



# THE AFRICA BIENNIAL BIOSCIENCES COMMUNICATION (ABBC 2023) SYMPOSIUM

## Evolution of Genetic Improvement Tools in Agriculture: *Is Communication Matching Up?*

AUGUST 22-24, 2023 | Nairobi, Kenya

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### REPORT



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## ABBREVIATIONS AND ACRONYMS

ABBC	-	Africa Biennial Biosciences Communication
AU	-	African Union
EALA	-	East African Legislative Assembly
GMOs	-	Genetically Modified Organisms
ISAAA	-	International Service for the Acquisition of Agri-biotech Applications
NBTs	-	New Breeding Tools
PBS	-	Program for Biosafety Systems



# MESSAGE FROM THE CO-CONVENOR, ABBC2023 SYMPOSIUM



*Dr. Margaret Karembu, MBS  
Co-convenor, ABBC2023 and  
Director, ISAAA AfriCenter*

On behalf of the Organizing Committee of the Africa Biennial Biosciences Communication (ABBC) symposium, I would like to extend my heartfelt gratitude for your invaluable participation during ABBC 2023, held between 22nd - 24th August, 2023, in Nairobi, Kenya. We understand the commitment it takes to participate in an event like ABBC, and are truly grateful for your support. Your dedication to ensure communication trends are matching up with advancements in new breeding tools is truly inspiring!

The thoughtful presentations, engaging discussions, and interactions that took place throughout ABBC 2023 exemplified the shared commitment within our community to amplify public understanding of new breeding tools for enhancing their contribution to food systems and planetary health. It was truly a privilege to have such a diverse and accomplished group of individuals come together to exchange ideas and insights.

The range of perspectives and expertise you brought to the table enriched the depth and breadth of our discussions. Your questions, contributions, and interactions added immeasurable value to every session.

We were very fortunate to have had a diverse team of renowned experts in relevant fields participate in the Symposium. This coupled with the broad range of delegates comprising policy makers, regulators, scientists, editors and science communicators created an ideal platform to widen our networks, which will ultimately build useful synergies for greater outcomes moving forward. I am certain we all maximized on this noteworthy opportunity.

The connections made, the knowledge shared, and the friendships forged during the symposium are vital not only for your personal and professional growth, but also for the advancement of modern biotechnology.

On behalf of the organizing committee, I am honored to present to you this symposium report. The report captures amazing insights and ideas, and summarizes key outcomes and recommendations for shaping the future of communicating genetic improvement tools in agriculture. We encourage you to continue your involvement in our community and to keep the momentum going by applying the insights gained from the symposium to your ongoing work.

## SYMPOSIUM OVERVIEW

The 5th edition of the Africa Biennial Biosciences Communication (ABBC2023) symposium was held in Nairobi, Kenya, from August 22-24, 2023 and attended by 180 delegates from 23 countries.

The symposium was organized under the theme 'Evolution of Genetic Improvement Tools in Agriculture: Is Communication Matching Up?' It aimed at aligning communication approaches with advancements in new agricultural breeding tools for enhancing their contribution to sustainable Food Systems and Planetary Health. Specifically, the symposium interrogated narratives framing regulatory and policy perspectives on new breeding tools (NBTs) and their impact on Africa's goal for a transformed agriculture in line with Agenda 2063.

The delegates discussed the interminable challenge of misinformation, trust deficit, silo mentality and jargon in communicating about bio-innovations. Far-reaching resolutions on best-bet communication practices that will ensure proper utilization of genetic improvement tools in improving our food systems and healthy wellbeing in the face of climate change were adopted at the symposium.

The delegates at ABBC2023 comprised scientists, biosafety regulators, policy makers, science communicators and media editors, industry players, young researchers, lawyers and farmer representatives.

**180**  
**DELEGATES**

**23**  
**COUNTRIES**

Argentina, Belgium, Brazil, Burkina Faso, Cameroon, Colombia, Ethiopia, France, Ghana, Honduras, Kenya, Malawi, Malaysia, Netherlands, Nigeria, Philippines, Rwanda, South Africa, Switzerland, Tanzania, Uganda, United Kingdom and USA



## OBJECTIVES



1. Share lessons from the last three decades of communicating about modern biotechnology and implications on progress with new breeding tools.
2. Interrogate narratives framing regulatory and policy perspectives on new breeding tools and their impact on Africa's goal for a transformed agriculture in line with Agenda 2063.
3. Determine best-bet communication practices on new breeding tools that contribute to advancing sustainable food systems and planetary health goals.









# OFFICIAL OPENING

# SETTING THE PACE

It was all systems go as the Chief Guest, Kenya's Cabinet Secretary (Minister) for Agriculture and Livestock Development Honorable Mithika Linturi rose to the podium to officially open ABBC2023, the 5th edition in a series of bioscience communication symposia in Africa. From the onset, the Minister's speech set the tone capturing the very essence of the symposium by underscoring the importance of communication in science, and the need to communicate our priorities to address food and nutrition insecurity and build Africa's resilience in the face of climate change. Hon. Linturi expressed the Government of Kenya's commitment to actualize the potential of NBTs and harness its benefits to address the country's intractable food and climate challenges.

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**This commitment, he said, is demonstrated by the Cabinet decision to lift the 10-year ban on importation and utilization of foods derived from genetically modified organisms (GMOs) in October 2022. The Kenyan Government is banking on Bt cotton to revitalize its cotton sub-sector and spur up manufacturing through a vibrant apparel and textile industry.**

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He assured the delegates that the Government will continue supporting commercialization of agri-biotech crops.

The Minister identified misinformation, poor engagements and aggressive anti-GMO activism as major hurdles in tapping the potential of modern agricultural biotechnology to increase food productivity, address food insecurity and foster climate resilience.



*I call upon you, the delegates of ABBC2023, to suggest innovative communication strategies for combating misinformation and propose policy recommendations for taming this menace and cultivating a favorable ecosystem for innovations that transform.*

**Hon. Mithika Linturi**, Minister, Agriculture and Livestock Development, Kenya



The Chief Guest's punchy speech hammered the theme home, setting the stage for insightful and thought-provoking deliberations that would examine the place of communication in supporting utilization of NBTs for a better planet.



## Opening Statements

- Misinformation is a major impediment in advancement of bioscience technologies, such as NBTs. Innovative communication and policy action is needed in tackling this challenge.
- Stakeholders should come together, synergize their efforts and speak with one voice for bioscience innovations to be adopted and utilized.
- The private sector is an important bridge in reaching the last mile with some of the available biotech innovations.

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**AUDA-NEPAD and the Government of Kenya became the first policy decision organs to express readiness to adopt resolutions from ABBC2023.**

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*ABBC2023 brings together great minds who have the answers to important questions on how to actualize biotechnology and deliver its huge potential in addressing challenges such as food insecurity, job creation and undefined value chains.*

**Dr. Robert Karanja**, Co-founder and Chief Innovations Officer, Villgro Africa and Board Chair, ISAAA AfriCenter



*ISAAA AfriCenter Board poses for a photo with Kenya's Agriculture and Livestock Cabinet Secretary Hon Mithika Linturi*

## Remarks from Partners

Remarks from partners echoed a vibrant spirit of collaboration and synergy that flows within the veins of ABBC symposium. Kenyatta University and the Program for Biosafety Systems (PBS) highlighted how partnership with ISAAA AfriCenter and other ABBC partners has translated into success.

**Prof. Richard Oduor**, the Acting Registrar for Research, Innovations and Product Development at Kenyatta University spoke on behalf of the university's Deputy Vice-Chancellor (Research, Innovation and Outreach) Prof Caroline Thoruwa. He expressed the university's enthusiasm for being among partners implementing the Feed the Future Striga Smart Sorghum for Africa (SSSfA) project, a project that seeks to find a solution to the challenge of Striga weed on sorghum in the continent. The project holds tremendous promise in transforming farmers' lives in Kenya and Ethiopia.

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**The success of SSSfA initiative and other genome-edited projects in Africa relies not only on scientific breakthroughs but also on effective communication.**

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**Prof. Thoruwa** emphasized the relevance the of ABBC2023 theme saying it reflects the growing importance of bridging the gap between cutting-edge scientific advancements and accessibility of this knowledge to the greater public. She challenged scientists to proactively ensure the knowledge they generate transcends the boundaries of laboratories and academic journals, finding its way into the fields and homes of those who need it.

“

*Communication is the bridge that connects scientific potential to the practical impact, and it is an area where we must continually assess whether it is matching up with modern-day challenges.*

**Prof Caroline Thoruwa**, Deputy Vice-Chancellor (Research, Innovation and Outreach), Kenyatta University





**John Komen**, PBS Deputy Director, represented Dr. Judy Chambers, the global head of PBS. Komen said the symposium could not have come at a better time. The Deputy Director reflected on Africa's biosafety journey over the last two decades and pointed out key milestones in development and implementation of biosafety frameworks on the continent.

PBS conveys her utmost gratitude to national, regional and international partners and biosafety agencies for being in the trenches and making bold decisions on biotechnology innovations and ensuring farmers reap economic benefits from these technologies.

Enthused by this progress, PBS would use ABBC2023 to celebrate the 20 years of tremendous achievements recorded in this front since the program was established in 2003. "Our work is far from done; our journey is just beginning," Komen remarked.

