Concept Note

International Symposium on Agricultural Transformation and Biotech Crops in Africa

Theme: Increasing access to New Tools, Technologies, and Methods (TTMs) in Africa's Agriculture

Background

The **International Symposium on Agricultural Transformation and Biotech Crops in Africa** will deliberate on what agricultural sector stakeholders need to do differently to ensure expanded farmer access to crops produced using New Breeding Techniques (NBTs). Symposium participants will deliberate on how genome editing tools like Zinc Finger Nuclease, TALENs, CRISPR/Cas, among others, can be used to improve crops for the benefit of African farmers. Participants will also deliberate on how genetically modified organism (GMO) technology has been deployed on the African continent for the benefit of farmers, its impact so far, and its prospects. Also, participants will deliberate on the yet-to-be-realized potential that genome editing hold for the ongoing efforts to ensure Africa feeds itself.

The symposium will discuss the **Future of Biotech Crops in Africa** from the perspectives of scientists developing improved crops using new breeding techniques, government officials managing the agricultural sector, regulators, policy experts, as well as social and economic analysts. The challenges that have inhibited the rapid adoption of biotechnologies in Africa, including the myths surrounding them, will be dissected. The possible difference that could have been seen in Africa's current food insecurity situation, had the continent adopted these technologies rapidly when they were first introduced about 25 years ago, will be discussed. Additionally, the likely social, cultural, political, and economic implications that will result if more African countries adopt these new breeding techniques will be discussed.

Scientists will shed light on the latest promising new breeding techniques and other scientific innovations in crop improvement. Social scientists will also share perspectives on the role of interdisciplinary scholarly research in helping create the appropriate environment for the deployment of GMOs & genome-edited crops in Africa. Industry players, donor partners, and government officials will share ideas on how self-sustaining public-private partnerships can be created to enhance the adoption of biotech crops on the African continent. The need for African governments to commit more resources to research activities on new breeding techniques as viable investments that can help ensure a healthy and food-secured Africa will also be discussed.

At the end of the symposium, a communique on '**Pathways To Making Africa Food Sufficient'** will be issued. The document will make recommendations on the changes that African governments, state agencies, donor partners, universities, research institutions, industry, farmers, consumers, and other agricultural sector stakeholders, should institute to help enhance access to '**made in Africa biotech crops.'** The symposium will generate a holistic body of knowledge that policymakers, policy implementers, and development partners can tap into for ideas on how to make the African continent food secure using new breeding techniques. GMOs, genome-edited crops, and other new breeding techniques can play a huge role in making Africa food secure. The deliberations at this symposium will make that clear and chart the pathway forward on what needs to be done differently to achieve this.

Format of Symposium

The **International Symposium on Agricultural Transformation and Biotech Crops in Africa** is being organized by the West Africa Centre for Crop Improvement (WACCI) at the University of Ghana, Alliance for Science, and Alliance for Science Ghana. It will be held on **Friday 2nd June 2023,** as part of activities to mark WACCI's 16th-anniversary celebration. The event will be hosted at the premises of WACCI, University of Ghana. There will be a session on GMOs, another session on genome editing, and sessions that discuss biotech generally.

Session on GMOs

GMO technology has been described as the world's fastest-adopted crop technology since its commercial introduction in 1996. But its penetration in the Global South (Africa, Asia, the Caribbean, Pacific Islands, and Latin America) has been slow. In Africa for example, genetically modified crops are grown commercially in only about 15% of the continent's 54 countries, despite the huge need for the technology. GMOs have been commercialized in 7 African countries. They are Nigeria, South Africa, Ethiopia, Kenya, Malawi, Sudan, and Eswatini. The main traits that have been commercialized are insect resistance and herbicide tolerance in cotton, maize, cowpea, and soybean. Burkina Faso and Egypt previously commercialized GM cotton but the approvals have been suspended. 34 additional crops are under confined field trials in 11 countries.

The GMO - focused session will deliberate on the following questions and more:

- What is the current status of GMO adoption across the African continent?
- What kind of impact has GMOs made in African countries where they have been commercialized?
- What social, political, cultural, legal, and ethical challenges have inhibited the rapid adoption of GMO technology in Africa?
- What are some myths surrounding GMOs that need to be dispelled?
- What potential do GMOs hold in the ongoing efforts to ensure Africa feeds itself and what can be done to enhance access to 'made in Africa biotech crops'?
- What do agricultural sector stakeholders need to do differently to ensure the expanded adoption of GMOs on the African continent?
- What social, cultural, political, and economic implications will result if more African countries adopt GMOs?
- What role can communications and interdisciplinary scholarly research play in helping create the appropriate environment for deploying GMOs in Africa?
- What should industry players, donor partners, and government officials do to help create self-sustaining public-private partnerships that can enhance the adoption of biotech crops on the African continent?
- Why should African governments commit more resources to research activities on GMOs as viable investments that can help ensure a healthy and food-secured Africa?

Session on Genome Edited Crops and NBTs

Even before the full potential of GMOs is explored, Genome Editing is also offering some very promising opportunities for crop and animal improvement to help the Global South leapfrog the challenges that have slowed the spread of biotechnology. Four African countries currently have various genome-edited crop projects in the works. Work on genome-edited banana, maize, yam, cassava, and wheat is being done in Kenya, Uganda, South Africa, and Egypt. Traits being worked on include disease resistance, drought tolerance, pest resistance, and reduced cyanogen in crops.

