dossier to NBA detailing features of the donor organism, recombinant and recipient plants, nutritional, toxicity, and allergenicity information that helps in risk assessment. Then, a team of assessors comprising food, molecular, toxicological, proteomic, and biochemical scientists goes through the dossier to determine if it is as nutritious and safe for consumption as its conventional counterparts.

The team then recommends to the Authority to approve or reject the dossier. After that, NBA makes a final determination on the application subject to environmental risk assessment and socio-economic considerations.

"...we do not have G.M. food/feed currently sold in the Kenyan market"

NBA and the developer carry out post-market monitoring of approved G.M. food and feed products to determine long-term health effects associated with its consumption. The Authority uses guidelines from the Codex Alimentarius Commission, Organization for Economic Cooperation and Development (OECD) – reports on the safety of novel foods and feeds; Biosafety Clearing House (BCH) - exchange scientific, technical, environmental, and legal information on G.M. organisms; Food and Agriculture Organization (FAO) – G.M. foods platform, Agriculture and Food Systems Institute – to ascertain the composition of food crops; Allergen Online – for identification of proteins that cause allergic reactions among others to monitor on the safety of G.M. food/feed.

On the local scene, NBA collaborates with the Kenya Plant Health Inspectorate Service (KEPHIS), the Kenya Bureau of Standards (KEBS), Department of Public Health, Department of Veterinary Services (DVS), Kenya Agricultural and Livestock Research Organization (KALRO), Government Chemist, and the Horticultural Crops and Development Authority (HCDA).

Genetically Modified Cassava can Raise Living Standards in Kenya

By Elphas Sambu Simiyu



Display of a genetically modified cassava by one of the biosafety officers.

Cassava (*Manihot esculenta* Crantz.) has proved to be an important crop for African countries amid the threatening effects of climate change over the years. The crop is climate adaptable, exhibits appreciable productivity in poor soils, and can be cultivated without mechanization or costly inputs like fertilizer.

Cassava is an alternate staple food in most African homes, ranking fourth after maize, rice, and wheat. Most importantly, cassava roots produce higher calories per capita unit than the alternative crops, can stay for up to 24 months in the soil without spoiling, and farmers have used its clonal stems for vegetative propagation. In addition, some communities in the Cassava cultivating regions consume cassava leaves as a rich source of vitamins.

Recently, Cassava has received considerable interest from various governments and industries to counter the prevailing food security threats owing to its unique and desirable

characteristics. Besides its importance for food, Cassava generates thousands of jobs due to its potential industrial use along the value chain.

Despite the great promise exhibited by Cassava towards mitigating the effects of climate change, the crop is seriously constrained by pests and diseases. Cassava Brown Streak (CBSD) and African Cassava Mosaic (ACMD) diseases are among the leading constraints faced by Cassava, causing up to 100% yield loss in the cases of severe infection. To overcome the disease, farmers' adoption of resistant varieties and breeding for disease-resistant varieties are the critical strategies for managing these two serious diseases. Consequently, scientists from the Kenya Agricultural and Livestock Research Organization have developed a CBSD-ACMD-resistant cassava line 4046 using RNA interference (RNAi) technology. The cassava line 4046 is also referred to as Genetically Modified (G.M.) Cassava.

The NBA board, during the 41st Full board Meeting held on 15th June 2021, approved the application for the environmental release of the G.M. cassava. If well adopted by farmers, G.M. cassava has great potential to revolutionize the agricultural sector in Kenya. Other than the variety being resistant to Cassava brown streak disease (CBSD) and African Mosaic disease (ACMD), it has the potential to give higher marketable yields compared to the conventional varieties. Furthermore, G.M. cassava has a good peeling ability, which cassava consumers prefer, both at subsistence and commercial level, for easier processing. Therefore, Kenyan cassava farmers are set to reap higher yields and earn higher profits.

The improved G.M. cassava is expected to spur manufacturing, create employment and contribute to Kenya's economy, in line with the country's Big 4 Agenda addressing manufacturing and food security.

Leveraging technology

Kenya TradeNet System: A Revolutionary Tool for GMOs Surveillance

By Julia Njagi, Bii Felix, Joseph Odongo

The Kenya National Electronic Single Window System was implemented under a public single-window business model. The Kenya TradeNet System, which is part of the Kenya Vision 2030, is meant to make trade easier by speeding up customs checks and cutting down on the cost of trade. The System's objective is to provide the trading community and stakeholders with a single access point to all external trade-related services and ensure compliance with trade-related legal requirements. One of the outstanding features of the KenTrade System is the risk profile module which profiles consignments as high risk and low risk.

The Dynamic Risk Management Module

The Dynamic Risk Management module in the Kenya TradeNet System has made it easy for government agencies to target and release cargo. The System enables agencies to profile cargo based on various predefined criteria, such as the country of origin, the nature of the cargo, and the importer/exporter's history, among others, making it simple for an agency to target specific individuals/cargoes without inconveniencing others.