“

*One critical lesson I have learned over the last 20 years is that having technologies in hand is not sufficient; having a wonderfully-crafted agri-biotech policy, biosafety law or guideline is not a guarantee for success. The success depends on effective communication and outreach.*

**John Komen**, Deputy Director, Program for Biosafety Systems



A section of ABBC2023 delegates

# Africa's Agricultural Transformation Journey: *From Challenges to Growth*

This presentation reflected on Africa's agricultural transformation over the last few decades and re-evaluated the progress made and challenges faced. It also interrogated the role of disruptive agricultural technologies, such as genetic engineering and genome editing, in transforming agriculture and livelihoods. This talk premised on the fact that agri-transformation is key in ensuring food and nutrition security in Africa and is a key strategic pillar of the African Union's Agenda 2063.

Agriculture is the backbone of the African economy, with the sector accounting for about 16% of the continent's GDP, 60% of its labour force, 20% of exports and is the main source of income and workforce for 90% of the region's rural population. Sadly, Africa has had historical challenges in traditional farming, key among them low levels of mechanization, poor agronomic practices, poor genetics, low levels of technology adoption, erratic climate (frequent droughts and floods) and poor soil health. These challenges have compounded the problem of hunger and malnutrition on the continent calling for urgent policy interventions.

In a bid to address this challenge, the AU adopted the Comprehensive Africa Agriculture Development Program (CAADP) as an instrument for promoting Africa's agricultural development, food security and rural transformation in line with Agenda 2063. In 2014, the AU adopted the Malabo Declaration as a reaffirmation to its commitment to the principles of CAADP to accelerate agricultural growth and transformation across the continent and attain key goals and targets by 2025. Of a big concern though is that only one country – Rwanda – is on-track to achieve the Malabo goals and targets by 2025 whereas 19 other countries are progressive but slow.

A case of green revolution in Ethiopia and massive transformations that came following the hunger crisis in 1980s were presented as a model of success. In the '80s, Ethiopia faced frequent droughts precipitating unprecedented famine that provoked international level interventions. A strong political will made agriculture the centre of Ethiopia's development.

The prevalence of moderate or severe food insecurity in Africa increased by one percentage point in one year to

**60.9%**

in 2022 (248 million)

*FAO Food Security  
Status Report 2022*

*Key drivers of agricultural transformation in the continent include strong and consistent political will and an enabling policy and legal environment.*

**Prof. Hamadi Boga**, Former Principal Secretary, Ministry of Agriculture, Kenya

This presentation also examined the potential of disruptive agricultural technologies (DATs) to accelerate agri-food outcomes and empower farmers. Modern biotechnology (precision breeding and genetic engineering) has great potential to disrupt agriculture as a tool for tackling the challenges. However, Africa is making a slow progress in adoption of biotechnology in Agriculture with only a few (seven) countries planting biotech crops.

Agricultural transformation translate to a food secure continent, better nutrition, improved health, cleaner environment, resilience to climate shocks and increased GDP growth and more jobs in agriculture.

# KEYNOTE ADDRESSES

## Evolution of Genetic Improvement Tools in Crops

This keynote address was delivered by Dr. Mahaletchumy Arujanan, Global Coordinator, ISAAA BioTrust. The speaker traced the journey and dynamics of genetically modified (GM) crops since they were first commercialized close to three decades ago. This keynote presentation served the delegates with valuable lessons gained in communicating about GMOs.

The close to 30 years of communication about GMOs have been marred by glaring mistakes such as over-claims, inward engagements (not engaging opponents) and low social media footprint. Misconception being created over time is that genome editing is better than GMO. A weak coordinated approach in communication has also created space for pseudoscientists to enter the stage.

One key lesson gained in communication about GM crops is political will is a key enabler in adopting agri-biotechnology. Another lesson is that effective communication builds public trust and enhances social acceptability of new technologies and regulations. Understanding your audience and potential consumers marks an important step towards acceptance of new technologies.



*If they trust you, they do not need to see your science; and if they do not trust you, they do not care to see your science!*

**Dr. Mahaletchumy Arujanan**, Global Coordinator, ISAAA BioTrust



Always align your data or information with the audience values. This strengthens your credibility, makes the message believable and establishes a personal touch between you and the audience. Dr. Arujanan said that it is time we change our heroes from scientists to farmers and consumers.



## Evolution of Genetic Improvement Tools in Animals

The second keynote address was delivered by Prof. Appolinaire Djikeng, Director General, International Livestock Research Institute. Noting the rapid increase in population, Prof. Djikeng observed that Africa's diverse livestock systems face increasing demand for products.

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**Among potential solutions that genetic improvement tools will deliver include feeding the ballooning world population that is projected to reach 9.8 billion by 2050, reducing greenhouse gases and carbon footprint, enhancing sustainable development and arresting the effects of climate change.**

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The speech highlighted some of the challenges of tropical livestock development. They include disease threats, challenging climate and production systems, feed and nutritional deficiencies, limited performance data and recording and low productivity. Genetic tools are proving an important option in addressing these challenges and unlocking the potential of Africa's livestock systems. Genetic tools that exist for animal improvement comprise selective breeding, artificial insemination, embryo transfer, gene-editing, transgenics and so on.

However, an effective communication strategy is needed to drive public awareness and acceptance of these technologies. There is a need for consistent, clear and transparent information to address concerns and benefits of genetic tools for animal genetic improvement.



*Tools for genetic improvement in animals have experienced significant growth worldwide in the past 10 years. As scientists, however, we have not been communicating adequately about the benefits of these tools. There is a need for consistent, clear and transparent information to address concerns and benefits of genetic tools for animal improvement.*

**Prof. Appolinaire Djikeng**, Director General,  
International Livestock Research Institute





## **HIGH LEVEL PANEL:** Charting the Course for better Communication about NBTs

The High Level Panel placed the voices of eminent personalities at the heart of the discussion. The panel delved into the evolution of genetic improvement tools in crops and animals, and assessed the effectiveness of communication strategies employed to disseminate information about these tools to different audiences. This session acted as a complement to keynote addresses as it proposed a toolset of effective communication strategies for better development, adoption and utilization of NBTs.

### **The following were takeaways from this session:**

- Continuous and sustainable policy engagements will over time cultivate a favorable policy environment for NBTs. There still exists poor political will in most African countries.
- Stakeholders should work in synergy and enhance their collaborations in charting a better course for NBTs.
- Need-based communication approaches were emphasized as the panelists called for more intensified public sensitization on NBTs to promote acceptance of these technologies.
- Emphasis should be put on the benefits that local private sector will reap from NBTs. The private sector exists for profits and business sustainability.
- Communication about NBTs should be simple, precise and to the point marked with clear messages.
- More effort is needed to show how NBTs will address animal welfare. Communication that addresses animal welfare challenges has been inadequate.
- Stakeholders should be pro-active in addressing misinformation and disinformation about NBTs, especially the use of scary images.



“

*There is need to attract a strong political will to drive adoption of disruptive technologies in agriculture. The continent needs to embrace latest technologies in seeds, fertilizer, mechanization, digitization and biotechnology.*

**Prof. Hamadi Boga**, Former Principal Secretary, Ministry of Agriculture, Kenya

“

*Let us listen to scientists and talk to politicians for favorable policies. Nigeria is generally receptive to agri-biotechnology thanks to massive advocacy carried out. However, we must continue optimizing the power of communication to get the entire farming community embrace the technology.*

**Arc. Kabir Ibrahim**, National President, All Farmers' Association of Nigeria



“

*The private sector exists for profits and is concerned with business and sustainability. Communication that enhances trust on biotechnologies and addresses the needs of private sector players is critical.*

**Ayalneth Tilahun Meteka**, Manager, Ethiopian Seed Association







*Voices on animal welfare have been lost in the conversation about biotechnology. There is zero communication between technology developers and the end users in regard to animal welfare.*

**Tennyson Williams**, Africa Regional Director, World Society for the Protection of Animals



*As scientists, we need to communicate in a simple and precise manner paying keen attention to clear messages on the limits of the technology and emphasizing that one technology can be complemented with another.*

**Dr. Canisius Kanangire**, Executive Director, African Agricultural Technology Foundation



*We acknowledge agri-biotech scientists who have taken a bold step to engage the East African Legislative Assembly (EALA) with facts amid raging debate on GMOs.*

**Hon. Francoise Uwumukiza**, Chairperson, Committee on Agriculture, Tourism and Natural Resources, EALA



## SCIENCE DIPLOMACY AND ADVICE

Held under the aegis of the Network of African Science Academies (NASAC), this session examined the nexus between scientific advancements and effective policy making in addressing societal challenges. The practices of both scientific research and policymaking present a huge opportunity to respond to today's complex world, which has been engulfed in volatility, uncertainty, complexity and ambiguity. Therefore, science advice comes with a high premium in informing sound policies in the face of these challenges. The panelists interrogated the place of science communication in policy making and proposed a set of sound communication practices that can influence better policies.

### The following sums up key deliberations from this session.

- There still exist weak links between research and policy making.
- Science advice that takes into account multiple perspectives and sources of evidence results into good policies.
- Openness and transparency around scientific data that underpins scientific advice is critical.
- Policy actions should inspire trust across the science community, policy makers and the public.
- Scientists should prepare policy briefs as part of policy engagement tools. Policy briefs communicate to relevant stakeholders to create a demand pool that will support technology application.



*Through the Network of African Science Academies (NASAC), we encourage our scientists to forge for three-fold outcomes: science for science, science for society, and science for policy.*

**Dr. Jackie Kado**, Executive Director, NASAC





## CASE STUDY PRESENTATIONS:

### Communicating NBTs for Impact (Crop and Animal Biotech)

Presented in this session were two case studies that explored the critical role of communication in shaping the development of sustainable food systems and One Health, with a specific focus on crop and animal production, and the impact of NBTs.

