

NOT FOR SALE

JANUARY - JUNE 2018

THE BIOSAFETY-ZAMBIA NEWSLETTER

A Newsletter for the National
Biosafety Authority (NBA) Zambia



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VOLUME 1: ISSUE NO.1

Harnessing Biotechnology and Biosafety for sustainable development



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The Chief Executive Officer's Message:

Welcome to the first issue of **The BIOSAFETY-Zambia Newsletter**, a bi-annually publication. We intend to make it a regular publication and use it to keep you updated with news and developments which relate to modern biotechnology, Genetically Modified Organisms (GMOs), biosafety and biodiversity.

Our mandate is to regulate the research, development, application, importation, export, transit, contained use, release or placing on the market of any GMO whether intended for use as a pharmaceutical, food, feed or processing, or a product of a GMO. We also ensure that any activity involving the use or a product of GMO does not have any socio-economic impact or cause harm to human, animal health and the environment in the country. I am happy with the progress we have made in executing our mandate despite being in existence for about four years.

This biannually publication will be giving you updates on what we are doing as an institution and latest developments in the science field especially biosafety

and biotechnology and decisions and developments relating to the protocols that we are party to as a nation. It will not only inform you, but also educate you on a number of issues relating to our mandate and what is happening locally, regionally and internationally in relation to our core business.

It is our sincere hope that through this publication we will also help address some of the issues and concerns from stakeholders, clients and partners. We are so delighted that the publication of the Newsletter has finally come to fruition. This is a milestone for us. Look out every six months for interesting and educative information. We shall endeavor to update you on the latest developments.

We also hope to get feedback from you. We welcome suggestions, concerns and we want to assure you that we will do our best to respond to you. There is so much development in biosafety and biotechnology which as a country, we cannot ignore.

We hope you will enjoy this new way to keep you updated with the latest news. We wish you all a very fruitful 2018. Enjoy reading!



Mr. Lackson Tonga,
Chief Executive Officer,
National Biosafety Authority

“It is our sincere hope that through this publication we will also help address some of the issues and concerns from stakeholders, clients and partners.”



Editors Note!



Sandra Lombe-Mulowa
Communications Officer
National Biosafety Authority



“
I am delighted to introduce the first issue of The BIOSAFETY-Zambia Newsletter, a bi-annual publication. This newsletter provides you an opportunity to get information and also interact with us.
”

No GMO permit- punishment

As the Authority’s mandate is to regulate GMOs in the country we are concerned with the low number of people applying for permits to either import or place on the market products with or that may contain GMOs.

However, we are not sleeping and have continued inspecting trading places to ensure that all those dealing in products that may contain GMO have permits. Failure to obtain a permit from the Authority, results in non-compliance with the law. However, any person or organization that brings in GMO products without prior authority from the NBA (and the products undergoing risk assessment by the Authority) is likely to be fined and/or even imprisoned.

We have in the recent past visited and inspected a number of supermarkets, stores and malls to ensure compliance and also sensitize Shop managers on the importance of obtaining permits from the Authority for all products containing

GMO. At one of the chain supermarkets we had to confiscate some products containing GMOs that were placed on the market without a permit. For those that have applied for the permits but have not yet been issued with one, we advise them not to place any products containing GMOs on the market until they get a permit. We will not sit and watch people abrogate the law and bring in products which may contain GMOs and whose risk assessment has not been done.

We also advise consumers to pay particular attention and read contents of the products they are buying. When they are not sure of the product contents or suspect them to be Genetically Modified, they are free to inform us. We can assure them of confidentiality.

It is also important for those trading in products containing GM products to display their permits or request their suppliers to avail them copies of such.

WHO WE ARE: The Authority

The Authority

We are a Government statutory institution established under the **Biosafety Act No. 10 of 2007**.

We fall under the Ministry of Higher Education (MoHE), department of Science and Technology. Our obligation is to regulate the use and development of GMOs in Zambia to maximize the benefits of modern biotechnology for end users, producers, consumers and the general public. We also ensure that all applications for GMOs undergo a comprehensive risk assessment by the Scientific Advisory Committee (SAC). SAC is a technical committee consisting of experts in various fields of science.

The Board/ Committees

We are managed by the Board of Directors appointed by the Minister. The Board is supported by two (2) sub-committees, namely Scientific Advisory Committee and Administration & Finance Committee. The Management Board is composed of a maximum of thirteen (13) members. The Board members term of office is three years and a member can only serve two terms. The current Board is chaired by Dr Paul Zambezi, who is the second Chairman since the Authority came into effect. The team meets once every quarter.

