



Open Forum on Agricultural Biotechnology in Africa (OFAB)

Kenya Chapter 2014 Report (Vol VIII)

Experiences in sharing knowledge and information on agricultural biotechnology



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in Africa (OFAB)
Kenya Chapter 2014 Report (Vol VIII)**

Experiences in sharing knowledge and information on agricultural biotechnology

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Contacts:

For more information about the publisher, please contact us at:

ISAAA *AfriCenter*,
ILRI Campus, Old Naivasha Road,
P.O. Box 70-00605, Nairobi, Kenya.
Tel: + 254 20 4223618

Email: africenter@isaaa.org,

Website: www.africenter.isaaa.org

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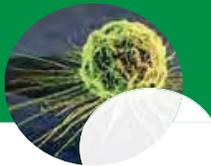
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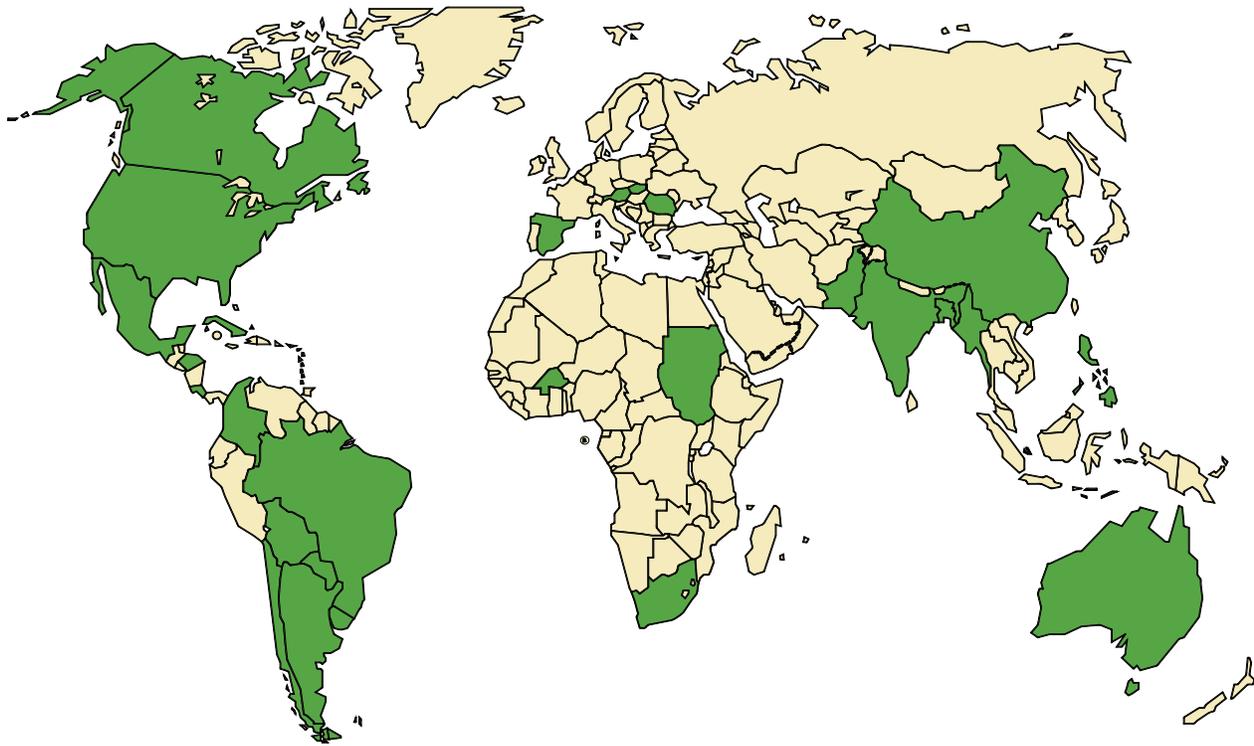


Acronyms

AATF	African Agricultural Technology Foundation
ACP	African Caribbean Pacific
ACTIF	African Cotton and Textile Industries Federation
AGOA	African Growth and Opportunity Act
AMSDP	Agricultural Marketing Systems Development Programme
BCH	Biosafety Clearing House
BecA	Biosciences eastern and central Africa - International Livestock Research Institute Hub
CEBIB	Center for Biotechnology and Bioinformatics
CL&SMB	Cotton Lint and Seed Marketing Board
CODA	Cotton Development Authority
COMESA	Common Market of Eastern and Southern Africa
COP MOP	Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety
CIMMYT	International Maize and Wheat Improvement Center
EASAC	European Academies Science Advisory Council
EFSA	European Food Safety Authority
ERAfrica	European Research Area Network for Africa
FAO	Food and Agriculture Organization of the United Nations.
HCB	High Council for Biotechnology
ICOSEED	Integrated Community Organization for Sustainable Empowerment and Education for Development Programme
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IMAS	Improved Maize for African Soils
ISAAA	International Service for the Acquisition of Agri-biotech Applications
ISCI	Indian Society for Cotton Improvement
JKUAT	Jomo Kenyatta University of Agriculture and Technology



KALRO	Kenya Agricultural and Livestock Research Organisation
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Service
KICOMI	Kisumu Cotton Mills
KIPI	Kenya Industrial Property Institute
KUBICO	Kenya University Biotechnology Consortium
LMOs	Living Modified Organisms
MESHA	Media for Environment ,Science,Health and Agriculture
MoALF	Ministry of Agriculture, Livestock and Fisheries
MOUNTEX	Mount Kenya Textile Ltd
NACOSTI	National Commission for Science, Technology and Innovation
NBA	National Biosafety Authority
NBFs	National Biosafety Frameworks
NEMA	National Environment Management Authority
OFAB	Open Forum on Agricultural Biotechnology in Africa
OPVs	Open Pollinated Varieties
PBS	Program for Biosafety Systems
PCPB	Pesticide Control Products Board
PTL	Plant Transformation Laboratory
RIVATEX	Rift Valley Textiles Limited
SASHA	Sweet Potato Action for Security and Health in Africa
SCFCAH	Standing Committee on the Food Chain and Animal Health
SPS	Sanitary and Phytosanitary Measures
VIRCA	Virus Resistant Cassava for Africa
WEMA	Water Efficient Maize for Africa



 28 Countries which have adopted biotech crops

1

OFAB 74 – February 27, 2014
Global and Regional Trends in
Commercialization of Biotech/GM Crops
2013



Dr. Margaret Karembu
Director, ISAAA AfriCenter

Presenter's Profile

Dr. Margaret Karembu is the Director of ISAAA AfriCenter and the Chair of the OFAB Kenya Chapter Programming Committee. She is actively involved in various capacity strengthening initiatives for biosafety communication and policy outreach in Africa. She holds a PhD degree in Environmental Science Education from Kenyatta University.

Introduction

The world of today is faced with a challenge of producing enough food for an ever-growing population, predicted to be over 9 billion by 2050. According to the President of the World Food prize, Amb Kenneth Quinn, this will require as much food as has been consumed since the beginning of civilization. Achieving this will be an uphill task especially for Africa where the farming population is ageing and declining with the youth shunning agriculture for white-collar jobs in cities. Fortunately, productivity-enhancing technologies such as agricultural biotechnology offer increasing opportunities. That agri-biotechnology is a powerful tool in addressing biotic and abiotic constraints to crop production is without question given the exponential rate at which farmers are adopting it globally. It has demonstrated that improved technologies can make agriculture attractive to the youth. A recent survey by the Indian Society for Cotton Improvement (ISCI) demonstrated that Bt cotton technology has attracted young farmers to cotton farming in the country (Mayee and Choudhary, 2013). This is contrary to the perception that young farmers can no longer get to the farms and are abandoning active farming.