It was emphasized that NBTs come with potential benefits such as disease resistance in crops and animals, better nutritional quality, drought tolerance, salinity tolerance, parasitic weed control in crops and increased yields/productivity. The science/research community has always taken a back seat in communication about potential benefits of NBTs – they have failed to speak to the needs of the consumers.



*Consumer perception or knowledge is a key barrier in the adoption of biotech innovations. Understanding these technologies holds significant importance in predicting acceptance of these innovations.*

**Prof. Dr. Hans de Steur**, Professor of Agricultural Economics, Ghent University

One key observation from this session was the importance of the research community to utilize modern ICT tools to effectively communicate about NBTs. QR codes can be included on NBT-product packages for information such as nutritional composition and so on. Communication approaches that are proactive, transparent and culture/context-specific should be adopted.



*Communication about genetic products from animals should be assuring. Share positive stories that align with people's values and what they care about; such as stories that assure the steak they are going to eat is safe.*

**Dr. Tad Sonstegard**, CEO, Acceligen

It also emerged that there still exist communication pitfalls that continue to restrict post-approval uptake and use of genetic products from adapted high-performance dairy animals for Africa. Proactive engagement of all players in the value chain is one of the surest ways in addressing the aforementioned pitfalls. One key mistake in communicating about animal biotechnology is making big announcements on “new discoveries” that over-promise about the benefits of the technology before the technology is commercialized/approved. Also emphasized was a need for communication about animal biotechnology to be value-based and need-based. Address what is in it for consumers (WIIFM) such as product choices, pricing, nutritional value, proof of revenue and so on.

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*There is insufficient institutional capacity in the public sector to fully avail genome editing technology. Support to public institutions must be holistic and sufficient to assure their capacity to deliver the benefits of genome editing to those who wish to avail them.*

**Dr. Kevin Pixley**, Dryland Crops Program Director (DCP) and Wheat Program Director a.i. (GWP)



A section of the delegates at ABBC2023





## ROUND TABLE DISCUSSION:

### Systems Thinking towards Sustainable Food/Feed Supply and One Health

The discussion sought to underscore the importance of effective communication in delivering solutions that promote sustainable food/feed supply and One Health. Over the years, the world has steadily been shifting from traditional food production to sustainable food systems in the wake of contemporary realities such as rapid population growth, urbanization, changing consumption patterns, wealth creation and globalization. These new realities have come with a raft of challenges such as high calorie intake, low nutritional value, limited access to markets for small scale farmers and agri-enterprises, high levels of food wastage and loss, and increased incidences of food safety and a high ecological footprint.

The discussion revealed tremendous benefits of biotechnology along food/feed supply chain in Africa. Among them is bio-fortification of crops with Vitamin A and Zinc and introduction of heat-tolerant animals in sub-Saharan Africa. However, emphasis was put on the need to also push the agenda on the importance of livestock food system. Intensifying conversations about the importance of improving climate resilience and productivity in livestock through biotechnology should be a priority.



“

*Livestock food systems agenda is taking a back seat as animal researchers confine themselves in the lab with their microscopes. African Union Member States do not know what you (animal scientists) are doing. It is my hope that ABBC will become a platform to bring to the continental level the interesting work that livestock researchers are doing.*

**Dr. Mary Mbole-Kariuki**, Technology, Innovation and Skill Development Expert, African Union-InterAfrican Bureau for Animal Resources

It emerged that inclusion of women in biotech innovations is wanting. As most youth and women increasingly use and appreciate digital farming and marketing technologies, agricultural biotechnology tools such as biotech crops have remained elusive to them. There is a big disconnect on how we communicate how these technologies stand to benefit them.

The discussants brainstormed on several strategies that can be effective in building public knowledge about NBTs and fostering confidence in the capacity of biotech innovations to tackle prevailing challenges. Communication strategies proposed include development and delivery of consistent messages about the technology, explaining both the benefits and drawbacks of the technology (this builds public trust), preparation of audience-specific messages and speaking with one voice.



“

*The value of the technology is worth the space it sits on. We need to involve everybody in the ecosystem in order for our innovations to get to the end-user and have an impact on our society and our work.*

**Dr. Charity Mutegei**, Expert, Food Science and Technology



# INNOVATION MARKETPLACE

One standout event at the symposium was the innovation marketplace, a platform for industry players, institutions and young researchers to showcase their genome editing initiatives and connect with like-minded professionals on NBTs.

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## The Innovation Marketplace

provided a unique opportunity for innovators to get noticed, network and connect with those who could **scale up their innovations and transition them to market.**

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Seven (7) institutions/organizations and two (2) projects took up booths at the marketplace. They included the International Institute of Tropical Agriculture (IITA), International Maize and Wheat Improvement Center (CIMMYT) and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). Others were the National Biosafety Authority, Kenya Agricultural and Livestock Research Organization (KALRO), ILRI's Centre for Tropical Livestock Genetics and Health (CTLGH), aak-GROW and ISAAA AfriCenter. The projects showcased were the Feed the Future Striga Smart Sorghum for Africa (SSSfA) project and the Virus Resistant Cassava for Africa (VIRCA) Deployment project.

The Chief Guest Hon. Mithika Linturi (Kenya's Minister for Agriculture and Livestock Development), other high profile guests and tens of delegates visited the stands at the marketplace to learn and appreciate the potential of scientific innovations in transforming our food systems, national economies and livelihoods.





*Kenya's CS for Agriculture and Livestock Development and other high-level delegates visit SSSfA booth*



*Kenya's Agriculture and Livestock CS and EALA's Agriculture Chairperson Hon Umuwukiza at ICRISAT stand*



*Delegates at ABBC2023 visit ILRI CTLGH booth*



*CS Agriculture and Livestock and EALA's Hon. Umuwukiza at NBA booth*



*Top-level delegation visits aak-Grow's booth at ABBC2023*



*Bayer's Regulatory Scientific Lead for Africa Godwin Lemgo (left), AATF Executive Director Dr. Canasius Kanangire (center) and Nigeria PBS Coordinator Dr. Mathew Dore share a moment at ABBC marketplace*



# SORGHUM FESTIVAL

A major highlight of ABBC2023 was the Sorghum Festival, an extra-ordinary session held in the form of a refreshing cocktail gala. The importance of sorghum was showcased in the Festival. This was an opportunity for industries, researchers and entrepreneurs to exhibit various sorghum-based initiatives and products that address the challenge of climate change and food and nutrition security in Africa. Sorghum serves as a staple food security crop for millions of people worldwide, particularly in Africa and Asia. It is also used as animal feed and in the production of biofuels.

“

*It is important that we strive to de-orphanize sorghum, our indigenous crop that comes with a lot of value for our farmers. Sorghum is largely a woman's crop; so putting more investment in improving it means we reduce the drudgery of weeding by women thus empowering them to feed their families and earn more income.*

**Dr. Margaret Karembu**, MBS, Principal Investigator,  
Striga Smart Sorghum for Africa project



*A section of women leaders, scientists and communicators at ABBC2023*

The gala provided an interactive platform for sharing interesting snippets about sorghum. The participants also learned about the *Feed the Future Striga Smart Sorghum for Africa* (SSSfA) project, a new public-private partnership project that utilizes genome-editing technology to develop new sorghum varieties resistant to Striga, a parasitic weed responsible for up to 100 percent yield loss in Africa's staple cereals.

“

*Striga infests about 100,000 hectares of land and causes 30 percent to 100 percent yield losses in crops; the losses amount to more than US\$ 7 billion per year.*

**Prof. Steven Runo**, Co-Principal Investigator,  
Striga Smart Sorghum for Africa project



The participants savored a variety of sorghum foods and drinks that included snacks, cocktails and pastries. This was an opportunity to appreciate the importance of sorghum for improved food security and better livelihood for our people.

“

*At Julinza Food Processors, we bring together sorghum farmers and produce sorghum products such as pilau (a popular East African 'rice' dish), chapati (unleavened flatbread) and cakes. Our income flow has been rising thanks to increased demand of value-added sorghum products. Farmers are excited about this crop.*

**Linah Judy Nzambia**, a sorghum farmer and  
Director at Julinza Food Processors











The overriding objective of this session was to highlight the evolving trends in regulatory and policy perspectives surrounding NBTs in the context of agricultural transformation. The session also aimed at critically analyzing the current narratives shaping the adoption and acceptance of NBTs and their implications for Africa’s ambitious Agenda 2063 goals. The session comprised a keynote address, a sneak preview of AU’s Genome Editing Policy Guidelines, a case study and a regulators’ panel discussion on opportunities and challenges in communicating policies and regulations on NBTs.



*An appropriate regulatory framework helps to promote competitive seed markets and lower barriers to trade. Regulations should not create unnecessary obstacles to trade.*

**Khaoula Belhaj-Fragrière**, Regulatory Affairs Manager, International Seed Federation

- Appropriate regulations and policies should be protective, implementable, informed, enabling, enforceable, and there must be a defined authority. They should also keep pace with the fast-moving scientific advances.
- Public awareness and participation are drivers of informed decisions, policies and regulations on genome editing and other NBTs.
- Regulators should be open for consultations right from proof of concept stage to full product development. This allows a smoother project transition through the concept proof, introgression, variety registration, and premarket multiplication.
- The African Union (AU), through AUDA-NEPAD, has developed a Policy Framework for application of Genome Editing in African Agriculture. This is a strong statement that the AU recognizes genome editing is key in driving socio-economic development on the continent as envisioned in Agenda 2063.
- The developed Policy Framework recognizes that some products developed for genome editing will be equivalent to those developed through conventional breeding and should be regulated under conventional laws and regulations.
- The AU recognizes that appropriate communication strategies are a key enabler in leveraging the contribution of genome editing technology to African's social economic development.
- The seed sector is seeking a consistent, science-based approach for regulatory oversight, and agreement among governments on the criteria to determine the scope of regulatory surveillance.