The Secretariat is headed by the Registrar who is also the CEO and Secretary to the Board. The Registrar manages the day to day administration. The Authority has six units which include Standards and Technical, Imports & Exports, Research & Fields, Legal, Communication, Administration and Finance.

The Board



Dr. Paul Zambezi
Board Chairman



Mr Marlon Banda
Board Vice Chairman



Dr. Patrick C. Chikoti
Member



Dr Elizabeth Chizema
Member



Mrs. Mable Simwanza
Member



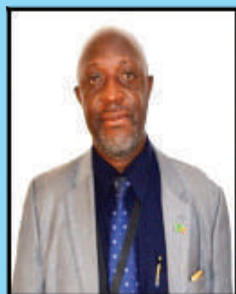
Mr. Beaton Kaluba
Member



Mrs. Jane Chinkusu
Member



Mr. F. Gondwe
Member



Mr. Sunday Chikoti
Member



Mrs. Natasha B Museba
Member



Mrs. Doreen Chomba
Member

WHO WE ARE: The Authority

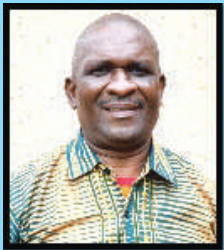
Scientific Advisory Committee (SAC)



Dr. Patrick C. Chikoti
SAC Chairman



Dr. Evans Kaimoyo
SAC Vice Chairman



Prof. Kavwanga E. Yambayamba
Member



Prof. Stephen Syampungani
Member



Dr. Lisulo Nyambe
Member



Prof. Philip O.Y. Nkunika
Member



Dr. Martin Chiona
Member



Dr. Aaron Shibemba
Member

Administration & Finance Committee



Mr Marlon Banda
AFC Chairman



Mrs. Mable Simwanza
AFC Vice Chairperson



Mr. Guest Mugala
Secretary



Mrs. Doreen Chomba
Member



Mr. Peter Mwila
Member



Mr. Lewis Libinga
Member



MEET THE TEAM- SECRETARIAT

The Registrar

Mr Lackson Tonga was appointed as Chief Executive Officer (CEO) and Registrar of NBA effective 1st December, 2017. He was until his appointment Acting Registrar. Prior to joining NBA in 2016, Mr. Tonga was Chief Science Officer at the Ministry of Higher Education. He is a science, technology and innovation policy specialist by profession with 13 years' experience in the industry.



Senior Biosafety Officers

Mr Christopher Simuntala -joined NBA-Zambia in 2016 as Senior Biosafety Officer-Standards and Technical Liaison. Mr Simuntala is a Medical Scientist with a BSc in Biomedicine (UNZA) and holds an MSc in Biotechnology with a specialty in communicable diseases and life Sciences research. He has over 20 years of work experience. Before joining the NBA, he worked at the Central Veterinary Research Institute.



Mutibo Chijikwa – Mushenywa is the Senior Biosafety Officer – Research and Field. Her role involves supervision and undertaking inspection services in order to ensure compliance to regulations, guidelines and standards in research and field facilities in the use and handling of GMOs and their products. She joined NBA in 2016. She holds a Master of Science in Entomology and a Bachelor of Science in Entomology and Parasitology from the University of Zambia.



WHO WE ARE: The Authority

Communications Officer



Sandra Lombe – joined the Authority in December 2017. She is a Media and Communication/ Public Relations Specialist. She is currently pursuing Master of Science in Public Relations and Communications. She holds a Bachelor’s Degree in Public Relations and Communications and a Diploma in Journalism. She has previously worked for the Private sector and Non- Governmental Organisation, as a Journalist, Managing Editor, Public Relations Executive, and Communications, Promotions and Partnership Officer.

Human Resource and Administration Officer



Mrs Emelda Mulenga-Chaling'anga- joined NBA in 2015. Mrs Chaling'anga is a Human Resource Officer. She holds a Bachelor in Human Resource Management and Secretarial. Her interests include reading, listening to music, public speaking, networking and attending educational events.