The genome editing session will deliberate on the following:

- What are New Breeding Techniques (NBTs)?
- What is the difference between GMOs and genome-edited crops?
- What is the status of genome-edited crop approvals in Africa and what sort of traits are being worked on?
- What kind of impact will genome-edited crops make in the countries where they are being worked on?
- What potential does genome editing hold in the ongoing efforts to ensure Africa feeds itself and what can be done to enhance its access on the continent?
- What do agricultural sector stakeholders need to do differently to ensure the expanded adoption of genome-edited crops on the African continent?
- What possible social, cultural, political, and economic implications will result if more African countries adopt genome editing?
- What role can communications and interdisciplinary scholarly research play in helping create the appropriate environment for the deployment of genome editing in Africa?
- What should industry players, donor partners, and government officials do to help create self-sustaining public-private partnerships that can enhance the adoption of genome-edited crops on the African continent?
- Why should African governments commit more resources to genome editing research?

The rest of the sessions will discuss the **Future of Biotech Crops**, based on current experiences.

Agenda

Time	Activity	Focus of presentation	Participants
8:00 am	**Arrivals**		All participants and speakers
	Session 1		
9:00 am – 10:30 am	**Opening session**	Welcome address and opening addresses	Prof. Eric Danquah - Founding Director, WACCI, University of Ghana, Ghana (10 mins) Dr. Sheila Ochugboju – Director, Alliance for Science, Boyce Thompson Institute, USA (10 mins) Joseph Opoku Gakpo – Country Lead, Alliance for Science Ghana, Ghana (10 mins) Hon. Yaw Frimpong Addo – Deputy Minister, Ministry of Food & Agriculture, Ghana (10 mins)
		Keynote address – Transforming Africa's Agriculture Using Biotech	Dr. Leena Tripathi - Eastern Africa Director of International Institute of Tropical Agriculture (IITA) & Leader of Biotechnology Program (35 mins)
		Questions and answers	Conference participants and Dr. Leena Tripathi (15 mins)
10:30 am – 11:00 am	Break	Coffee break and group photograph	All participants and speakers
	Session 2		
11:00 am – 12:30 pm	**GMOs in Africa**	An overview of Africa's GMO landscape: Which country is growing what?	Main presenter – Joseph Opoku Gakpo; Fellow - Genetic Engineering and Society Center, North Carolina State University, USA (20 mins)
		Ghana's first GM Crop: The Bt Cowpea	Dr. Jerry Nboyine – Principal Investigator, Bt Cowpea Project, Ghana (15 mins)
		VIRCA Deployment: Improving Africa's cassava through biotechnology	Dr. Nigel Taylor, Principal Investigator, Virus Resistant Cassava for Africa (VIRCA) Deployment Project, Donald Danforth Plant Science Center, USA (15 mins)
		The TELA Maize Story	Dr. Murenga Mwimali – Team Leader, Product Development, TELA Maize Project, Kenya (15 mins)
		Burkina Faso's GM cotton: Lessons & recommendations	Dr. Edgar Traore – Open Forum on Agricultural Biotechnology (OFAB) Coordinator, Burkina Faso (15 mins)
		Questions from the audience (10 mins)	
12:30 pm – 1:30 pm	Lunch Break		All participants and speakers
	Session 3		
1:30 pm – 3:00 pm	**Genome Editing in Africa**	An overview of Africa's Genome Editing Landscape	Main presenter - Dr. Daniel Dzidzienyo; Coordinator - Genome Editing Project, West Africa Centre for Crop Improvement (WACCI), Ghana (20 mins)
		Genome editing strategies for developing disease resistant banana	Dr. Valentine Ntui, Research Scientist, International Institute for Tropical Agriculture, Kenya (15 mins)

		Improving cassava through genome editing	Dr. John Odipo, Research Scientist, National Crops Resources Research Institute (NaCRRI), Namulonge - Uganda (15 mins)
		Improving sweet potato through genome editing	Samuel Acheampong, Research Scientist, Department of Molecular Biology and Biotechnology, University of Cape Coast, Ghana (15 mins)
		CRISPR gene editing of maize: experience and prospects for Africa	Dr. Elizabeth Njuguna, Former Postdoctoral Research Fellow, International Centre for Genetic Engineering and Biotechnology (ICGEB), South Africa (15 mins)
		Questions and answers (10 mins)	
	Session 4		
3:00 pm – 3:45 pm	**Global biotech experiences & lessons for Africa**	What can Africa learn from the UK's biotech experience?	Prof. Giles Oldroyd, Director, Cambridge Crop Science Centre, University of Cambridge, UK (15 mins)
		Biotech crops in Latin America and lessons for Africa	Pablo Orozco, Global Policy Director, Alliance for Science, USA (15 mins)
		Agric biotech in the Philippines: Replicating the best practices	John Albert Caraan, Institute of Plant Breeding, University of Philippines Los Banos, Philippines (15 mins)
3:45 pm – 4:00 pm	Break		All participants and speakers
	Session 5		
4:00 pm – 5:00 pm	**Panel discussion**	Future of Africa's Biotech Crops	Dr. Murenga Mwimali – Team Leader, Product Development, TELA Maize Project, Kenya Dr. Elizabeth Njuguna – Former Postdoctoral Research Fellow, International Centre for Genetic Engineering and Biotechnology (ICGEB), South Africa Dr. John Odipo – Research Scientist, National Crop Research Institute, Uganda Dr. John Eleblu – Coordinator, Research Programmes, Francophone Africa, West Africa Centre for Crop Improvement, Ghana Dr. Michael Osae, Director – Biotechnology & Nuclear Agriculture Research Institute, Ghana Session chair: Prof. Kwame Offei – Director, Biotechnology Centre, University of Ghana
5:00 pm – 5:10 pm	**Closing session**	Summary of key points Closing comments	Abigail Akoto – Alliance for Science Ghana (5 mins) Prof. Kwame Offei – Director, Biotechnology Centre, University of Ghana (5 mins)

MC: Chris Worla Essikpe