*African states must strengthen their capacity and establish legislation that will favor the use and implementation of NBTs.*

**Dr. Rufus Ebegba**, former DG/CEO, National Biosafety Management Agency, Nigeria

## Features of Appropriate NBT Regulations



1. A regulatory framework that allows for early consultation when the product is at the design stage encourages proper biosafety decision making.
2. For a regulation or policy to be efficient, it has to be protective, enabling, implementable and enforceable.
3. Relevant regulatory biosafety policies should be forward-looking and timeless - should keep pace with the fast-moving scientific advances.



## REGULATORS' PANEL: Opportunities and Challenges in Communicating Policies and Regulations on NBTs

The objective of the Regulators' Panel was to address the critical role of effective communication in shaping policies and regulations on NBTs. As the agricultural sector evolves with advancements in genetic improvement technologies, it becomes imperative to bridge the gap between regulatory frameworks and public understanding. Bringing together regulators, scientists and science communicators, the panel explored opportunities in communicating policies and regulations on NBTs. Challenges in this realm were also identified and strategies to address them proposed.



### The following were key recommendations from this session:

- Regulators must be swift to scan the environment to detect any possibility of new scientific developments. Indicators of new developments will prepare regulators and ensure they develop clear guidelines for early consultation focusing on the benefits of the technologies rather than processes.
- In this digital era, biosafety regulators should leverage on digital technologies such as social media communication and short videos to sensitize the public and other stakeholders on biosafety issues.
- Like-minded research institutions were encouraged to forge for collaborations among themselves so as to have a unified and stronger voice that could trigger good political will and more favorable policies on the technologies they are developing.



*I challenge research institutions to come together and establish a public affairs group that will facilitate engagements with policy makers through development of short, concise and easy-to-understand videos and messages. Having your eyes on the horizon and recognizing decision-making opportunities is critical.*

**Mia Cerfonteyn**, Communications Manager, The Sainsbury Laboratory, UK

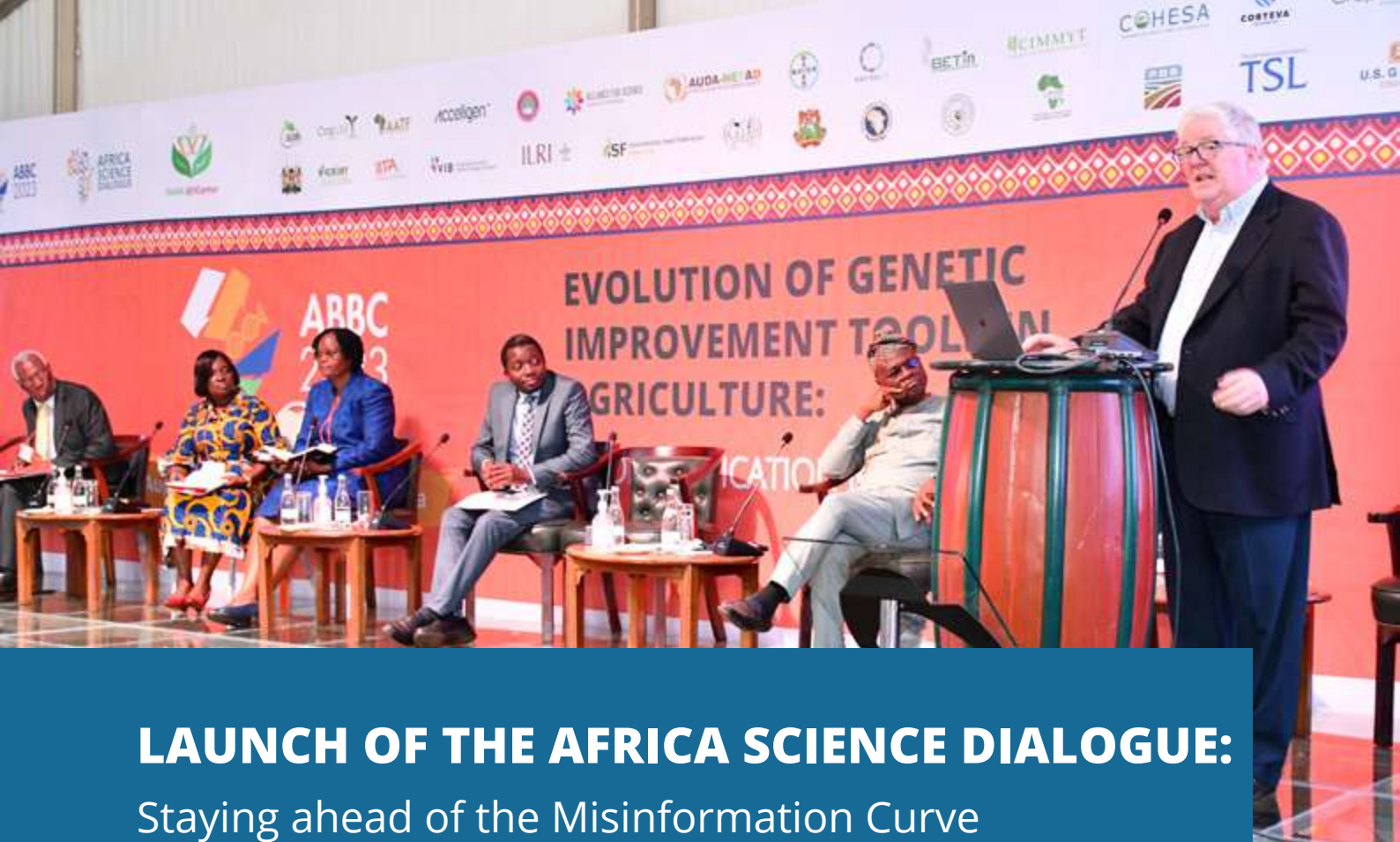
- The need to break down and simplify biosafety terminologies and scientific jargon was emphasized. One approach proposed is to on-board product end-users in simplification of these terminologies. End-users, such as farmers, will name the product in the language they understand and based on the product characteristics. This promotes product buy-in.
- Among challenges identified in the biosafety regulatory space included overlaps in public perceptions between genetic engineering and genome editing, inconclusive engagements and varying opinions on regulatory approaches at the global level, and varied terminologies.
- A proposal to establish regulatory communication strategies was put forward. Panelists felt that regulatory communication should be a complete subset of science communication.

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*We have an opportunity to learn from what worked and what didn't work in communicating policies and regulations around genetic modification. We need to put our communication up to speed with development of NBTs.*

**Dr. Roy Mugiira:** CEO, National Biosafety Authority, Kenya



## LAUNCH OF THE AFRICA SCIENCE DIALOGUE:

### Staying ahead of the Misinformation Curve

In a bold move to wrestle misinformation and its effects on innovations, ABBC2023 delegates launched the Africa Science Dialogue hub. The hub is an inclusive and interactive platform for verifiable and credible information about trends in advanced innovations in agriculture, health, and the environment. Through an inclusive approach and fact-checking mechanisms, the hub will tackle the dangers of misinformation which include delayed decision making, mistrusts and fears (use of scary images) about biotechnologies.

Further, the Africa Science Dialogue provides a portal for journalists to access real images on agri-innovations thus helping reduce the use of scary imageries. The platform will be instrumental in framing an accurate narrative of NBTs.

To register and be part of the Africa Science Dialogue community,  
visit <https://afriscidialogue.org/>





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*Disinformation has a profound impact on food and agriculture – it de-harmonizes regulatory frameworks causing GMO bans, disrupts trade and destabilizes public markets, undermines local food security and creates political instability.*

**Jay Byrne**, President and Founder, v-fluence

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*I challenge all stakeholders to actively engage through the Africa Science Dialogue. Let us be careful not to make it another platform for scientific discourse; let us ensure it becomes a facilitative platform for acceptance of agricultural bio-innovations.”*

**Hon. Dr. John Mutunga**, Chairperson, National Assembly Committee on Agriculture and Livestock, Kenya

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*As the president of the Kenya National Academy of Sciences (KNAS), I assure that KNAS will forge for a solid collaboration with the newly-launched Africa Science Dialogue forum to build a more prosperous Africa through effective and fact-based communication systems on new technologies and innovations.*

**Prof. Ratemo Michieka**, Chair, African Scientific and Research Innovation Council, and President, KNAS



# EVOLUTION OF GENETIC IMPROVEMENT TOOLS IN AGRICULTURE:

## COMMUNICATING ADVANCED BIOTECH INNOVATIONS: Towards One Health Approach and Sustainable Food Systems

This session discussed and proposed model communication approaches that can support utilization of NBTs to holistically address a plethora of climate-related challenges and build more sustainable food systems while promoting planetary health (health of humans, animals and the environment). Against the backdrop of this discussion was the realization that rapid population growth has put pressure on agricultural resources - such as land - and caused massive changes in food systems as the battle against emerging challenges such as animal and crop diseases, drought and hunger becomes even more complex. These challenges have come with devastating effects on the health of humans, animals and the environment.

**Production of primary food crops rose by more than half (53%) between 2000 and 2019. Meat production has also been on a steep rise with chicken meat production rising by more than half in the last two decades.**

Source: FAO. 2021. World Food and Agriculture - Statistical Yearbook 2021. Rome. <https://doi.org/10.4060/cb4477en>

The demand for more food in the face of harsh climatic conditions has seen an increase in pesticide use by 36% (since 2000) - 4.2 million tons of pesticides currently being used globally. Limited knowledge on responsible use of this product has exposed farmers, animals and the environment to health risks. Further, the interaction between humans and animals is attributed to increased incidences of infectious diseases and pandemics - 75% of emerging infectious diseases of humans come from animals. Alarmingly, increased production of animals has contributed to climate change and environmental degradation.