Adoption of Biotech Crops 1996 to 2013

The year 2013 marked the 18th successful year in commercial planting of GM crops. Approximately 18,000,000 farmers in 27 countries planted 175.2 hectares of biotech crops. Majority of these, 90%, were resource poor farmers in developing countries. Developing nations dominated over industrial ones with 19 out of 27 being mainly from Asia, Latin America and Africa. Additionally 8 out of the 10 lead countries planting more than 1 M ha were developing. The biggest gain worldwide was recorded by Brazil which grew 40.3 M ha an increase of 3.7 M ha from 2012. The country, which is the second largest adopter of biotech crops after the US, commercialized its first stacked soybean with insect resistance and herbicide tolerance in 2013. Additionally, it has approved commercialization of home-grown virus resistant bean, planned for 2015.

Three countries in Africa namely Burkina Faso, South Africa and Sudan planted biotech crops in 2013. Burkina Faso and Sudan increased their Bt cotton hectareage substantially. Burkina Faso increased its



Bt cotton hectares by over 50% from 313,781 hectares to 474,229. Sudan, in its second year of commercialization tripled its Bt cotton from 20,000 hectares in 2012 to 62,000 in 2013. South African farmers grew biotech maize, soybean and cotton on an accumulated hectareage of approximately 2.9 million hectares. Seven other countries conducted field trials on a broad range of crops, mostly food security crops. These are Cameroon, Egypt, Ghana, Kenya, Malawi, Nigeria and Uganda. Notably, the water efficient maize for Africa (WEMA) project is expected to deliver its first biotech drought tolerant maize as early as 2017.

The year 2013 also saw approval of commercialization of new biotech crops in three other countries. Bangladesh approved environmental release of insect-resistant eggplant; Indonesia approved drought-tolerant sugarcane while Panama gave a go ahead for the commercialization of biotech maize. The approval by Bangladesh is important in that it serves as an exemplary model for other developing countries. Also, very importantly, Bangladesh has broken the impasse experienced in trying to gain approval to commercialize Bt eggplant in both India and the Philippines. Soybean, cotton, maize and canola continue to lead as the main biotech crops with adoption rates of 79%, 70%, 32% and 24% respectively.

Impact of Biotech Crops

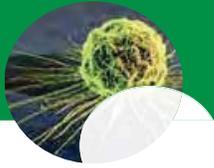
In 2012, the direct global farm income benefit from GM crops was US \$18.8 billion. This is equivalent to having added 6% to the value of global production of the four main crops of soybeans, maize,

canola and cotton. Since 1996, farm incomes have increased by US \$117.1 billion. Over the 17 years, 1996–2012, the cumulative farm income gain derived by developing country farmers was US \$58.17 billion, equal to 49.7% of the total farm income during this period. Industrial nations gained US \$59 billion over the same period.

Additionally, biotech crops have contributed to environmental conservation and protection of biodiversity. Insect-resistant crops have greatly reduced the application of broad-spectrum insecticides which is beneficial to the environment. The accumulative reduction in pesticides for the period 1996 to 2012 was estimated at 497 million kilograms (kgs) of active ingredient (a.i.), a saving of 8.7% in pesticides, which is equivalent to an 18.5% reduction in the associated environmental impact of pesticide use on these crops. Sustainable intensification of land made possible by biotech crops has led to increased production on the same land. This is important to biodiversity protection since people do not have to cut down trees in order to expand farmland.

Conclusion

The main challenge to adoption of biotech crops in Africa remains misinformation. This can however be addressed through sustained political good will, efficient and predictable biosafety regulations and sustained factual information sharing to the public. Public private partnership has shown great promise in ensuring that resource poor farmers have access to the technology at no additional cost.



Status of Agri-Biotechnology R&D in Kenya

Dr. Simon Gichuki, Head, KALRO Biotechnology Centre

Development of GM Crops in Kenya

Kenya is among the countries in Africa which have embraced application of biotechnology in agriculture. However, the country is yet to commercialize a genetically modified crop. Despite this, there are a number of projects currently ongoing with a focus on food security crops including maize, sorghum, cassava and sweet potato. Research on insect-resistant GM cotton, commonly referred to as Bt cotton, has also been completed. The following is a summary of research projects employing GM techniques in the country.

a) Water Efficient Maize for Africa.

This project seeks to develop maize varieties that are both drought-tolerant and insect-resistant. Under moderate drought, the drought-tolerant WEMA maize with insect protection is expected to increase yields by 20–35%. This translates into additional 2 MT maize during drought years to feed about 14 to 21 million people in the long-term. The WEMA varieties are being developed through conventional breeding, marker-assisted selection and genetic modification. Five confined field trials

(CFTs) for drought-tolerant maize have so far been completed with promising results. Two seasons of CFTs for insect-resistant maize are also about to be completed. Preparations for commercial release of Bt maize have been initiated.

b) Improved Maize for African Soils (IMAS)

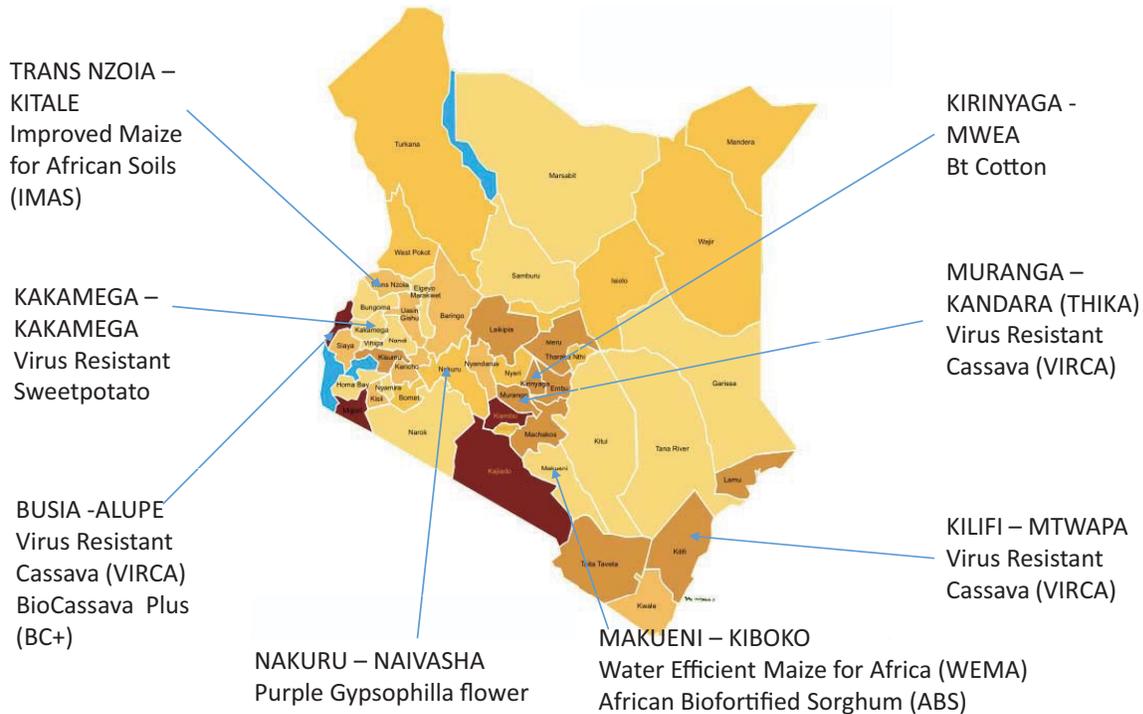
The goal of this project is to develop maize hybrids and open-pollinated varieties (OPVs) with 50% higher yield under severely Nitrogen-depleted conditions when low Nitrogen-stress is the main constraint and 25% where other constraints are important. Twenty per cent of maize area planted to IMAS products, resulting in 25% yield increase will produce 1 million tons of additional grain. CFT sites have been selected in Kitale and Kiboko. Preparation of the Kiboko site is already complete with the first inspection by regulators done. At the same time, preparation of the CFT site in Kitale is nearing completion. Both sites are undergoing Nitrogen depletion and will be commissioned soon with planting expected in 2015.