Accountant

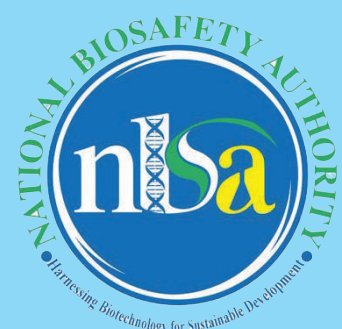


Mrs Esther Mutale Kalukango- Joined NBA in 2016 as an Accountant. She holds a Master’s of Science in Accounting and Finance from CBU and ZICA professional qualification. She has over five years work experience in the Financial Accounting with extensive experience in management of accounting systems and procedures, public accounting and reporting. Her interests include reading and learning new things. Prior to joining NBA Mrs. Kalukango worked for Mufulira Municipal Council as Senior Accountant Assistant.

Secretary



Mrs Faith Lumba Chanda- Joined NBA in October 2017 as Personal Secretary to the Registrar. She is a Secretary by profession.



WHO WE ARE: The Authority

Accounts Assistant

Richard Muleya- Joined NBA in 2015 February as Accounts Assistant. He has a qualified ZICA technician. Mr Muleya is currently pursuing Bachelor's Degree in Accountancy and Finance at the University of Lusaka.



Procurement & Supplies Assistant

Isaac Bwalya- Joined NBA in May 2016 as a Procurement and Supplies Assistant. He holds a Professional Diploma in Procurement and Supply. Mr Bwalya's hobbies include watching Planes.



Office Assistant

Edward Katulwende- joined the NBA in 2015 as Office Assistant. He is currently pursuing a Bachelor's Degree in Agricultural Science at Zambia Open University.



Driver

Caphas Nkandu

Mr Nkandu Joined the NBA in October 2017 as a driver.



Driver

Humphrey Chibangamoto- is a Driver, he joined NBA on 2nd March 2015.



Questions & Answers

What is a GMO?

A genetically modified organism is any biological entity, capable of replication or transferring genetic material or any plant, animal or microorganism, whose genetic material has been altered through modern biotechnology.



Are GMOs allowed in Zambia?

GMOs are allowed in Zambia once they have undergone risk assessment and have been authorized by the NBA in writing. Permits have been granted on products and of GMOs.



Does the NBA bring GMOs in the country?

No. The NBA does not bring GMOs in the country. The Authority regulates the use and development of GMOs in Zambia to maximize the benefits of modern biotechnology for end users, producers, consumers and the general public.

The NBA do not promote nor prohibit any Genetically Modified Organism but regulates all matters relating to GMOs.

The Authority ensures that any GMO product coming into the country does not have any adverse effects on the animal, humans and the environment. Also all GMOs passing through the country are well secured so that they do not spill in the country. Zambia being a landlocked country and we have neighbours that may want to export their products to other countries but have to transit through Zambia.



Whose interests does the NBA Protect?

The NBA serves the interests of consumers, producers, stakeholders involved in modern biotechnology and the general public. - NBA



Kuala Lumpur Supplementary Protocol comes into effect

The coming into effect (March 2018) of the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress is a good step and timely. As NBA we are happy as this is key in contextualization of the Biosafety Act.

Zambia is a part to the Cartagena Protocol and the coming into effect of the Nagoya-Kuala Lumpur Supplementary Protocol to the Cartagena Protocol on Biosafety, is very welcome. The Cartagena Protocol addresses the handling and transiting of GMOs so that they do not have adverse effects on human, animal health and the environment. The protocol is important for trade and helps ensure that all those that are party to it adhere to the regulations.

Zambia acceded to the Cartagena Protocol in 2004. The Supplementary Protocol was adopted on 15 October 2010 in Japan,



as a supplementary agreement to the Cartagena Protocol. It aims to contribute to the conservation and sustainable use of biodiversity by providing international rules and procedures in the field of liability and redress relating to Living Modified Organisms (LMOs). The Protocol requires that response measures are taken in the event of damage resulting from LMOs or where there is sufficient likelihood

that damage will result if timely response measures are not taken. It includes provisions in relation to civil liability and Parties may develop them further. Response measures are any reasonable actions to prevent, minimize, contain, mitigate or otherwise avoid damage or measures to restore biological diversity. Zambia is yet to ratify to the Supplementary Protocol.

NBA/bch.cbd.int

Certify your products, Farmers, Producers and Processors urged

We are calling on all farmers and producers to have their products certified either non genetically modified or genetically modified. It is very important that the farmers have their produce certified either as non-genetically modified or containing genetically modified organisms (GMOs) before they can sell and export.