The place of communication in addressing these challenges using innovative biotech solutions cannot be gainsaid. It was felt that communication provides important linkages for a multi-faceted approach in arresting the aforementioned challenges. The following recommendations were proposed:

- Multiple sectors and disciplines must work collaboratively to best manage the health of humans, animals and ecosystems.
- Strategies that proactively engages and mobilizes all players and communities to tackle threats to health and ecosystems should be prioritized.
- Develop and share messages that explain the potential of NBTs in addressing nutrition deficits, pest and disease challenge in crops and animals, and the effects of climate change. Messages that show how NBTs contribute to a healthier planet are impactful.
- The environmental sector is overlooked in the One Health approach. Effective communication promotes inclusivity of all One Health sectors.
- More investment is needed to enhance grassroots sensitization on correct and responsible use of crop protection products such as agrochemicals. This will promote human health and a safer environment.



*Remember that effective communication about advanced innovations and their contributions to food systems and One Health involves not only providing information but also fostering understanding and addressing concerns in a respectful and inclusive manner.*

**Prof. Maria Dagli**, School of Veterinary Medicine and Animal Science, University of Sao Paulo, Brazil





# AFRICA'S MOST PROMISING BIOTECH VENTURES:

Presentation by the Next Generation Innovators in Africa

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Counted as a major feat in the history of ABBC, the 2023 edition of the symposium hosted the inaugural Bioscience Entrepreneurial Pitching Competition dubbed '*Africa's Most Promising Biotechnology Ventures: A presentation by next-generation innovators in Africa*', a celebration of our continent's potential to inspire transformation and greatness through modern bioscience innovations in agriculture. The session, pulling together visionaries, entrepreneurs, and innovators thrilled the delegates with excitement and insights on emerging bioscience opportunities and promising innovations.

Eight innovative ideas from young innovators were selected from a thorough screening process and pitched during the session. Innovators whose innovations emerged tops were recognized. Innovations were scored based on their novelty, innovativeness, patentability, feasibility, scalability, presentation quality, timeliness and clarity. An eminent panel of judges, including experts, investors, and industry leaders from academia and private sector giants like Kenya Breweries Limited and Elgon Kenya Limited conscientiously listened to the pitches. Each pitching team had five minutes to impress the judges and two extra minutes to respond to judges' questions.

***The pitches that emerged  
tops were as follows:***



## **‘Shamba Assistant’:** Sustainable Protein Production and Waste Management using Black Soldier Fly



The ‘Shamba Assistant’, presented by Peter Ndegwa and Peter Nduta, students at Kenyatta University (Kenya) was the winning pitch. The ‘Shamba Assistant’ is a fascinating innovation that seeks to provide alternative protein sources and sustainably address the challenge of organic waste management. Using a portable kit named ‘shamba assistant’, Ndegwa and his team have demonstrated proficiency in measuring, optimizing and monitoring nutrients and soil moisture in Black Soldier Fly (BSF) farming ecosystem. This ground-breaking approach also offers a sustainable and commercially viable solution for nutrient-rich frass fertilizer that can be utilized in agriculture. The young innovators envisage a future where the ‘shamba assistant’ empowers a more sustainable and nutritious food system, powered by the remarkable potential of BSF farming. Further, this technology opens avenues for provision of affordable soil testing services to farmers thus increasing crop productivity and creating market for nutrient rich frass.



*It is an incredible honor and validation of our dedication, creativity and potential to impact on the world through biotechnology. We are thrilled and motivated to pursue our vision even with greater motivation.*

**Peter Ndegwa**, Co-winner



## **Solar Powered Micro Silage Vacuum Packaging Machine**



Pitched by Patience Mueni of Chandaria Business Innovation and Incubation Centre, Kenyatta University, this innovation won the first runner-up recognition. The student is developing a less capital intensive solar powered machine that processes and preserves fodder at an optimal moisture content. The innovation has a potential of mitigating post-harvest losses among small scale dairy farmers in eastern Kenya. This innovation is poised to contribute positively towards increased milk production among target farmers.

## **Wilt-resistant fungicide- free CRISPR Tomato**



Tomato is a vegetable that is widely consumed globally due to high nutrients hence a high value cash crop for small and medium size farmers. However, it suffers from fungal and bacterial disease requiring high usage of chemical pesticides that are often misused posing serious health concerns. Therefore, this innovation by Uganda's Andrew Kiggundu seeks to address this challenge by developing disease-resistant genome-edited tomato. This will reduce the need for farm chemical spraying pre-and post-harvest periods. This innovation won the second runner-up recognition.

The winning pitch has the unique opportunity of further development through AfriBiohub, a program aimed at nurturing and incubating ground-breaking biotech innovations. The AfriBiohub, is an initiative under the Feed the Future Striga Smart Sorghum for Africa project funded by the United States Agency for International Development.



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*As we embark on this journey of discovery and inspiration, let us remember that innovation knows no boundaries. The ideas presented today hold the potential to transform lives, industries, and communities.*

**Dr. Dianah Ngonyama**, Research Integrity Officer, Iowa State University



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*The AfriBIOHub, whose establishment is co-supported by Beneficial Bio, presents a huge opportunity to actualize innovation ideas like the excellent ideas shared in this pitching session.*

**Dr. Jenny Molloy**, Executive Director, Beneficial Bio, UK



*Winners of the bioscience pitching competition pose for a photo with judges and partners*





*A group photo of biosafety regulators and agricultural scientists attending a breakfast meeting during ABBC2023*





## **REGULATORS' AND SCIENTISTS' MEETING**

Held on the sidelines of ABBC2023 and organized under the aegis of the African Coalition for Communicating about Genome Editing, the meeting brought together biosafety regulators to explore opportunities and challenges that come with the changing dynamics in biosafety regulatory communication needs. Biosafety regulators from across Africa and their counterparts from Latin American and Asian nations attended the meeting. Scientists conducting genome editing research also attended this session.



The meeting shed light on the common hurdles faced by African countries in communicating genome editing technologies. The absence of regulatory guidelines in most African nations was a prominent issue, leaving them ill-equipped to counter misinformation. Additionally, the use of complex terminology in genome editing presented a significant communication challenge. At times, due to their active participation in public forums and media engagements, regulators often found themselves tagged as technology promoters, further emphasizing the need for improved communication strategies on biosafety.

**In order to foster development and utilization of genome editing regulations and address the challenge of misinformation, the following recommendations were put forward:**



1. Forge a collaborative approach (including South-South collaboration) to conduct multimedia communication campaigns that enhance understanding of genome editing, address the challenge of misinformation and facilitate science-based solutions.
2. Create research databases accessible by the public, and promote exchange and dissemination of research information through conferences, workshops, publications, and other forums. Data sharing supports science-based decision making and ensures solidarity in advancement of biotechnologies.
3. To counter misinformation about genome editing, it is important to define technical terminologies and translate them into a simple language in drafting regulatory guidelines for genome editing.
4. Researchers are advised to walk the journey of technology and product development with the regulators to avoid a situation where the regulators are brought on board too late in the process (close to commercialization).
5. Prepare well-informed spokespeople who will carry genome editing messages in different platforms (to address the misperception that regulators are advocates of the technology).
6. More concerted efforts are needed in building human and infrastructural capacity (such as investing in research hubs) to foster more innovative ideas that solve current African challenges.
7. Need for consistent and harmonized messages on genome editing to avert controversies around the technology.



## PANEL DISCUSSION: Perspectives on Best Communication Practices from Key Stakeholders

This session tapped into experiences from various practices (farming, industry and consumption) and different areas of expertise (media, communication and science) to draw best communication practices that can help the cause for emerging bioscience innovations such as acceptance of genome-edited products.

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*As scientists, we have to get over the fear of sharing our ideas with others. Let us get communicators and social scientists on board in our quest to make an impact through science.*

**Prof. Curtis Youngs**, Morrill Professor, Iowa State University, USA



## SCIENTISTS' PERSPECTIVE



- Collaborative approach between scientists and science communicators is the surest way to effectively communicate and build public trust on new bioscience technologies.
- Messages about agricultural bioscience technologies should speak to the hearts of farmers and align with emotional attachment that they have on their crops and livestock.
- Messages should focus on technology benefits rather than the process. The messages should be simple, consistent and properly packaged to suit varied target audience.
- More investment should be injected in building science communication capacity and addressing the wide gap between science and society.

*"As a scientist, I am open to digital communication platforms such as podcasts and WhatsApp. Through these platforms, I talk about what I do and I reach more farmers."*

**Dr. Wilkister Nakami**, Veterinarian/  
Theriogenologist, University of Nairobi

## MEDIA'S PERSPECTIVE



- Journalists and media editors should be counted as part of important stakeholders in a quest to find solutions to problems facing mankind.
- The media, like scientists, require capacity building in new science interventions so as to empower them to report accurately and effectively educate the public, and cause a desired impact.
- News has become user-generated. Scientists have to drive their own narrative in the media. Shaping science narrative in the media may inspire a positive impact on science policies.

*"During the late 1980s and 90s, when the first cases of HIV/AIDS were reported in Nigeria, journalists were kept at bay and not considered for capacity building programs aimed at battling this condition. Let's learn from this mistake and henceforth carry journalists along in building acceptance of genome editing technologies."*

**Diran Onifade**, Editor-in-Chief, Nigeria



## SCIENCE COMMUNICATORS' PERSPECTIVE



- Forging for collaborations among scientists, communicators and other social scientists is key in enhancing understanding and acceptance of NBTs. Communication is a field of study and there are experts in this field.
- Let us use a dialogue model in communicating about new bioscience tools.
- Audience assessment and segmentation is critical to understanding specific needs of different audiences. Understanding your audience is key in preparing messages that are receptive and impactful.