Hon Cecilia Ngetich, Member of Parliament, makes her remarks



GM Crops Research and Field Trials in Kenya



c) Virus Resistant Cassava for Africa

This project aims at producing high yielding disease resistant cassava with consumer preferred characteristics. One round of field trials for cassava mosaic disease has been completed at Western Kenya (Alupe, Busia). Proof of concept trials for cassava brown streak disease have been completed at the same site. Furthermore, Trait Selection Trials were planted in Western and Coast regions of Kenya in December, 2013.

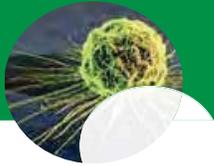
d) Development of Biofortified Cassava and Sorghum

KALRO is also currently developing nutritionally-enhanced cassava and sorghum under the Bio Cassava Plus

and African Biofortified Sorghum (ABS) projects respectively. One round of field trials has been completed at Alupe, Busia for Vit A biofortification in cassava. The ABS sorghum varieties are also being back crossed to popular local varieties.



Dr. Margaret Karembu and the participants display the brief at the launch



e) Preparation for Deployment of Bt Cotton

The application for environmental release of insect-resistant Bt cotton has been completed. A task force to oversee commercialization was also established with stakeholders already having been trained on stewardship. However, the current policy and regulatory environment in the country has been a challenge.

Remarks by the Chief Guests

Hon. Cecilia Ng'etich, Women Representative, Bomet County, Kenya

The role of science and technology in socioeconomic development is acknowledged worldwide. Embracing science will contribute a lot towards the realization of Kenya's Vision 2030. Biotechnology is among the technologies that can revolutionize the agricultural sector. However, this can only be realized if we all base our decisions on credible facts. Science is based on evidence

and I believe that the data contained in the report on the global status of biotech crops will facilitate a knowledge-based discussion on the technology. Biotechnology can help the country increase productivity while protecting the environment. The benefits outweigh the perceived risks and it is time to dialogue and come up with a way forward. The truth should be told and facts tabled so that the myths and misinformation can be corrected. There is also need to address the concerns of those opposed.

Hon. Kareke Mbiuki- Vice-chair, Parliamentary Departmental Committee of Agriculture

The role of biotechnology in agriculture is supported by scientific facts gathered over 18 years now. The technology continues to benefit millions of smallholder farmers in developing countries. Unfortunately Kenya is yet to commercialize a GM crop, a situation complicated by the ban on GM foods importation. The government will plant biotech maize in the newly launched irrigation schemes.



The chief guests Hon. Kareke Mbiuki (2nd from left) and Hon Cecilia Ng'etich (3rd from left) launch the brief



Question and answers

1. The civil society wanted labelling and not the ban. I urge scientists to continue with their research and stakeholder engagement.

2. The youth are going to be and must be part of this technological revolution. The youth can only engage in farming activities only if new technologies are available.

3. Was the ban politically motivated and has it affected research?

Answer: The ban was not informed by politics but the discredited paper (now withdrawn) by French scientists led by Prof. Gires-Eric Seralini who claimed that GM maize caused tumours in rats. There is a task force investigating the safety of GM foods and we hope its report will be positive.

The question regarding the impact of the ban on research should be looked at both in the short and long terms. All universities now have biotech centers where students are being trained and we should ask ourselves where these graduates are going to be employed. The ban has already made development partners to develop cold feet and will likely lead to brain drain.

4. Advised all scientists to conduct National Performance Trials within the CFTs so as to save time.

5. The ban on GM foods importation was from the Ministry of Health and not agriculture. The decision was out of context although it was also informed by the negative attitude developed by some EU countries towards the technology. The decision was political since it was never gazetted.

6. The task force was appointed by the Ministry of Health. Therefore, it is only the Minister of Health who can say when the report will be released. I urge stakeholders to present their views to the task force especially when it shall start holding public hearings.

7. We are complying with the ban at the moment while waiting for the report from the task force. NBA is however ready to handle any application pertaining to research.



2

OFAB 75 – March 27, 2014
The Shifting European Perspective
towards Crop Genetic Modification
Technology: A New Approach to Biosafety
Regulation for Europe and Africa



Dr. Roy Mugira

Presenter's Profile

Dr. Roy Mugira is a Senior Assistant Director of Research at the State Department of Science and Technology. He is responsible for technical advice on policy formulation for science, technology and innovation, specifically biotechnology/biosafety. He holds a PhD in Molecular Biology from Zhejiang University, China.



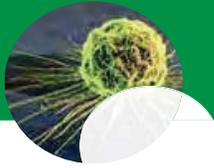
Introduction

Agricultural production is currently faced by numerous constraints including pests, diseases, low soil fertility and drought among others. Given the size of the demographic challenge, the world cannot afford not to use all the available technologies. There is need to harness the best of each technology, both old and new. Genetic engineering is among the technologies that have proven essential in addressing biotic and abiotic crop production constraints. Adoption of the technology is however faced by a number of challenges including opposition from certain quarters and poor policy frameworks in some countries.