NBA is the only institution mandated by the Act to prove whether a product is non GMO or contains GMO. We test and issue clear-

ance. It is therefore essential for the farmers and producers to take it upon themselves and ensure that their produce and products are certified accordingly. We appeal to farmers, producers and processors to engage us.

It is also important that all products for exports or imports are clearly identified and labelled whether they may contain GMOs or not. Last year only three farmers (two small scale and one commercial) had their products certified.

Under the 'procedure for export' its provided for that any person who intends to export any product that contains GMO or a product of a GMO shall provide the NBA with a written advance informed agreement or notification from a competent authority in GMOs of the importing country. - *NBA*



HIGHLIGHTS...

Research Trials

Zambia is making headways in research and development. We have so far approved three research applications, two on HIV vaccine and another for Malaria control.

The Centre for Infectious Disease Research in Zambia (CIDRZ) is conducting research trials on the safety and immunogenicity of HVTN 120/ALVAC in Lusaka and another trial (involving the release of a heterologous prime/ boost vaccine regime for the HVTN 705/ALVAC, a phase 2b clinical trial to evaluate the efficacy of the genetically modified vaccine in healthy HIV- 1 uninfected female participants) in Ndola and Lusaka with Zambia Emory HIV Research Project (ZEHRP). The malaria control research is being done at

Macha Research Trust in Choma and it is still at confined stage.

The SAC reviewed the three applications and were found to have met the required threshold and also other requirements from collaborating partners such as Zambia Medicines Regulatory Authority and the Biomedical Research Ethics Committee hence the approval.

In addition to the research projects we have approved 23 permit applications to import and place on the market food, feed and products derived from Genetically Modified Organisms (GMOs) since 2015. Among those who have been issued permits include Comox Trading Ltd, Horizon Distributors and Zambian Brands. - *NBA*



“

In addition to the research projects we have approved 23 permit applications to import and place on the market food, feed and products derived from Genetically Modified Organisms (GMOs) since 2015.

”



GMO's and NBA the Mandate

Genetically modified organisms (GMOs) are organisms (such as plants and other living organisms derived from modern Biotechnology techniques) whose genes have been artificially altered to modify their characteristics. GMOs may be plants, animals or most commonly microorganisms including bacteria, virus's parasites and fungi.

Humans have indirectly changed traits in plants and animals since time immemorial, but new techniques of molecular biotechnology have resulted in the ability to target specific traits for alteration. Biotechnology has allowed the introduction of proteins, for example, that are not native to a given species. Biotechnology has also been defined as the use of biological processes of microbes, plants and animal cells for the benefit of humans. Genetically modified products such as foods, feed and pharmaceutical products have been introduced into the society and food supply chain.

Therefore, the NBA's mandate is to regulate research that may involve modern biotechnology to come up with new organisms that

could be plant varieties or animal breeds or other organisms, modification of organisms to come up with new products such as DNA vaccines, cosmetics or the use or manipulation of organisms for whatever means, import, export, transit, contained use, release or placing on the market of any GMO whether intended for use as a pharmaceutical, food, feed or processing, or a product of a GMO. Our aim is to ensure that any activity involving the use of any GMO or a product of a GMO prevents any socio-economic impact or harm to human and animal health, or any damage to the environment or biodiversity. Therefore, our major role is to regulate the application of gene technology and ensure safety of the Zambian community.

Such GMOs or products need to be regulated until they demonstrate that they are safe through risk assessment. Such crops may have important benefits to farmers and consumers. For example, some soybeans plants have been modified to produce less saturated fat than conventional soybeans and offers significant consumer health benefits.



—By Christopher Simuntala

“

Our aim is to ensure that any activity involving the use of any GMO or a product of a GMO prevents any socio-economic impact or harm to human and animal health, or any damage to the environment or biodiversity.

”



HIGHLIGHTS...

Inspections intensified

It is an offence to import, export or place on the market GM products without prior authority from the NBA. Against this background we have intensified inspections to ensure that all

those selling products containing or made from genetically modified organisms have permits. Recently we carried out operations and inspections together with other law enforcement agencies and

did confiscate some products that were found to be on the market with a permit from the Authority. We also withdrew some products from some supermarkets that have applied for permit to place on the market but have not yet been issued with one. We wish to warn all those trading in food, feed and pharmaceuticals that may contain products of GMO to get permits for placing on the market. We will not be relevant until we ensure that the law is not being abrogated.