Key Benefits of TradeNet System

The National Biosafety Authority dramatically benefits from the KenTrade System in carrying out its mandate of regulating genetically modified organisms in Kenya. The System

has simplified import and export processes and procedures, increased process transparency, and improved information sharing. In addition, the System has created a stable and dependable platform for international trade stakeholders to collaborate. Without a doubt, the KNESWS is a game-changing trade facilitation tool for both traders and regulators.

NBA officers stationed at various entry points can verify documents from ship owners lodged in the Single Window and determine whether they are products of interest for further analysis and ensuring compliance with the Biosafety Act of 2009. The System eliminated the time and expense associated with travelling to various regulatory bodies to apply for permits, increased customer satisfaction, and fewer complaints. As a result, inspections and clearances of genetically modified organisms have become more predictable and transparent. Additionally, administrative costs associated with storing and retrieving physical documents are significantly reduced/eliminated. Further, the Kenya TradeNet System has provided secure, accurate, and efficient data repository and reporting capabilities, enabling real-time data updates and enabling PGAs to quickly generate reports for prompt decision-making.

In conclusion, National Bio-Safety Authority has informed its stakeholders that all new permit applications must be submitted through the upgraded trade net system; <https://ftp.kenyatradenet.go.ke/TFBSEW/cusLogin/login.cl>. In addition, the risk profile module is set to enhance the Authority's responsibility in regulating the transnational movement of genetically modified organisms in Kenya.

Awareness creation

Sensitization on the 4th National Report on Implementation of the Cartagena Protocol on Biosafety and Biosafety Clearing House (BCH)



NBA Staff members and stakeholders during the Sensitization of the 4th National Report exercise in Sarova Panafri Hotel, Nairobi- Kenya. The workshop started on 17th to 18th March 2022.

NAIROBI, KENYA: The National Biosafety Authority conducted a two-day Workshop for the Sensitization on the 4th National Report on implementing the Cartagena Protocol on Biosafety and the Biosafety Clearing House (BCH).

The two-day workshop was meant to;

1. Sensitize stakeholders on international environmental conventions since Kenya is a party to the Conventional Biological Diversity (CBD) and the Cartagena Protocol on Biosafety.
2. Apprise stakeholders on the 4th National Report on implementing the Cartagena Protocol on Biosafety.
3. Acquaint stakeholders on the new BCH Platform and its features.
4. Explain the role of different stakeholders in BCH Management.

The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement on biosafety as a supplement to the Convention on Biological Diversity, effective since 2003.

The Biosafety Protocol seeks to protect biological diversity from the potential risks of genetically modified organisms resulting from modern biotechnology. In addition, the Protocol clarifies that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits. The Protocol established a Biosafety Clearing-House (BCH) to facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, living modified organisms; and to assist Parties in implementing the Protocol.

In the year 2000, Kenya signed the Cartagena Protocol on Biosafety. In compliance, national reports on the Protocol implementation are submitted every four years. The first National Report was submitted in 2007, the second in 2011, and the third in 2015.

The workshop was sponsored by the United Nations Environment Programme (UNEP) and the Global Environment Facility (GEF).

Participating in Kenyatta University's 15th Annual Career Week 2022



Dr Roy Mugiira, the NBA Director of Technical Services (3rd from Right), in a group photo with some Kenyatta University students during the Career Week 2022. He took the opportunity to mentor them.

Members of the National Biosafety participated in Kenyatta University's 15th Annual Career week at the university's graduation square. Themed "**Dynamic World: Creativity, Innovation and Technology as the Main Skills for the Future Work**", the event took place from 22nd to 28th January 2022.

The career fair concept was meant to provide prospective job seekers with an opportunity to meet multiple organizations in one place. Therefore, it is a big-time saver for job seekers and the organization. In addition, it provided an opportunity for the Authority to create awareness of its service charter procedures, career growth prospects within the organization, and the Authority's mandates in Kenya.

The career fair provided the best opportunity for the students to access multiple employers at a time. As an organization, we met numerous candidates in one place and had the convenience of requesting them to apply for internship and attachment positions.

Corporate Social Responsibility

Tree Planting at Rungiri Primary School



Rungiri primary school pupils planting the tree seedlings during the campaign.

National Biosafety Authority sponsored and participated in a tree planting exercise at Rungiri Primary School. The initiative saw more than 1000 pupils participate in planting 1,200 tree seedlings.

Rungiri Primary School was preferred because it is a public school located in a semi-urban environment. However, tree cover within its compound had been dwindling due to tree cutting to support the school feeding programme and the construction of classrooms.

The school has an adequate land size, about 1500 pupils, and a borehole that makes it easy to care for growing seedlings through watering. Again, the teachers and pupils were committed to increasing the tree coverage; hence, it was suitable for this noble initiative.

The Authority understands trees' critical role for people and the planet. In a semi-urban environment, the trees will provide shelter and improve people's mental and physical health. They will promote health and social well-being by eradicating air pollution, reducing stress and encouraging outdoor physical activities. This will be good, especially for the pupils at Rungiri Primary School.