EU Institutions and Policy Makers Support the Safety of GM Crops

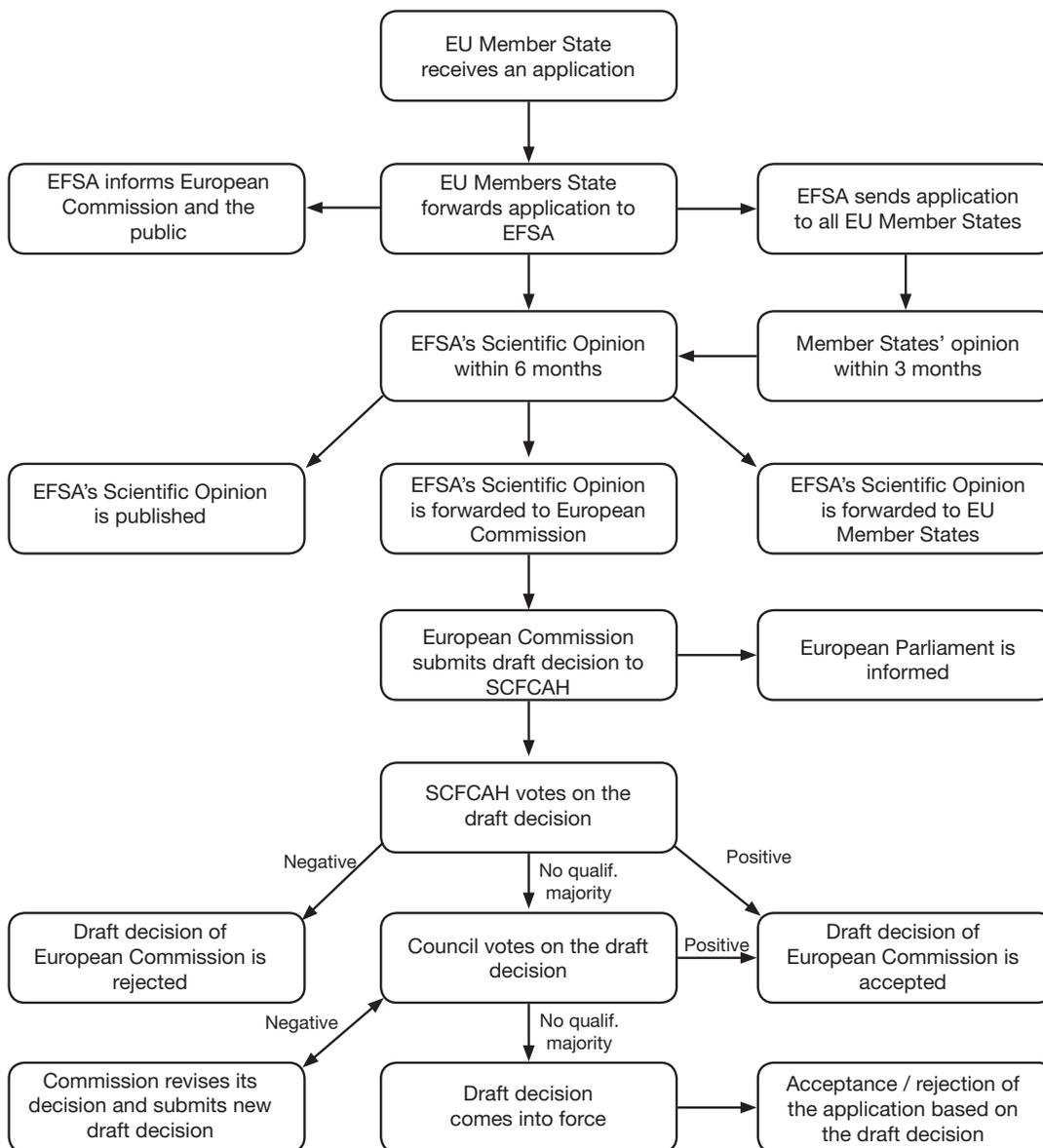
The question as to whether GM foods are safe or not is one that is unlikely to disappear from the public discourse soon. This is unfortunate since there is overwhelming evidence supporting the safety of GMOs. In 2010, the European Commission Directorate-General for Research published a comprehensive report titled "A Decade of EU-funded

GMO Research (2001-2010)" with a conclusion that biotechnology, and in particular GMOs, are not more risky than conventional plant breeding technologies. The report covered more than 130 research projects over a period of more than 25 years of research, and involving more than 500 independent research groups. The report further observed that projects dealing with the development of new products and processes based on GM technology fully integrate safety assessments in their conception, experimentation and development. The Directorate said that "GMOs have demonstrated a history of safety which has been confirmed and reaffirmed by independent research. In 2013, the European Academies Science Advisory Council (EASAC) also concluded that there is no validated evidence that GM crops have greater adverse impact on health and the environment than any other technology used in plant breeding. In their report entitled "*Planting the Future: Opportunities and Challenges for using Crop Genetic Improvement Technologies for Sustainable Agriculture*" EASAC added that there is compelling evidence that GM crops can contribute to sustainable development goals with benefits to farmers, consumers, the environment and the economy.



Unfortunately despite the above conclusions and several others from reputable European institutions, the continent is behind in GM crops adoption. Due to political interference in the EU, it

can take more than 10 years to approve a GM crop. Small and public companies are not able to afford this. Even big companies have started to pull out of the continent due to the high costs.



Approval process of GMOs in the EU

Source: Anne Glover, former Chief Scientific Adviser to the President of the European Commission



Major policy makers in EU have also voiced their support for research, development and commercialization of GM crops in the continent. While addressing a pre-G8 event on June 14, 2013, the UK Prime Minister, David Cameron, urged the EU to be open to scientific arguments as pertains to biotech crops. In addition, UK's Environment Secretary, Rt Hon. Owen Paterson has warned that Europe's attitude to GM can be misinterpreted as a sign that the technology is dangerous. This can generate unwarranted resistance to the technology in parts of the world that most need access to agricultural innovations.

The situation in Europe has had a spillover effect to Africa given the two continents trade interests. African nations are wary of losing their export markets if EU refuses GM products once adopted in the continent. For instance, Egypt and South Africa stopped the development of Bt potato for fear of losing European markets. However according to the former Chief Scientific Adviser to the President of the European Commission, Anne Glover, Africa should tap on the increasing well

educated youthful human resource to exploit the potential of biotech. The continent should get off the hook of the stringent EU regulatory system and use appropriate regulatory system.

Conclusion

There are many opportunities for collaborations between African and European institutions in agricultural biotechnology research and product development. These are aimed at promoting a unified European approach to collaborating with Africa in science and technology for sustainable development. Some of these opportunities include the Horizon 2020, the biggest EU research and innovation programme with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the laboratory to the market.

Questions and Answers

1. The conclusions presented are mainly from the Academies of Sciences. What is the Kenya Academy doing?

Answer: The Kenya Academy of Science operates under the goodwill of the CEO of the National Commission for Science, Technology and Innovation (NACOSTI). The Academy has developed a position paper in support of biotechnology.

2. Africa seems to suffer from a very tight grip by the EU. Why can't we develop policies that suit us and say no to EU?

Answer: It should be noted that most European countries have made decisions based on politics instead of facts. Africa will move forward only if we realize this and follow the examples of progressive countries such as South Africa.

3. Considering that biotechnology research started over 30 years ago and we now have thousands of peer reviewed publications on biosafety studies is there need for any further regulation of GM crops?

Answer: The Cartagena Protocol on Biosafety was crafted out of fear. Regulating may not be necessary but we are bound by international obligations to do so hence the establishment of NBA.



3

OFAB 76 – April 17, 2014
**Harmonization of Biosafety Frameworks
in the East Africa Community: Progress
and Prospects**



Mr. Moses Marwa

Presenter's Profile

Mr. Moses Marwa is the Principal Agricultural Economist at the East African Community Secretariat based in Arusha, Tanzania. He previously worked at the Agricultural Marketing Systems Development Programme (AMSDP), Arusha, Tanzania, as a Zonal Commercial Officer. He holds a Master of Science degree in Agricultural Economics from the University of Reading, England.

EAC Status and Membership

The East African Community (EAC) is a regional intergovernmental organization with its headquarters in Arusha, Tanzania. Its vision is for a prosperous, competitive, secure, stable and politically united East Africa. In this regard, EAC aims to widen and deepen economic, political, social and cultural integration in order to improve the quality of life of the people of East Africa through increased competitiveness, value added production and investment. EAC Secretariat is based in Arusha with a purpose of promoting development and harmonization of policies to ensure alignment of development plans between partner states. With a total GDP of approximately \$ 84.7 billion, the 5 EAC states (Burundi, Kenya, Rwanda, Tanzania & Uganda) are inhabited by around 135.4 million people.