*"Tell your own story, or someone else will tell it in a way that suits them."*

**Elriza Theron**, Advocacy and Communications Manager, CropLife South Africa

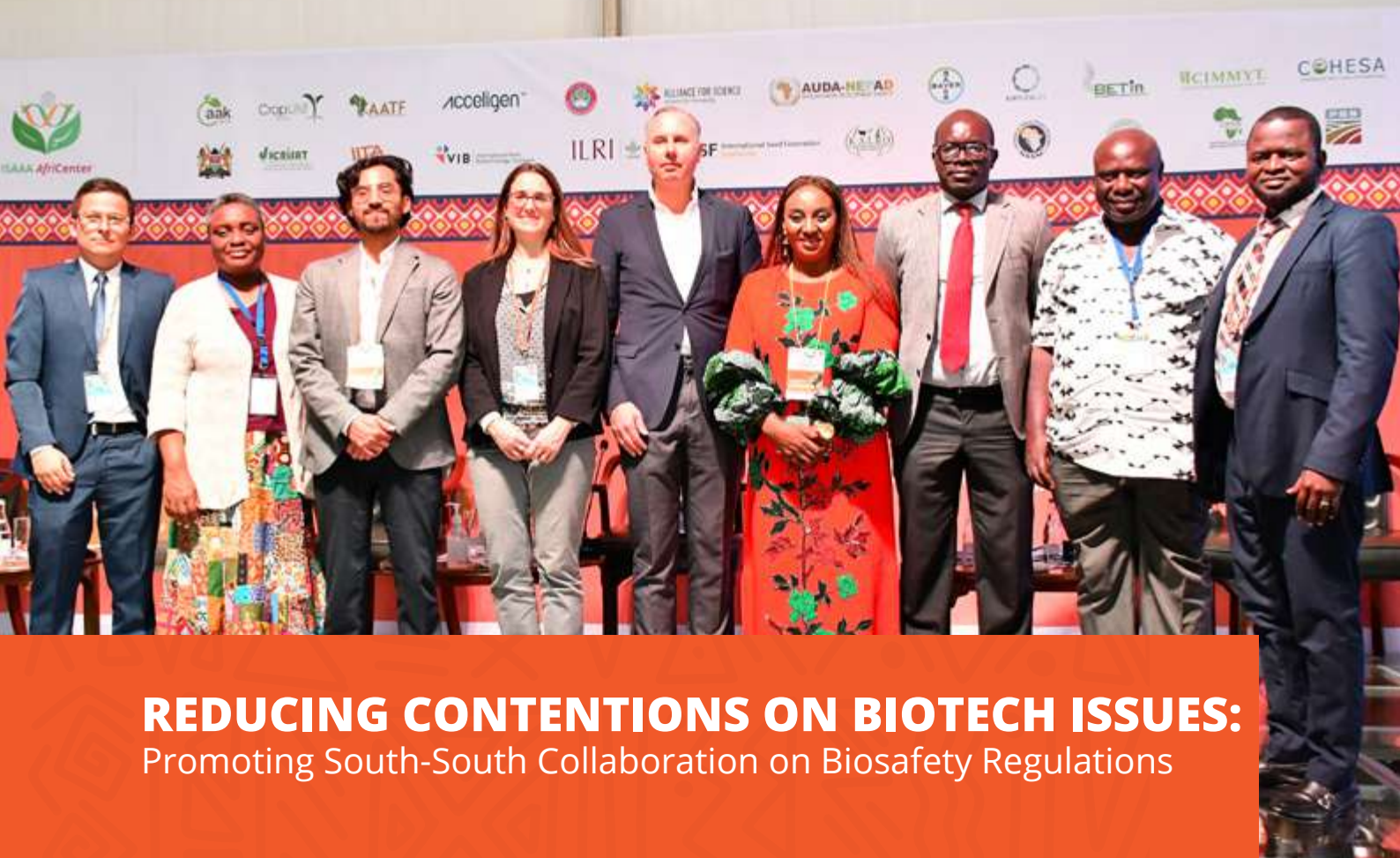
## PRIVATE SECTORS' PERSPECTIVE



- One big gap in communication is failing to acknowledge that communication is a profession that we cannot do without. Some research organizations do not have communication departments. This needs to change.
- The purpose of communication about NBTs is three-pronged: To promote knowledge, create understanding and impact change.
- Effective communication is cognizant of the audience language, culture, emotional status and other factors that may affect understanding and acceptance of messages.

*"We must accept that being able to read, write and talk does not make you a communication expert. If we do not have humility to accept this fact, then we have lost."*

**Gerald Masila**, Executive Director, Eastern Africa Grain Council



## REDUCING CONTENTIONS ON BIOTECH ISSUES: Promoting South-South Collaboration on Biosafety Regulations

Organized in collaboration with Alliance for Science, this special session brought together environmental lawyers and biosafety regulators from Africa and Latin America to interrogate legal and policy bottlenecks bedeviling agricultural biotechnology in the two regions. A dozen of lawyers under the auspices of the Association of Environmental Law Lecturers in African Universities (ASSELAU) and 50 biosafety regulators under a South-South collaboration for innovations group took part in the meeting and shared insights on the place of law in mediating legal standpoints around GMOs.

The panelists called for more investment in supporting law lecturers in helping the next-generation of environment lawyers understand and appreciate emerging scientific technologies such as genome editing. Enhancing lawyers' capacity to address legal and policy stalemates around GMOs and new bioscience innovations is a step towards bridging the gap between science and society, and realizing Sustainable Development Goals on zero hunger, good health, poverty reduction and sustainable environment.

One key challenge identified is the non-existence of biosafety legal frameworks and policies in many African countries. Only seven (7) countries – representing slightly over one-tenth of all countries in the continent – have biosafety laws. Another challenge is failure by most scientists to understand procedural issues of law in the context of GMO lawsuits.





*The bulk of GMO cases in courts is on procedural issues; there are very little deliberations about the substance. This will still remain a challenge for scientists until we are all able to engage effectively.*

**Prof. Collins Odote**, Interim  
Chairperson, ASSELLAU



The third challenge comes in form of myths about GMOs that continue to hover in legal minds despite the fact that science continues to become clearer. Another taunting challenge is lack of multidisciplinary collaborations as scientists work in silos. The global south has made tremendous progress in technology advancement yet these technologies have not translated into solving societal problems. The silo mentality is to blame. Insufficient or lack of capacity on GMO topics by legal experts forms another hurdle in addressing legal standpoints around agri-biotechnologies.

#### ***Other Sources of Contentions in Biotech***

- o Knowledge vacuum
- o Faith and culture
- o Diversity in languages
- o Silent farmers

# Working out Solutions to Biotech Contentions

The South-South collaboration is a formal grouping that presents a huge potential to address contentions in agricultural biotechnology. Alliance for Science, ISAAA AfriCenter and other like-minded partners have thrown their support to strengthening the South-South collaboration; they co-hosted a side-event for global south countries at COP-MOP10 held in Montreal, Canada in December 2022.

**The South-South collaboration will address these contentions by:**

1. Forming pro-innovation groups: Countries in Africa, Latin America and Asia should promote formation of groups that will support science and innovations. Such groups will comprise technology champions that will sustain favorable conversations, promote acceptance of NBTs and inspire impact.
2. Building collaborations and promoting dialogue: Collaborative initiatives like south-south partnerships bolster science communication and strengthen biosafety regulations by facilitating exchange of knowledge and experiences related to NBTs.



*Africa has made tremendous strides in biosafety regulations over the last two decades, which is commendable. While we acknowledge the challenges in communicating about progress in biosafety, we must look out for opportunities to forge ahead together.*

**Dr. Judy Chambers**, Director, Program for Biosafety Systems



3. Capacity building and data exchange: Enabling effective communication in science demands both capacity building and exchange of data systems. This synergy enhances the flow of information within the scientific community. Further, scientists should be capacitated on matters of law as legal experts also learn science.
4. Leveraging on existing constitutional and sectoral laws: In the absence of biosafety laws, as in many African countries, it is advisable that scientists operate around constitutional provisions and sectoral legislations dealing with sustainable development, protection of environment and intellectual property. Customary law and traditional knowledge systems also need to be fostered in a bid to create trust on new biotechnologies.
5. Enhancing engagements with environmental lawyers: One way of demystifying myths and perceptions about GMOs among lawyers is to enhance and sustain engagements among them, scientists and regulators.





*Law is an important tool because it can incentivize or penalize. On the other hand, science can inform the law thus a need for an interplay between the two areas.*

**Prof. Dr. Oliver Ruppel**, Professor of Law,  
University of Stellenbosch, South Africa



6. Harmonizing regulatory approaches: A unified regulatory approach is paramount for new technologies. Harmonization does not only bolster and streamline the regulatory process but it also reinforces the coherence of science communication efforts. Already Argentina and Brazil have signed an MOU for regulatory agencies in both countries to harmonize their approaches in regulating GMOs and NBTs. Uruguay and Paraguay are also entering this partnership. The MoU will also help in democratization of tools and techniques in modern biotechnology.
7. Developing a communication strategy: African Union Development Agency (AUDA-NEPAD) has developed a genome editing communication strategy for use in Kenya, Ethiopia, Nigeria, Malawi, Zimbabwe, Mozambique and Burkina Faso. The strategy acknowledges the indispensable role of national biosafety regulatory bodies and institutional regulatory bodies in regulating genome editing research and products.
8. Developing a communication manual on NBTs: AUDA-NEPAD is also developing a communication manual for the purpose of communicating about genome editing across African countries already conducting genome editing research and those that will follow suit.
9. Promoting transparency in science: Encourage transparent and inclusive decision-making processes that involve diverse stakeholders, including scientists, industry representatives, ethicists, consumer advocates, environmentalists, and policymakers. This approach helps address concerns and build public trust on NBTs.
10. Promoting scientific literacy and public participation: Promote public education about NBTs among the members of the public: Farmers, consumers, faith-based groups, civil society, special interest groups and traditional rulers. This will serve to counter misinformation and facilitate informed dialogue.