Additionally, the assorted indigenous trees will be ready for harvest after 5-10 years, having chosen a fast-growing variety to provide timber and firewood for the school. Availability of

timber will minimize construction costs in the school, whereas the firewood will be helpful in cooking, thus promoting the school's feeding program.

On special request by the school administration, NBA provided 200 fruit tree seedlings (avocado, passion, lime and guava). The seedlings will be used to facilitate the pupils' CBC practical assessments. Also, they will provide fruits to the pupils once they mature.

NBA hired the services of the Kenya Forestry Research Institute (KEFRI) to assist in demonstrating the proper ways of planting and taking care of tree seedlings.



Pupils of Rungiri primary school holding tree seedlings during the tree planting campaign.



Photo Gallery



NBA technicians using the PCR machine at the Molecular Biology Laboratory



Prof Aruna Kilaru (Right) and Dr Roy Mugiira during a courtesy call that she made at NBA. Prof Aruna Kilaru is an AAAS STP Fellow, Science Advisor and International Trade Specialist.

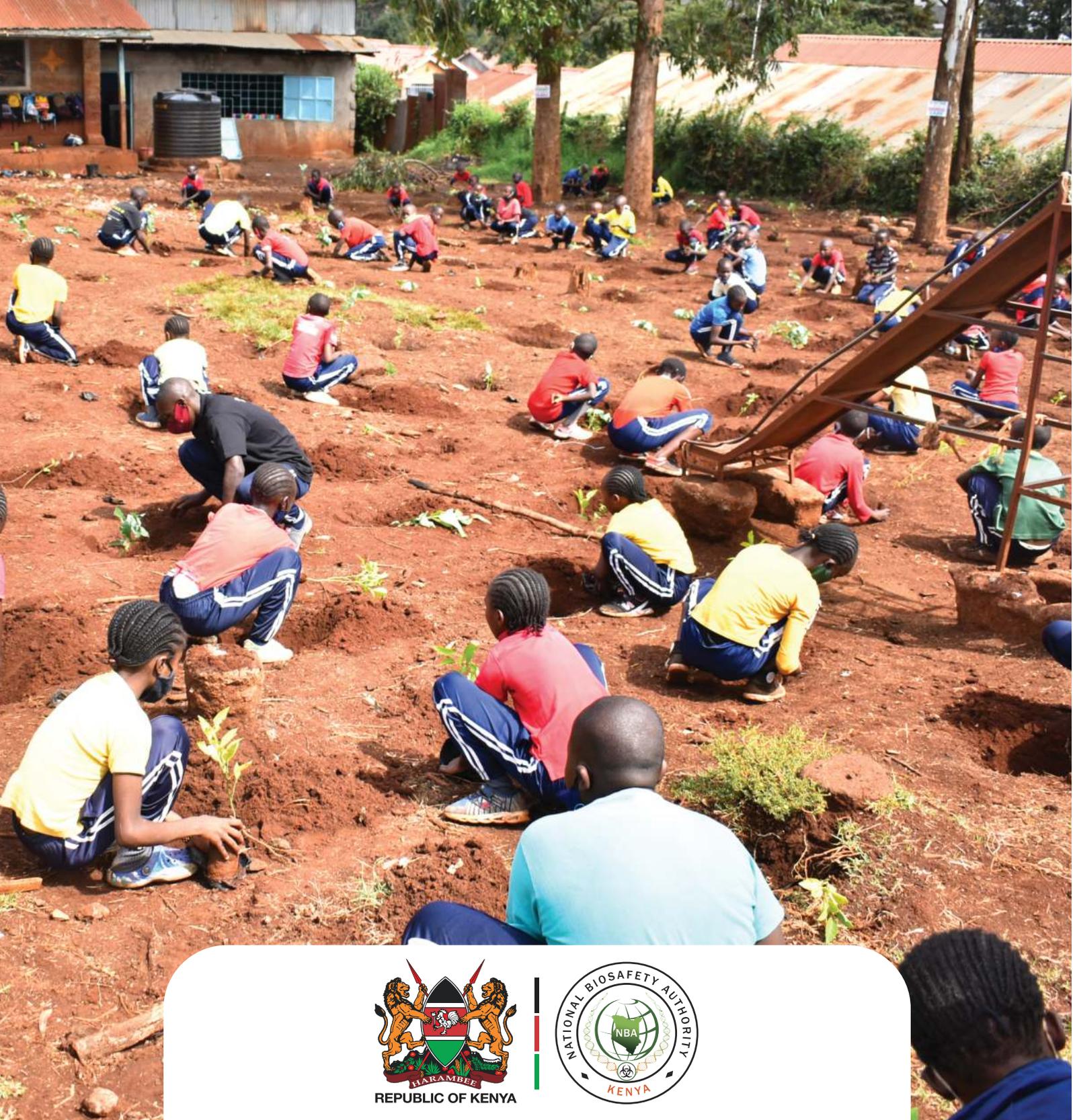


NBA staff member engaging high school students during the GMO awareness creation activity at ASK Show in Meru.



Biosafety officer supervising the planting of GM Cassava in Alupe- Busia County.





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Biosafety Kenya



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NBA is ISO 9001:2015 Certified