Hon Kareke Mbiuki making a presentation at OFAB during the session

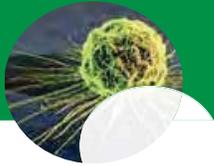
Agriculture and Food Security Department

The overall goal of cooperation in agriculture and rural development is the achievement of food security and rational agricultural production. EAC has 3 instruments that guide the development of programmes and projects for realisation of agricultural sector goals and objectives. These are;

- a) Food Security Action Plan
- b) Agriculture and Rural Development Strategy
- c) Agriculture and Rural Development Policy

EAC Provisions on Biosafety

Biotechnology and biosafety matters at EAC are handled by the department of environment and natural resources. The protocol on environment and natural resources, Chapter 3, Article 27(1) states that “partner states shall develop and adopt common policies, laws and take measures to ensure that the development, handling, transport, use, transfer and release of any living modified organism are undertaken in a manner that prevents or reduces the risks to environment,



natural resources and human health”. Additionally, the EAC climate change policy framework creates a chance for examining the opportunities that biotechnology and biosafety has to offer as climate change adaptation strategy.

Justification for Harmonization

Harmonization can be looked at from both international and local contexts. Internationally, Article 14 of the Cartagena Protocol on Biosafety states that “parties may enter into bilateral, regional and multilateral agreements and arrangements regarding intentional transboundary movements of living modified organisms, consistent with the objective of the Protocol and provided that such agreements and arrangements do not result in a lower level of protection than that provided for by the protocol”. Locally, regional integration is taking place at a high pace in EAC. The EAC common market protocol provides for free movement of goods and services

including trade in agricultural products. Therefore, regional cooperation in biosafety is crucial to ensure that the goals of regional integration are not jeopardized. This will help in addressing transboundary movements of GMOs-seeds, trade and food aid. It should be noted that growth in intra-regional trade in staples such as maize, sorghum, cassava and bananas is fast. Therefore introduction of GM crops/commodities is likely to disrupt trade in absence of harmonized regional biosafety decision-making arrangements.

Status of Biotechnology and Biosafety in EAC Partner States

All the EAC partner states have ratified the Cartagena Protocol on Biosafety. This is a global instrument that supports safe handling, transfer and use of living modified organisms. However, EAC partner states are at different stages of establishing National Biosafety Frameworks.



Dr. Margaret Karembu flanked by members of the OFAB Kenya Programming Committee (PC) presents the speaker a copy of ISAAA's global status of commercialized biotech crops report



Country	Policy & legislation	Institutional arrangements	Research and development
Kenya	National Biotechnology Development Policy 2006; Biosafety Act 2009; Four biosafety regulations	National Biosafety Authority supported by 8 regulatory agencies	Various stages of lab and field testing of crops such as cassava, maize, sorghum, sweetpotato and cotton.
Uganda	National Biotechnology and Biosafety Policy 2008; Biosafety Bill 2012 in parliament for consideration	National Biosafety Committee under Uganda National Council of Science and Technology	Approved trials include GM maize (insect and drought tolerant) cotton (insect-resistant and herbicide-tolerant), cassava (virus resistant) and bananas (biofortified, disease resistant).
Tanzania	National Biotechnology Policy 2010; Biosafety issues addressed under Environmental Management Act, 2004; Biosafety regulations gazetted in 2009	Division of Environment under Vice President's office	Agricultural biotech R&D involves non-GMO applications. Permits for GM maize (food aid) on transit to Somalia through port of Dar es Salaam granted
Rwanda and Burundi	National Biosafety Frameworks (NBFs) developed; Draft Biosafety Policies and Bills available	Biosafety issues under institutions responsible for environment	Research is mainly on conventional biotechnology applications areas such as plant tissue culture

Challenges in Biotech and Biosafety in EAC

Low levels of public awareness on GMOs has undermined fair and balanced understanding of the perceived risks and potential benefits. Additionally, there is inadequate national capacity for modern biotechnology particularly for risk assessment, risk management, research and detection of GMOs. Capacity building and retention should be continuous in tandem with rapid developments in biotechnology.

EAC Policy Making Organs' Decisions and Directives on Biotechnology and Biosafety

The 7th meeting of the Sectoral Committee on Health held in October 2004 considered public concerns around GMOs and made recommendations to the 9th Council of Ministers held in November 2004. The Council established an EAC partner states Technical Committee of Experts to address biosafety issues and



recommended need for development of an EAC regional policy, legal and regulatory framework on GMOs. In response to the 9th Council of Minister's decision, a three-day regional workshop to develop a draft common policy and legal framework on GMOs was convened in Entebbe in September 2006. The main objective of the workshop was to review the EAC partner states national biosafety frameworks and recommend the way forward for the development of a regional policy, legal and regulatory framework. The 13th council of ministers held in November 2006 established a working group on GMOs under the sectoral committee on environment and natural resources to guide regional efforts on harmonization of biosafety policies and legislation. A 2nd meeting of the sectoral council on environment and natural resources was held on 1st February 2013 in Kigali. The meeting directed the EAC secretariat to organize National multi-sectoral consultations of relevant sectors to consider matters related to biotechnology and biosafety and organize a regional multi-sectoral meeting to consider a consolidated effort of the national multi-sectoral consultations.

National biosafety consultations were held in September and October 2013, during which national biosafety priorities including policies, mechanisms to enhance regional information sharing, networking and capacity building were mapped out. In addition, requirements for transboundary shipments of GMOs were identified. Regional biosafety consultations were then held in November 2013, where priorities to guide the development of a regional biotechnology and biosafety framework were identified. These included:

1. Formulation of a harmonized regional biotechnology and biosafety policy to inform decision making on GMOs.
2. Establishment of a regional biotechnology and biosafety unit at the EAC
3. Need for mechanisms for resource mobilization to support human, infrastructural and institutional capacity building and retention.
4. Strategies for public education, participation and awareness in biotechnology and biosafety.
5. Development of a framework for a harmonized regional approach to global negotiations in biotechnology and biosafety.

Specific Priorities and Action Areas Included:

1. Development of mechanisms to enhance regional information sharing and networking.
 - Establishment of a a regional information sharing platform- Biosafety Clearing House (BCH).
 - Establishment of a biotech and biosafety network of research and academic institutions, industry and civil society to foster synergy.
2. Development of mechanisms to facilitate decision making, promote compliance, capacity building and address transboundary movement of GMOs:
 - Establishment of a functional biotechnology and biosafety unit at EAC to spearhead coordination.
 - Establishment of a Panel of Experts (PoE) to guide biosafety decision making- give risk assessment opinions.



- Establishment of EAC Centers of Excellence in biotechnology and biosafety.
- Harmonized approaches to risk assessment, management and decision making.

Roadmap for Implementation

The following milestones were developed to ensure that identified priorities are implemented:

- i. Draft Regional and Biosafety Policy developed by June 2014.
- ii. National and Regional validation workshops held between July and December 2014.
- iii. Submission of Draft Policy to the 5th Sectoral Council on Environment and Natural Resources.
- iv. Submission of the Draft Policy to the EAC 30th Ordinary Council of Ministers.

Envisaged Benefits of Harmonization

- i. Capacity building support through designated regional centers of excellence.

- ii. Minimized costs and duplication in testing and approval procedures.
- iii. Mitigation of potential impacts of GMOs on inter and intra-regional trade.
- iv. Enhanced information sharing and coordination on regulatory approvals/transboundary movement of GMOs.

Conclusion

The potential of biotechnology in addressing agricultural and climate change challenges should be explored in a science-based manner to maximize potential benefits while minimizing risks. The East Africa Community Treaty recognizes the fundamental importance of science and technology in economic development. Article 103 States that “the Partner States shall undertake to promote co-operation in the development of science and technology ...” It is therefore important to work together as a community in establishing systems that will enable our farmers reap the benefits of biotechnology like the rest of the world. Mainstreaming of biosafety considerations in the regional integration agenda is a key priority. Most regional economic blocks including COMESA, SADC and ECOWAS are at different stages of harmonizing biosafety matters.