## **POLICYMAKERS' ROUNDTABLE:**

Lessons learned about Policy Formulation related to Application of NBTs to achieve Sustainable Food Systems and One Health Goals

Comprising acclaimed policymakers and policy consultants from EALA, Kenya, Ethiopia, Nigeria and Burkina Faso, this session provided an opportunity to share policy formulation experiences and lessons in the area of modern biotechnology in Africa. It also aimed at interrogating policy and legal instruments on this technology and suggesting recommendations for influencing policies supportive to NBTs.





## Nigeria's Perspective

- In Nigeria, policy formulation does not necessarily require a legislative procedure. The following considerations are taken into account in the process of policy formulation: Thematic areas the policy will address, and the target group and implementation agencies. Also considered is the potential impact of the policy to people's livelihood, environment and economy.
- Once the policy has been drafted, it is subjected to public participation and stakeholder review before it goes to the Cabinet where it is approved.
- The approved policy will require development of laws and guidelines that will ensure the policy is adequately implemented.
- Three key reasons why Nigeria's biosafety system is robust:
  - i. The Nigerian biosafety system, including biotechnology policy, **gives the National Biosafety Management Agency (NBMA) discretionary powers** in biosafety decision making. Sharing these decision making powers among different agencies was going to pose a difficulty. However, the NBMA Chief Executive is held liable should they go against the law.
  - ii. **Stakeholders are fully involved** in biosafety framework/ policy development and implementation process. The Agency engages an ad-hoc committee whose role is to only give recommendations on the draft policy/law.

“*Issues of biosafety are not based on democracy but on scientific facts.*”

**Dr. Rufus Ebegba**, former DG/CEO, National Biosafety Management Agency, Nigeria

- iii. The NBMA counts on the diversity of departments/units such as legal, media, protocol and enforcement units as integral in biosafety decision making. This diversity enhances the Agency's capacity on biosafety regulation.



## Burkina Faso's Perspective

- Just like other Sahel countries, Burkina Faso's population is growing faster than its food production. The impact of climate change is visible and high.
- Agriculture policies in Burkina Faso focus on production of sufficient and healthy food. They also look at environmental safety. Policymakers look at how science yields solutions to these challenges.
- Once the policy has been prepared, it is reviewed at the Cabinet level before it gets to Parliament. Once Parliament okays it, it goes back to the Cabinet who will then approve it for implementation.
- Biotech cotton was adopted in Burkina Faso in 2003 when cotton production was plummeting. A biosafety framework was put in place in 2004 and amended in 2012.
- The country is further revising the biosafety law in view of AU guidelines and advancement in modern biotechnology especially development of genome editing field.



## Kenya's Perspective

- Policy making in Kenya is a laborious process due to the nature of the constitution that provides two levels of Government – the National Government and County Governments. It may take as long as one year to formulate a policy in the country.
- One big policy challenge in Kenya is the overlapping biosafety mandate between NBA and the National Environment Management Authority. The Environmental Management and Coordination Act (EMCA) contains a 'miscellaneous' clause that classifies major developments in biotechnology as 'high risk' requiring full Environment Impact Assessment.
- Strengthening coordination among relevant agencies comes in handy in order to address the aforementioned challenge.
- A champion is needed to ensure success in policy formulation and approval. He/she will collect evidence required to guide the new direction.
- Working with County Governments in the realm of policy formulation is crucial – County Governments are very powerful.
- Consensus building is critical for contentious issues like food safety where many agencies are involved (agencies in charge of health, environment and agriculture).
- Strategies to use in addressing areas of contention in biotech policy formulation include: Equipping champions with evidence and facts, having open conversations about areas of contentions, engaging all stakeholders and working closely with policymakers.
- Like-minded organizations should come together to support stakeholder engagement and facilitate experience-sharing with countries that have made significant progress – benchmarking helps in addressing controversial topics/technologies and builds confidence in decision-making.





## Ethiopia's Perspective

- To build sustainable food system and planetary health in line with SDGs and Agenda 2063 goals, effective policies are needed. Engaging stakeholders at all levels during policy development is paramount.
- A review of existing policies is conducted to obtain a better experience in developing new policies.
- A diversity of aspects was considered while developing Ethiopia's agri-biotech policy. These included aspects such as infrastructure, human resource, biodiversity, biosafety, biocontrol and biosecurity, market exchange, entrepreneurship and partnerships.
- Community participation is also conducted before any draft policy gets a nod.
- The draft policy then goes to the Ministry of Justice, and thereafter gets to The House of Peoples' Representatives.





## East Africa Legislative Assembly

EALA is strongly committed to harmonize a number of legal instruments among East African Community (EAC) members. The East African Science and Technology Commission (EASTECO), an organ of the EAC, provides the platform for harmonization of biosafety frameworks in the region. Already, a regional bio-economy strategy has been developed. The Commission is forging for common policies that will promote inclusive economic growth, job creation and competitiveness.

EASTECO has developed a draft harmonized biotechnology and biosafety policy for EAC. The policy will be subjected to stakeholders, and submitted to the Council of Ministers in each partner State. The policy will harness the benefits of biotechnology and prioritize responsible and sustainable use of this technology with the aim of safeguarding human health, environment and biodiversity.

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**EALA recognizes the contribution of biotechnology and biosafety in building sustainable agriculture and food systems in the East African Community.**

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The regional Assembly is ready to support stakeholder engagement and community/farmer outreach and promote dialogue about the technology.

*We applaud and commend Kenya for leading the front in agri-biotech and biosafety development in the EAC region.*

**Hon. Francoise Uwumukiza**, Chairperson, Committee on Agriculture, Tourism and Natural Resources, EALA

The Assembly is also engaging EAC member States to commit more funds into research. Ugandan Government has allocated the highest amount to science and research. EALA recognizes that research and technology is needed to make sure we develop policies and strategies that are innovative for crop and livestock improvement.

*At EALA, we are moving a Bill – the East Africa Livestock Bill – to address, among others, transboundary zoonotic diseases.*

**Hon. Francoise Uwumukiza**, Chairperson, Committee on Agriculture, Tourism and Natural Resources, EALA



## Here is a key message from this session:

Lack of biosafety laws does not, in any way, hinder research and development in modern biotechnology. Scientists in countries that do not have these laws should conduct research in accordance with other science, technology and innovation (STI) laws enacted in the country, and in line with international biosafety protocols.



*ABBC2023 was an eye-opener, it gave us an opportunity to know whether we can harmonize, collaborate or cooperate in the area of biosafety regulations and improvement of biotechnology. We need to find ways to implement ideas from this conference and take the lessons to more and more stakeholders including the public.*

**Dr. Rufus Ebegba**, former DG/CEO,  
National Biosafety Management  
Agency, Nigeria

## KEY LESSONS

Lessons from close to three decades of communicating about GMOs should inform how we communicate about NBTs. Some glaring mistakes in communicating GMOs include bias towards genome editing over genetic modification, allowing pseudo-scientists to dominate the space, over-claiming the benefits of the technology, inward engagements (talking to converts) and low social media footprint.

Disproportionate influence from the Global North to Global South is attributed as one key impediment towards acceptance and adoption of GMOs. Failure to create enough awareness on the varying needs between the two geographical regions fuelled this influence. The Global South has unique food security and climate-related challenges that can be addressed through use of GMOs. Learning from this mistake, communication about NBTs should be need-based and context-specific.

The most important enablers to adopting new breeding technologies are political will and social licencing. Good political will drives adoption. In addition, gaining social license for the technology facilitates acceptance and influences favourable policies and regulations.



*Building a pool of science diplomacy speakers and enhancing bio-diplomacy should be a priority towards global acceptance of genome-edited products. This approach has seen success in Japan.*

**Prof. Kazuo Watanabe**, Research Professor,  
University of Tsukuba, Japan



Three key factors which will strengthen adoption of NBTs and enhance development of sustainable food systems and One Health are emphasis on technology potential benefits, proactive transparency and contextual communication.

Further, communication about these technologies needs to be value-based, credible, believable (real stories) and emphatic. This will cultivate trust and facilitate acceptance of the technologies.



*ABBC2023 Convenor Dr. Margaret Karembu hands a gift to Hon. Dr. John Mutunga, Chairperson, National Assembly Committee on Agriculture, Kenya*

There needs to be a shift in message carriers (from hero scientists to others such as farmers). Shifting the heroes to consumers (beneficiaries) of the technology will enhance believability of messages through first-hand testimonials of tech-benefits.