We are also working with partners at all points of entry (borders) to ensure that any products of GMO without permits are not allowed in the country. - *NBA*



Permit application process

The Application Process

1. Applicant establishes an Institutional Biosafety Committee (IBC) and registers with NBA.
2. Applicant applies for permit and provides other supporting information.
3. NBA Secretariat checks for completeness and accepts the application.
4. NBA forwards copies to appropriate referral agencies for comments.
5. Public Consultation—the applicant advertises in two public newspapers inviting the public to submit comments to the Authority within 30 days.
6. The Scientific Advisory Committee (SAC) reviews the application, and incorporates public and referral agency comments in its final recommendations to NBA.
7. NBA makes a decision.
8. NBA notifies the applicant and the public.
 - (a) In case of missing information or an incomplete application, NBA re-requests for additional or missing information from the applicant.
 - (b) In case of rejection, NBA gives the applicant a notice of rejection.
 - (c) In case of the application being compliant to the Biosafety Act, the NBA issues the applicant with a permit.

- *NBA*



Zambia still GMO grain free

Currently there is no activity or entity involving GMO grains in the country. NBA registrar Mr Lackson Tonga explains that Zambia has no genetically modified organism crops.

“If at all the country has any GMO grains then they could be would be coming from some neighboring country, Malawi, which is carrying out a confined field trial on genetically modified cotton.”

Nevertheless, Malawi has not yet commercialized its activity hence-



forth, it is still not possible for Zambia to import GMOs without the knowledge of the Authority. - NBA

Ugandan scientists develops a genetically-modified banana variety resistant to wilt

Banana is Uganda’s most important staple food crop, with over 20 million Ugandans depending on banana to feed their family. Yields of this vital crop have been greatly affected by banana bacterial wilt for roughly a decade, resulting in dramatic losses for the nation’s farmers.

Ugandan scientists have developed a genetically-modified banana variety that is resistant to wilt

but that variety cannot reach eager farmers until the nation’s Biosafety Bill is enacted. After years of wrangling, the Ugandan Parliament passed the bill in October 2017 but President Yoweri Museveni referred it to back to lawmakers in December, citing various concerns. With those concerns now reportedly addressed, State Minister of Agriculture Christopher Kibanzanga said last month

that “the bill will pass.”

As the video above shows, Uganda’s farmers certainly hope that Kibanzanga is right. For now, Uganda’s political system holds the key to helping farmers who are struggling with the devastating banana bacterial wilt disease. The potential for the GMO banana also extends beyond Uganda, as bacterial wilt disease ravages banana plantations across the globe.

Source: Alliance for Science (<https://allianceforscience.cornell.edu/blog/2018/04/gmo-banana-uganda-biosafety-bill-bacterial-wilt/>)



Dear readers please feel free to drop your questions, suggestions and concerns. We will be more than glad to respond. We look forward to hearing from you. You can email us on nbacommunications1@yahoo.com. Like our Facebook page: NBA-Zambia, follow us on twitter: @NBA_Zambia and visit our website on www.nbazambia.org

BIOTECH IN ZAMBIA

NISIR

The National Institute for Scientific and Industrial Research (NISIR) formerly known as National Council for Scientific Research (NCSR) is a government institution set up by the Science and Technology Act No. 26 of 1997 through the Statutory Instrument No. 73 of 1998. NISIR is funded by the government of Zambia. However, multilateral and bilateral cooperating partners fund specific projects of mutual interest. .

The institute with its unique laboratory facilities and experience is a leading research and development institution in Zambia and has a proven track record of developing technologies and offering quality analytical laboratory and other services that can be exploited by small and medium scale enterprises that normally have no research and development facilities of their



own for mutual benefit.

The functions of the NISIR as stipulated in the Science and Technology Act of 1997 Section 4 and Statutory Instrument No. 73, are:-

- To conduct and promote Scientific, Technological and Industrial Research in Zambia;
- To carry out research in civil, mechanic, chemical, electronic and electrical engineering, nuclear science, textile technology, biotechnology, energy resources,

industrial chemistry, food science, material science and natural products, information science, cartographic and location analysis

- To liaise with other research bodies within and outside Zambia conduction similar research activities;
- To cooperate and liaise with industries
- To develop and maintain a vibrant relation with the business sector.

THE NATIONAL BIOTECHNOLOGY LABORATORY OFFERS:

- GMO testing analytical services to the public.
- Training to tertiary education students (UNZA, CBU) through industrial attachment practical or thesis practical work. Training of interns is also done. It involves training in laboratory skills mentioned in the next segment.