Questions and Answers

1. You indicated that Chapter 3 has not been ratified by one member state. Which one is that?

Answer: The Protocol on Environment and Natural Resources has not been ratified by Tanzania.

2. Is EAC partnering with COMESA?

Answer: EAC works with other regional economic blocks. There is a formal framework for collaboration known as Tripartite Agreement.



4

OFAB 77- 10th November 2014 Declining Cotton Industry: A Case Study of Mwea Ginnery



Mr. Mugo Makanga

Presenter's Profile

Mr. Mugo Makanga is a director at the Mwea Ginnery in Kirinyaga County, Central Kenya. He is the chairman of Integrated Community Organization for Sustainable Empowerment and Education for Development Programme (ICOSEED). He holds a Diploma in Agriculture and Animal Health.

History of Cotton Production in Kenya and an Overview of Mwea Ginnery

Cotton was introduced to Kenya by British settlers in 1902 through the British Cotton Growers Association and the Cotton Research Corporation. Cotton Lint and Seed Marketing Board (CL&SMB) was later formed to deal with all cotton matters in Kenya. At Independence, the Cotton Board of Kenya was formed through an act of parliament, to replace the CL&SMB. The Cotton Board was in charge of all matters concerning cotton including regulating and licensing of all cotton activities. The Board also owned majority of ginneries in the country and some textile industries such as Kisumu Cotton Mills (KICOMI) in Kisumu, Mount Kenya Textile Ltd (MOUNTEX) in Nanyuki, Rift Valley Textiles Limited (RIVATEX) in Eldoret among others.

The board started having financial constraints in the 1980s, probably triggered by the state of the Kenyan economy during that period. They were unable to pay farmers for the cotton they delivered to ginneries, resulting in the farmers abandoning cotton farming

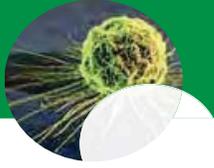


Mr. Mugo Makanga makes a presentation about the state of cotton ginneries in Kenya

altogether. Cotton farming came to a halt in 1987. In 1991, the Government in power at the time introduced a liberalization programme, where unprofitable assets owned by the government were to be sold to the private sector.

Mwea Cotton Ginnery Limited

In 1995, all ginneries owned by the Cotton Board of Kenya were advertised for sale through the Treasury. A group of farmers and business people from Kirinyaga purchased the Mwea Cotton Ginnery (MCG) through a company called Mwea Cotton Ginnery Limited. The group encouraged local cotton farmers to buy shares in the company. The machinery had not been in use for over 10 years and a lot of resources had to be spent on rehabilitation.



Farmers had lost all interest in cotton growing and a big campaign, involving government bodies such as Kenya Agricultural Research Institute (KARI) now Kenya Agricultural and Livestock Research Organisation (KALRO) and Ministry of Agriculture (MoA) now Ministry of Agriculture, Livestock and Fisheries (MoALF), had to be undertaken by MCG Ltd. to try and revive cotton farming. MCG employed qualified staff, majority of who were former employees of The Cotton Board of Kenya, which was by then, nonexistent.

MCG managed to get and distribute some seed from KALRO to farmers in their catchment areas of Kirinyaga, Embu, Mbeere, Murang'a, Kiambu and parts of Meru. Unfortunately, these efforts did not bear fruit and a few years later, the farmers were not making ends meet because of what they thought were poor prices. They started pulling out of cotton farming again.

The cotton farmers could not continue growing the crop due to poor planting materials and high cost of input. In 2006, due to the outcry regarding the sorry state of cotton farming in Kenya, MCG and the World Bank (WB) financed a cotton rehabilitation project, which provided a deeper insight of the woes facing cotton as an industry in Kenya. The project was used to educate farmers on ways to grow cotton efficiently and profitably.

MCG Ltd formed the Mwea Cotton Promotion Project (MCP), which together with Deloitte created the Pilot Project Management Team (PPMT) to manage the project. Deloitte Consulting represented the WB as the project managers. A local NGO based in Kirinyaga, ICOSEED, was

selected through competitive bidding to do the field work. The project was a public-private partnership venture between the farmers, the ginnery, banks and input suppliers.

Mwea Cotton Promotion Project- Presented by Mr. Patrick Muriuki, the Director, ICOSEED

The aim of the project was to increase production, quality and income for the value chain players by facilitating institutional and technical support for the ginnery, extension services, strengthen production market linkages between the farmers, ginnery and other stakeholders. The project conducted a baseline survey to establish causes of low production and profit in cotton farming. It mobilized farmers into organized groups and clusters for capacity building and linkage to other institutions. It also organized farmers to do cotton farming as a business through contract farming for Mwea Cotton Ginnery. The project developed a cotton production manual that was easy for farmers to use, provided a quarterly newsletter to cotton farmers and facilitated development of a cotton credit model with financial institutions for farmers to access credit.

The project identified the challenges that were being experienced by the cotton farmers. Some of them included: Poor farming technical skills, poor planting material, very expensive pest management practices and lack of affordable finance for ploughing. The project also identified inadequate finance for working and investment capital,



outdated machinery and equipment, inadequate volume of seed cotton from the farms and lowly capacitated ginnery staff as additional challenges. These challenges had contributed to low levels of cotton production by the farmers (200-300 kg per acre), low quality of cotton -78% BR (Grade II) produced fetching low prices, high ginning costs due to poor ginning equipment and other operating costs e.g. collection of cotton from scattered farmers and the ginnery operating at below 10% of its capacity.

Some of the proposed solutions to these challenges included; farmer trainings, provision of certified seeds by the government through Cotton Development Authority & Kenya Agricultural and Livestock Research Organization (KALRO). It also highlighted group based pesticide bulk buying and urged KALRO to produce pest tolerant/resistant varieties. The project saw the need for banks and other financial institutions to provide affordable credit to farmers. The project proposed purchasing of modern gins to match with the current efficient technology. Engaging farmers in a tripartite farming contract with a credit and building capacity for staff were also identified as possible solution.

After MCCP interventions 11,805 farmers were organized into groups and clusters (243 Groups in 27 Clusters) and therefore properly trained in:

- a) Group dynamics, leadership and management.
- b) Good agricultural practices- good cotton crop husbandry with support from KALRO Mwea and Ministry of Agriculture enabled farmers to intercrop cotton with suitable legumes, weeded in time among other activities.



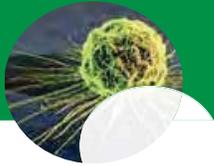
Mr. Patrick Muriuki, Director, ICOSEED making his presentation

- c) Financial literacy- With support from Equity Bank- enabled farmers to keep records and monitor performance.
- d) Group pest spraying gangs- With support from Juanco SPS chemical company- led to cotton AR (Grade I) increasing from 22% to 89%

Farmers organized themselves for contract farming and therefore 1000 farmers were able to access credit from Equity Bank as a pilot. Demonstration farms and farmer field schools were established, farmer exposure tours were conducted so that farmers could learn from KALRO and other farmers, while ginnery staff were trained in extension services. Religious leaders and Councilors were trained by the Ministry of Agriculture in modern technologies that would increase cotton production and profitability

Following the project evaluation, it was established that:

- a) Farmer Groups were properly organized.
- b) There was good team work the CODA, MoA, KALRO, farmer groups, chemical suppliers, bank, ginnery & ICOSEED.
- c) Farmers were put under multi-



- partite contract farming for market assurance.
- d) Credit model tried and found beneficial to farmers but interfered with by politicians.
 - e) Farmers adopted Good Agricultural Practices (GAP).
 - f) Pest management especially bollworms was challenging.
 - g) The farmers used 9 - 13 sprays per crop to properly manage the pests. This required between 49 and 53% of cost of production.
 - h) Development of cotton production manual.
 - i) About 89% of the farmers reached in evaluation felt that Bt cotton should be brought in immediately so as to assure high yields with less cost of production-most of these farmers had resisted the CFT in KALRO.
 - j) Cotton was getting competition from fruit trees like Mangoes and horticultural crops where irrigation water was available.