Top

# 10

## Best-Bet Communication Practices on NBTs

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1. Rethink our engagement strategies and adopt **an inclusive broad-based approach** that reaches out beyond converts (pro-technologists). We should **change technology heroes** from scientists to farmers and consumers.
2. Encourage **a systems-thinking (multi-sectoral, multi-disciplinary, multilateral) approach** in communicating about NBTs and its benefits especially towards enhancing sustainable food systems and improving our planetary health – there is a need for more collaborations.
3. Encourage **context-specific/culture-specific, need-based communication approaches** that ensure simplicity of messages and appreciate the value-based system and case-by-case product approach.
4. Forge for **pro-active transparency** in communicating about NBTs and involve end-users at the onset. This will build public trust and increase buy-in.
5. Leverage on the newly-launched **Africa Science Dialogue** to do fact-checking and address the challenge of misinformation on NBTs.
6. Put in place systems for **nurturing young African innovators** in biosciences – effective science communication (communication for impact).
7. Build a **community of champions and science diplomats** to advocate for favorable policies for development, uptake and utilization of NBTs. The champions will comprise members of the Network of African Science Academies (NASAC) and select policy makers from across the globe.
8. Develop a **communication manual** to facilitate consistent and coordinated dissemination of scientific information about NBTs and Planetary Health in a simple and easy-to-understand language and format. This will promote scientific literacy among stakeholders.
9. Develop a **glossary of terminologies in modern biotechnology** and unpack the technical jargon for non-technical audiences to reduce fears and enable informed choices.
10. Introduce **science communication modules** in all STEM programs in the universities.

## Conclusion

Overall, it emerged that communication trends have not matched up with advancements in NBTs hampering acceptance and utilization of these tools. Effective communication enhances NBTs' potential to contribute to the goals and priorities of Africa's Agenda 2063 (from a Food Systems and Planetary Health standpoint).

## Key Recommendation

**Invest more in communication:** African States and development partners should put more investment in science communication, stakeholder engagements and grassroots outreach.



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*Communication is key in driving uptake of agricultural technologies. ABBC2023 symposium provided a platform to interrogate tried and tested communication strategies and identify ideal practices. This community of practice has contributed towards re-framing the narrative on new and emerging breeding tools which is key for political buy-in and increased public acceptance.”*

**Bibiana Iraki-Kipkorir,**

Senior Program Officer, ISAAA AfriCenter



“

*To all our partners and ABBC2023 delegates, we say a BIG THANK YOU. Your support and contributions are invaluable and we owe you a debt of gratitude. We look forward to working with you in implementing the actions and recommendations from this symposium.*

**Dr. Margaret Karembu, MBS**

Director, ISAAA AfriCenter,  
and Co-convener, ABBC 2023



# PARTICIPANTS' TAKE-HOME MESSAGES

## Foster facilitative policies

Political will drives acceptance and adoption of new agricultural technologies.

Establish science communication offices in universities and research institutions.

Decision makers are interested in the benefits of science for them to make informed decisions.

Effective science communication facilitates evidence-based and data-driven policy decisions.

Evidence synthesis and brokerage are two important aspects of science advice.

Kenya is among the leaders in operationalization of genome editing regulations in Africa.

More focus needed to navigate the science-policy nexus.

Science advisors need to be neutral and independent.

Science is not static; it is dynamic...thus African scientists need to be dynamic.

Technology is better explained when it is active; beyond that, it becomes obsolete and irrelevant.

The most important enabler in adoption of agricultural biotechnologies is political will.

Understanding the political landscape when communicating is key.

We need to reduce the politics in science but increase the science in politics.

## Enhance understanding of NBTs

Communicate the science of NBT in a simple and easy-to-understand manner – avoid jargon.

Could proactive transparency increase acceptance of genome-edited products?

Gene selection is taking place naturally; scientific tools offer precision editing.

Knowledge brokerage is vital in communication.

Science is not revolutionary; it is evolutionary and incremental.

## Communication should be need-based

Communication or not, what do consumers need to know?

In communicating about NBTs to politicians, consider what is it for them (how can NBTs help them win elections?).

We cannot afford to turn away from precision technologies in agriculture while anticipating for a food and nutrition secure Africa.

Communication about NBTs should look at the bigger picture – i.e. NBTs for solution and impact, and not belaboring the process.

NBTs have a huge potential to address Africa's food insecurity.



## The burden of misinformation

Scientists need to be more proactive and push pseudo scientists out of the public space.

Misinformation is the biggest impediment to uptake of modern agri-biotechnologies.

When more untruths about genetic engineering are repeatedly made, they are taken as truths.

## Trust is everything

Effective communication does not overpromise on the benefits of technologies but manages expectations, a key step towards building trust.

Make emotional connections with the audience as you communicate about NBTs – show that you care.

Tell people what they want to know about NBTs rather than what they need to know.

Use storytelling and real personal stories on the benefits of the technology to enhance technology acceptance.

We should change technology heroes from scientists to farmers and consumers.

## Breaking the Silos

Forge for collaboration pitting scientists, regulators and policy makers to enhance wide acceptance of NBTs.

A formal network comprising scientists, communicators, policy makers, regulators, farmers and other genome editing stakeholders should be formed as an outcome of ABBC2023.

Multi-sectoral collaboration is critical in moving products from the lab to the market.

## Focus on the product; not the process

Effective communication focuses on the product not the process.

Technologies should not just be represented as dossiers but innovations on farmers' fields.

## Communication complements science

Communication plays a complementary role to science and regulations for effective technology utilization and impact. Expand NBT-communication focus from crops to include livestock and human health.

# ONE HEALTH EXCURSION AND BUSH DINNER

As the curtain fell on the three-day ABBC2023 Symposium, the delegates participated in a special One Health Excursion. The visit served as an eye-opener on the need for an integrated approach towards achieving optimal health outcomes for people, animals and ecosystems. The delegates also visited the iconic Nairobi National Park where they were treated to a thrilling experience, with a game drive through the stunning Kenyan wilderness followed by a bush dinner featuring delicious local dishes served at Maasai Lodge. This unique event offered a fantastic opportunity for reflections on key Symposium highlights while raising consciousness on how innovations impact Planetary Health.





# ACKNOWLEDGMENTS

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I am also indebted to the ABBC2023 Organizing Committee comprising Anne Muia (NBA-Kenya), Betty Kiplagat (Corteva Agriscience), Godwin Lemgo (Bayer Crop Life), Dr. Jackie Kado (NASAC), John Komen (PBS), Dr. Kevin Pixley (CIMMYT), Prof. Lulu Rodriguez (Iowa State University), Dr. Marc Heijde (VIB), Dr. Maty Mbole Kariuki (African Union InterAfrican Bureau for Animal Resources), Dr. Olalekan Akinbo (AUDA NEPAD), Dr. Sheila Ochugbujo (Alliance for Science), Dr. Tad Sonstegard (Acceligen) and Prof. Firew Mekbib (Haramaya University, Ethiopia).

Further, I thank the Board of ISAAA AfriCenter led by our Chairperson Dr. Robert Karanja for providing guidance and leadership as we geared up for the symposium. The Board was instrumental in securing sponsorship and support for ABBC2023. AfriCenter is immensely honored to have such a distinguished Board who even went out of their way to fully participate in this event.

I will not forget the terrific AfriCenter staff (ABBC2023 Secretariat) for their collective effort and hard work to ensure we deliver a successful symposium. I also owe a debt of gratitude to Sylvia Mutinda, Peter Theuri, Titus Korir, Cecilia Shinda, Damaris Barminga, and Clifford Akumu for being part of the team that put together this report.

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**Margaret Karembu, PhD, MBS,**

Principal Convenor, Africa Biennial Biosciences Communication (ABBC2023) symposium, and Director, ISAAA AfriCenter

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# A GLANCE AT ABBC2025 SYMPOSIUM:

## Proposed Themes

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scientific science communication plant farmer BEST products sciences technologies  
Africa communicating innovation Safety  
communication Biotechnology adoption will policies New Breeding ABBC role  
Artificial Intelligence

A post-ABBC2023 symposium survey was conducted between September and November 2023. Respondents comprised delegates who participated in ABBC2023. The survey sought to gauge participants' experiences about ABBC2023. The response rate was above average.

From the survey, respondents proposed a number of areas/themes that they would like to feature in ABBC 2025 symposium. The proposed themes reflect a diverse range of critical issues in biosciences and agricultural transformation in Africa. Participants would like ABBC 2025 to interrogate the intersectionality of science communication, policy, and the mass media, emphasizing the need for effective dissemination of scientific findings. Technological advancements to mitigate the environmental impact of food production were proposed as a sub-theme, encompassing both plant and animal sciences. The regulatory landscape on modern breeding technologies in Africa emerged as a popular sub-theme, emphasizing the status, opportunities, and challenges.

Artificial Intelligence's (AI) role in communicating biosciences, addressing myths surrounding genome editing technology, and promoting sustainability in communication practices were proposed as key themes. Global linkages for optimal utilization of genetic improvement tools, engagement in agricultural innovation for economic development, and ensuring safety awareness of genome-edited agricultural products in Africa also featured prominently.

An overarching theme, *"Harnessing New Breeding Tools: Steering Towards a Sustainable and Healthier Tomorrow,"* was proposed to delve deeper into the inclusion of new breeding tools in Africa's food systems, highlighting key aspects of effective deployment including sound regulations, trade policies, and co-existence with earlier technologies. Other significant areas include public-private partnerships in genome editing product development, farmer-led and community-driven processes, and applying new breeding technologies to address country context-specific challenges.

Key topics of emphasis to interrogate in ABBC 2025 include One Health (in the context of sustainable ecosystems, food security, and a recurring sub-theme on the impact of agricultural activities on the environment), the role of modern breeding innovations in the 4th Industrial Revolution (Industry 4.0), climate change mitigation and adaptation in the context of food security, and the political economy of biosciences adoption and regulation in Africa. Sub-themes on the role of youth empowerment in new breeding innovations, and effective science communication in a post-truth era were also proposed.

# Thank you to all our sponsors and partners



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