Methods

Analytical methods used to process test materials are adapted from standard EU protocols of ISO21571: 2005 and ISO 21560:2005 and are listed below:

- The C-TAB method for extracting DNA from plant/seeds/processed foods – a fairly lengthy method but with high yield, good quality DNA.
- Spectrophotometry using Nanodrop spectrometer to quantify concentration and purity/quality of our extracted DNA.
- Polymerase chain reaction or PCR for amplification of the region of interest in the test DNA. European certified GMO reference materials are used as positive controls.
- The PCR products are run on 2D gel electrophoresis and the bands of DNA (results) are visualized using the Gel documentation system.

NBA/http://www.nisir.org.zm/

A LAYMAN'S DESCRIPTION OF GENE MODIFICATION AND GENOME-EDITING TECHNOLOGIES

Part One

A brief word on first generation genetic engineering

Genetic engineering, sometimes called modern biotechnology or recombinant DNA technology is one of the first generation technologies that have remained controversial for a long period. In the first generation technologies genetically modified organisms were produced by cutting genes as DNA using enzymes generally called nucleases (specifically restriction endonucleases) extracted from bacteria and joining the genes to other DNA molecules using enzymes called ligases, some of which were extracted from viruses.

The DNA molecules used to carry other molecules between cells were generally called vectors. First generation vectors were made from naturally-occurring circular DNA molecules called plasmids extracted from bacteria. As an example a DNA molecule from a plant could be cut using restriction enzymes and inserted into a plasmid vector to make a new DNA molecule called a recombinant DNA molecule. The new DNA



molecule made in a laboratory in this manner was then transferred into cells where it could produce a product or where the inserted gene could be studied further. Gene guns were in the olden days used routinely to shoot DNA into cells. Cells carrying the recombinant DNA molecule could then be treated to make whole living organisms which we now popularly call genetically modified organisms (GMOs).

Reasons for constructing recombinant DNA using DNA of different origins are many. One may simply want to produce a protein from the DNA from say a bacterium. Because the protein is made in large amounts, the process is called an over-expression process. Technologies for reduc-

ing the expression of a gene were also developed. These were called by various names including antisense RNA, RNA interference (RNAi) or simply gene expression knock down. Antisense RNA and RNAi may be viewed as second generation gene modification technologies. Many products have been produced and continue to be made from both first and second generation gene modification technologies including crops expressing genes from bacteria, animals expressing genes from viruses and medical products made from technologies using gene over-expression steps.

Look out for part two on Genome-editing technologies: Zinc finger nucleases, TALENs and CRISPR-Cas systems



By Evans Kaimoyo, Ph.D.

“
The DNA molecules used to carry other molecules between cells were generally called vectors. First generation vectors were made from naturally-occurring circular DNA molecules called plasmids extracted from bacteria.
”



CAPACITY BUILDING

Biosafety Clearing House (BCH)

In the bid to build capacity, the Authority in partnership with the United Nations Environment–Global Environment Facility held



a three-day sensitization and awareness workshop for key stakeholders in February. The training whose main focus was to establish the Biosafety Clearing House (BCH) as a fully functional and effective platform for implementation of the Cartagena protocol was held at Twangale Park in Lusaka. The aim of the sensitization and awareness

meeting was to consolidate and intensify cooperation to achieving common goals and objectives in the use and operation of the BCH in Zambia. Facilitators included Regional Advisors from the United Nations Environment Programme (UNEP) Dr Ossama Abdel-Kawy (Egypt) and Ms Lillian Munyah Nfor (Cameroon).

Risk Assessment and Communication

In April, 2018, the NBA organized another training workshop in collaboration with Food and Agriculture Organization of the United Nations (“FAO”). The event which was also for three days was on food safety assessment of genetically modified organisms in a bid to strengthen national capacities and enhance regional Biosafety Regulatory Systems and decision making processes. Some key stakeholders, NBA staff, Scientific Advisory Committee (SAC) members and the NBA

board attended the training at Cresta Golfview Hotel in Lusaka. Facilitators were from FAO and included Dr Bert Poepping (Germany), Dr Masami Takeuchi (Thailand) and Hellen Kajuju (Kenya).

Risk Communication

It is the exchange of information, advice and opinions between experts and people facing threats to their health, economy or social well-being.

Importance of Risk Communication

- It helps people make informed decisions for their health and well-being.
- It helps citizens of affected communities understand the processes of risk assessment and management, to form scientifically valid perceptions of the likely hazards, and to participate in making decisions about how risk should be managed.