Conclusion

The cotton farmers are fully aware of the efforts by scientists to improve cotton farming, and have been keenly following the research on Bt cotton by KALRO. Some farmers and ginners have visited Bt cotton farms in South Africa, Burkina Faso, India and China and have learned that Bt cotton farmers in those regions are harvesting 800-1200kgs/acre, as opposed to Kenyan farmers' 200-300kgs/acre. Bt cotton is yielding 4 times more. If we are to bring profitability to cotton farming in Kenya, we have to embrace Bt cotton.

Currently, the industry is regulated by CODA, who should be in the front line to advocate increase in production through Bt cotton. Kenya's demand for cotton lint is 200,000 bales and the annual average production is 20,000 bales. This is only 10% of the demand, meaning that 80% is imported. The AGOA program is therefore not benefiting our local cotton farmers even with its extension. Growing Bt cotton will ensure more yields/acre, through clean certified seed and fewer sprays/season, thus more profits to the farmer.

Statements by Farmers

Mr. Joseph Pamba a farmer from Mbeere, Embu County, Kenya - Cotton that has been the main crop for Mbeere farmers over the years is being superseded by Miraa (khat). "The cotton crop as it is now does not give returns to investment," he said. It is time for the country to adopt biotech cotton that will give farmers more returns to the investments.



Mr. Joseph Pamba and Mrs. Margaret Ngare, cotton farmers from Embu County follow proceedings during the meeting



These words were echoed by Mrs. Margaret Ngare also a cotton farmer from Mbere, Embu County, who said that Bt cotton, if adopted will bring new seeds and definitely improve yield. “Farmers

need new seed,” she said. Farmers have continued recycling seed year in year out. Currently, the farmers spend a lot of money on pesticide inputs which can be greatly reduced should the Bt cotton be embraced.



Mrs. Margaret Ngare addresses participants at the event

Question and Answer

1. How much does it cost to gin a kg of cotton?

Answer: The cost is KES 42/kg

2. How does the ginnery address the fluctuating cotton prices from policy point of view?

Answer: Cotton is an internationally rated product and the prices are set internationally. The farmers trade in a liberalized society.

3. How is the government ensuring quality cotton seeds?

Answer: Kenya seed will multiply certified seeds at Bura and will ready them for the next planting.

4. Is the current ban on GM crops on all crops or on food crops only?

Answer: The ban affects any product that relates to GMOS. This creates a negative outlook to would be farmers.



Special OFAB Kenya Events



The May 2014 edition of the Open Forum on Agricultural Biotechnology was greatly anticipated by many stakeholders in the country, especially those from the media. The event hosted the chairman of the Council of Kenyan Governors on Health and Biotechnology, Governor Jack Ranguma, who had called for a press conference, representing a consortium of other cotton growing counties.

Governor Ranguma decried delays in commercialization of Bt cotton in Kenya owing to the ban and therefore urged for a speedy resolution of the issue. “This ban is delaying at least 8 cotton growing counties from commercializing Bt cotton. We know that our counties will reap major economic benefits by growing Bt cotton and would therefore like to move forward with this technology to revive the now moribund cotton sector,” said Ranguma who is also the Kisumu Governor.

He outlined benefits of GMO crops, as witnessed while visiting farmers in other countries, including reduction of pesticide sprays from 6 sprays to only 2 in Burkina Faso. This would definitely reduce production costs, and thus benefit farmers.

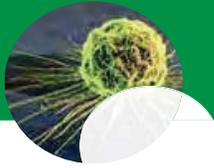
He disclosed that several investors are keen in partnering with cotton growing counties in textile businesses however they are discouraged because of the prevailing ban on GM food imports in the country.



Governor Jack Ranguma during the press conference

Stakeholders Participation in a Public Hearing Forum of the Task Force on Review of Genetically Modified Foods and Food Safety

The OFAB Programming Committee mobilized stakeholders to participate in making submissions during the public hearing called by the Government task force set up to review GMO food safety concerns in Kenya. The stakeholders included scientists from KALRO, different universities, youths representing students and graduates from Biotechnology-related courses and farmers. Presenters made passionate submissions outlining the benefits of GM crops, the safety track record of GM foods globally, implications of the ban on food security, trade and commerce, education and training among others. They urged the government to lift the ban on GM food imports.



National-County Biotechnology Stakeholders Forum

Working in collaboration with the Council of Governors, BioAWARE, AATF, PBS, Kenya Vision 2030, OFAB-Kenya organized a National-County Biotechnology Stakeholders Forum meeting on 15th July 2014 in Kisumu County in Western region of Kenya. The meeting brought together Governors and County Executives (CECs) from 16 cotton growing counties, to interact and share knowledge and information on Kenya's status of agricultural biotechnology with key scientists. The Council of Governors is seeking to form a forum with the objective of promoting public biotechnology awareness through deliberative county groups' dialogue with factual evidence-based information about biotechnology applications, use and products. The

constitution of Kenya mandates the county governments to 'promote social and economic development'. This mandate therefore offers these new administrative structures the opportunity to make strategic decisions for enabling social and economic development within their boundaries. As such some of the counties have singled out specific biotech crops of interest as their flagship agricultural products for promoting socio-economic development in their counties. However, the prevailing government temporary hold on GMOs is preventing progress in commercialization of biotech products like Bt cotton. Participants visited one of the local ginneries and noted the underutilized capacity due to lack of enough cotton. During the meeting the Governors came up with a ten-point communiqué urging the Government to lift the temporary ban and work towards providing a facilitative environment for deployment of biotechnology. The communiqué was broadcasted through several media outlets and submitted to relevant cabinet secretaries.



A ginner explains to H.E Jack Ranguma the challenges they face in trying to keep the Kibos ginner in Kisumu running



OFAB Kenya Holds Strategic Meeting with Special Groups

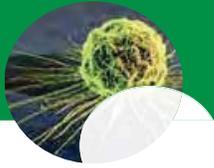
i. OFAB Supports NBA in Preparing Kenyan Stakeholders for MOP 7

OFAB facilitated the National Biosafety Authority (NBA), the country's National Focal point on Cartagena Protocol discussions, in organizing a half-day meeting for Kenyan biotechnology and biosafety stakeholders who would participate in COP MOP7 meeting from 29th September, 2014 in South Korea. The meeting, aimed at strengthening the understanding of issues to be discussed at MOP7 was organized on 16th September 2014, in Nairobi. The brainstorming session enabled

scientists and regulators to gain better understanding of the MOP7 agenda issues i.e. socio-economic considerations in biosafety decision-making, risk assessment and risk management, unintentional transboundary movements and emergency measures, the Nagoya – Kuala Lumpur Supplementary Protocol on liability and redress and the proposed guidance on handling, transport, packaging and identification of LMOs. The Chair of the NBA board as well as the authority's Chief Executive Officer made positive remarks in support of the initiative and commended OFAB's efforts in facilitating an increased grasp of global biosafety issues among Kenyan stakeholders. The need for a common position by the Kenyan team during MOP7 was emphasized. Regular biosafety related discussions will continue being spearheaded by the authority among stakeholders in future.