- The best risk communication occurs when the participants are informed, the process is fair, and the participants are free and able to solve whatever communication

difficulties arise. Ideally, risk communication is a two-way conversation in which an agency or organization informs, and is informed by affected community members.

NBA



International Women's Day

We joined the rest of the world in celebrating the International Women's Day under the theme 'Time is now' 'Press for Progress'.



International Women's Day



NBA and Zambia Qualifications Authority staff pose for a photo at the 2018 Trade Fair



NBA CEO/Registrar during ZNBC Radio Interview



Visitors at the NBA stand during the Trade Fair



Judges at the NBA stand during the 2018 Trade Fair



NBA sensitization meeting with Harry Mwanga Nkumbula International Airport officers in Livingstone



Sensitisation meeting at the Livingstone Border

PHOTO FOCUS



NBA Strategic plan meeting



NBA Board Chairman Dr Paul Zambezi with Mr Ephraim Shitima



Staff engagement meeting



Risk Assessment and Communication workshop certificate presentation



BCH certificate presentation



Group Photo Risk Assessment and Communication



Risk Assessment and Communication workshop at Cresta Golf View



Participants listening to Bert Popping during the Risk Assessment and Communication workshop

BIOTECH AROUND THE WORLD

Women Play Vital Role in Biotech-Study

As the world celebrates the International Women's Day (IWD) 2018, more women are speaking up for their rights, equality, and justice. With the theme "Time is Now: Rural and Urban Activists Transforming Women's Lives", the United

Nations Commission puts a focus on the activism of rural women, who make up over a quarter of the world population, and being left behind in every measure of development.

According to a study conducted by ISAAA in China, India, and the Philippines, women play

a significant role in biotech crop farming.

In India, the male farmers take charge of the farm activities that require physical labor, but women take an active part in farm operations such as weeding, picking, and cleaning. In China, there has been a growing feminization in cotton farming. Field work is mainly conducted by women, which enable the men to engage in off-farm tasks. Based on focus group discussions, the reduction in pesticide use and

less labor requirement of planting GM crops benefited women.

In the Philippines, women take charge of managerial tasks such as budgeting farm expenses, deciding on inputs, and hiring laborers to work on the farm. These indicate that women who are engaged in biotech crop farming experience transformation because of the value they provide to their family farm operations and the benefits that they get from the technology.

<http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=16250>



Brazil Sugar Mills Start Planting GM Sugarcane

Around 100 sugar mills in Brazil have started planting the first commercialized variety of GM sugarcane. Developed by Centro de Tecnologia Canavieira (CTC) to be resistant from cane borer, the GM sugarcane has been initially planted on 400 hectares (988 acres) of land. Cane borer is a common pest in Brazilian sugar mills, which costs US\$1.5 billion of losses and insecticide expense annually. One of the solutions to the pest problem suggested by experts was to plant in-

sect resistant sugarcane. It is projected to improve yields, reduce production cost, and increase profit. In June 2017, the National Biosafety Technical Commission approved Bt sugarcane after proving that the sugar and ethanol obtained from it are identical to the conventional sugarcane. Studies also showed that the Bt gene and protein were completely eliminated from sugarcane products after processing. Environmental studies further showed that Bt sugarcane does not cause negative effects.

<http://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=16248>

Argentina Approves Three GM Crops

Argentina, the world's third largest producer of genetically modified (GM) crops, has approved two GM maize varieties developed by Syngenta and the local unit of Dow AgroSciences, as well as a GM soybean variety from Bayer SA. One GM maize has multiple genes for greater control of lepidopteran insects, as well as tolerance to glyphosate and glufosinate herbicides; the other has resistance to 2-4D herbicides and aryloxyphenoxy. The GM soybean has tolerance to the herbicides glyphosate, glufosinate, and isoxaflutole. The Minister of Agribusiness Dr. Luis Miguel Etchevehere said: "These first three authorizations granted in 2018 are the result of the agile policies that we promote as an axis of management. These policies aim to increase the sustainability, productivity and agroindustrial exports, for which we must take advantage of - the leadership of our country in the development, regulation, and safe and intelligent use of agricultural biotechnology."

The announcement (in Spanish) is available at Argentina's Ministerio de Agroindustria.

<http://www.isaaa.org/kc/cropbiotechupdate/article/>

CRISPR-Cas9 Can Modify Cotton Bollworm Genes

Cotton bollworm (*Helicoverpa armigera*) is one of the most disastrous pests worldwide, threatening various food crops. Genomic tools may provide effective ways to manage this pest. The team of Ming-Hui Jin from Southwest University in China aimed to test the CRISPR-Cas9 system to induce mutations for targeted mutagenesis in cotton bollworm.

By injecting a single guide RNA (sgRNA) together with the Cas9 protein, the team obtained

predictable mutations in the cotton bollworm genome. The team was also successful in generating several types of gene modifications using different combinations of sgRNA and Cas9 pairs, including mutations in the HaCad and HaAB-CC2 genes of the cotton bollworm.

These findings indicated the applicability of CRISPR-Cas9 to the cotton bollworm. CRISPR presents an efficient tool to engineer genomes of the insect for its management.



<http://www.isaaa.org/kc/cropbiotechupdate/article>

Kenyan Government Banks on Bt Cotton to Revive Textile Industry

The Kenyan government is banking on adoption of Bt cotton to revive the textiles and apparel industry and increase the contribution of the manufacturing sector to the country's GDP from the current 9.5 percent to 15 percent by 2022. Speaking during a national biotechnology stakeholders' luncheon, adviser on textile value chain at the Ministry of Industry, Trade and Cooperatives Mr. Rajeev Arora said the industry provides a great opportunity for realizing the Big Four Agenda, a government's action plan aimed at accelerating the country's economic growth in the next five years. A cotton taskforce formed in July 2017 was mandated to implement an ambitious roadmap for the introduction of Bt cotton and high-yielding hybrids between

2017-2022.

Arora, who is also a member of the taskforce, remarked that reviving the cotton industry will see an increase in production from the current 5,500 tons to 50,000 tons in the next five years. The government aims at creating 680,000 direct jobs through cotton farming, 210 jobs at ginning level, 6,000 at integrated mills and 25,000 at garments manufacturing. "The revitalization will further create an import substitution of Ksh1.2 billion (\$11.87 million) and enhance self-sufficiency of lint," he noted, adding that lint exports will bring Kenya Sh8.75 billion (\$86 million) in foreign exchange.

The National Environmental Management Authority (NEMA) has already received an environmental impact assessment (EIA) report

for the proposed National Performance Trials (NPTs) on biotech cotton. Addressing the stakeholders, NEMA's Chief Compliance Officer Margaret Njuki said that the public's input into the EIA process is critical in arriving at the final decision on the project. "Giving an opportunity to the public to give their comments on the report is a legal requirement. This also allows them to participate in the conservation and management of the environment," she explained. The trials will be conducted in nine sites to select best performing varieties for distribution to farmers. Previous research in the country showed Bt cotton yielded three times more than the conventional varieties, providing evidence of its vital role in revitalizing the sub-sector.

<http://www.isaaa.org/kc/cropbiotechupdate>

Experiences on Implementing GM Labeling Laws Tackled in Seminar

“Any kind of labeling has to fit within the labeling system in your country.”



This was the bottom line of Atty. Gregory Jaffe's presentation titled "Experiences in GM Labeling: How Do Other Countries Label GM Food" during the Agriculture and Development Seminar Series (ADSS) of the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) on April 10, 2018. Atty. Jaffe is the Associate Director for Legal Affairs of the Alliance for Science at Cornell University, USA.

According to Atty. Jaffe, experts and policy-makers should always keep

in mind that labeling must be accurate, neutral, not misleading, and informative. His discussion also centered on the complexities and issues surrounding labeling of GM products. The examples he shared showed that no two GM labeling laws are alike, as countries have different regulations when it comes to threshold levels and highly-processed ingredients, among other factors. This also affects the labeling of imported food products. On the other hand, voluntary labeling is an option for countries that do not have mandatory labeling laws. Other

countries opt to implement a disclosure law that allows consumers to know more about the product through an electronic or digital link in the package.

The seminar was organized by SEARCA Biotechnology Information Center (BIC), in coordination with the Program for Biosafety Systems (PBS) Philippines, Cornell Alliance for Science, and Department of Agriculture-Biotechnology Program Office (DA-BPO). It was attended by students, researchers, key scientists, and experts from the Los Baños scientific community.

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Part Two: A LAYMAN'S DESCRIPTION OF GENE MODIFICATION AND GENOME-EDITING TECHNOLOGIES

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NBA around Zambia





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