Participants of the COP MOP 7 preparatory meeting.



ii. OFAB Kenya Supports a Luncheon and Makes a Presentation at the MESHSA Conference

In a bid to contribute to informed decision making process on matters of agricultural biotechnology, OFAB Kenya sponsored a luncheon at the Media for Environment Science, Health and Agriculture (MESHSA) conference on the 14th of October 2014. The luncheon was attended by 75 participants. During the event, Dr. Faith Nguthi gave a presentation on findings from a radio research project that had been conducted in Kenya, titled 'Optimizing radio use in communicating agricultural biotechnology- Case study of

Burkina Faso and Kenya.' The study was comparative and used a case study of two socio-culturally different communities, Burkina Faso in the Francophone and Kenya in Anglophone countries. The study sought to provide empirical insights on how radio can be used to promote accurate and fair understanding of agricultural biotechnology.

The project involved a situational analysis on radio reporting on agri-biotechnology and a comparison of the radio with other modes of communication on the technology. A three-month experimental radio campaign on agri-biotechnology was conducted followed by a survey to assess the impact of the broadcast on farmers, agricultural extension officers and broadcasters themselves.



Participants of the MESHSA conference follow the question and answer session during the luncheon sponsored by OFAB-Kenya.

Findings revealed that agricultural biotechnology is not adequately covered by Kenyan media in a way that could enable informed public debate and policy choices. This was demonstrated by few items presented, little space allocated and placement of the stories

in the newspapers. Radio producers cited various challenges that hindered adequate coverage of biotechnology which included: their low scientific knowledge, scientists' use of technical jargon and unavailability of experts well-versed and confident to speak in local



languages. Measures should be taken to improve both quantity and quality of coverage of biotechnology issues by improving relationship between journalists and scientists. The project highlighted the need for radio producers to verify the content of their broadcast and the need for a peer review to verify program content because farmers took the information broadcasted on radio as “the gospel truth”. It recommended the need to empower the radio journalists that report on biotechnology, while at the same time train the scientists on how to communicate effectively.

iii. EU Delegation Head Rescinds Statement Concerning GM Crops Imports to Europe

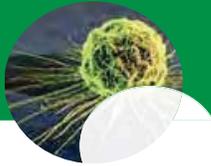
A meeting in Nairobi on the 7th of November 2014 to update the biotechnology stakeholders on the pace at which the country is progressing in biotech R&D and the impact the current ban on GM food imports has on biotechnology investments in the country.

The meeting, which was organized by the Kenya University Biotechnology Consortium (KUBICO) in collaboration with ISAAA AfriCenter and OFAB-Kenya was also intended to provide a platform to the EU Head of delegation to Kenya, Mr. Lodewjik Briet to present on the actual position of EU regarding the use and adoption of GM foods. The need for him to do this was necessitated by an earlier statement he had made implying that Kenyan farmers would lose the EU export market should they start growing GM crops. Through the Head of Rural Development and Agriculture at the EU, Dominique Davoux, the EU head rescinded the statement. He said that the EU has no problem importing GM products from countries that meet the set guidelines.

“The position of EU is that we have a list of GMO products that can be imported into the EU space. If Kenya contributes there, it will have access to the market,” he said. Mr. Briet clarified that the EU has authorized the importation of 58 genetically modified crops including GM maize, soya, oilseed rape, sugar beet and cotton.



Members of Parliament and other participants follow proceedings during the meeting



Dr. Wilson Songa, PS Ministry of Industrialization and Enterprise Development, who was the guest of honour at the meeting, pointed out that the Government recognizes the role agri-biotechnology can play in poverty reduction, enhancing food security, and in the conservation of biodiversity and the environment. For instance draught which is a constraint in agricultural production can be dealt with through genetic engineering.

As leaders in the East Africa region, Kenya should not lose its competitiveness due to the ban on GM food imports.

The second medium term plan (MTP) 2013-2017 acknowledges the importance of biotechnology and Biosciences programme in its realization of Kenya's Vision 2030. It also envisages creation of jobs and the competitiveness in textile industry by use of Bt cotton.



Mr. Dominique Davoux who represented Ambassador Briet Lodewijk at the event. To the right is Dr. Songa, PS, Ministry of Industrialization and Enterprise Development.



Hon. Florence Mutua responding to journalists at a press conference at the event.

Hon. Florence Mutua, the Busia County of Western Kenya Women Representative in parliament who was also present in the meeting urged the Government to lift the ban on GM foods importation unconditionally. She cited European countries such as Spain, which she had visited on a fact finding mission saying that EU was also growing and consuming GM foods contrary to the belief that EU is against biotech crops.



Summary of Presentations at the Forum

i. Dr. Richard Oduor, Chairman, Kenya University Biotechnology Consortium (KUBICO)

The challenge that needs to be addressed through biotechnology is hunger, which is brought about by climate change, increasing population a majority of whom depend on agriculture for their livelihoods, a big population that is depended upon for food production being the old as youth seek alternative white collar jobs. Therefore GM technology is a desirable alternative to ease the operations in pest and weed control, to mitigate against prolonged drought situations, to produce food that is fortified with essential nutrition e.g. Vitamin A, to reduce food toxicity, to improve food storability and enhance its usability after storage among other essential benefits. For all these to be realized there are requisite factors including the availability of research facilities and human capacity, government good will and existence of effective regulatory capacity.

Kenya has both the facilities and well

trained resource persons to effectively handle the technology. These facilities include the Kenya Agricultural and Livestock Research Organization (KALRO) Biotechnology Center with over 30 trained personnel trained in GM technology, Plant Transformation Laboratory (PTL) in Kenyatta University, Centre for Biotechnology and Bioinformatics (CEBIB) at UoN, BecA-ILRI Hub to mention but a few. In all these institutions, there are more than 20 scientists at PhD level and numerous others at Master's and Bachelor's degree levels

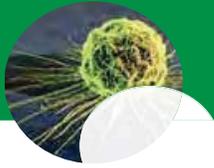


Dr. Richard Oduor addressing participants at the meeting

ii. Prof. Dorington Ogoi, National Biosafety Authority, (NBA)

Kenya has the capacity for the biosafety regulation of GMOs. The Biosafety Act of 2009 makes provision for the establishment of a legal framework for the safe handling, use and transfer of genetically modified organisms.

It thus set up the National Biosafety Authority as the national focal point on all biosafety matters in Kenya. The law mandated the Authority to exercise general supervision and control over dealings in GMO with a view to ensuring safety to human and animal health and protection of the environment. NBA is also mandated by the Act to consider and determine applications for approval for the safe transfer, handling and use of GMOs; to co-ordinate research and



monitor activities on all GMO work as per the Act; to strengthen national technical capacities and capabilities for biosafety and develop regulations to operationalize the Biosafety Act.

NBA is also mandated to establish and maintain a Biosafety Clearing House (BCH) mechanism – web based information sharing of national database that is linked to the international BCH; promote public awareness on biosafety and biotechnology; enforce the provisions of the Biosafety Act and to provide advisory services on matters of biosafety. It does these in collaboration with various regulatory agencies namely: Kenya Plant Health Inspectorate Service (KEPHIS); Directorate of Veterinary Services (DVS); Department of Public Health (DPH); Kenya Bureau of Standards (KEBS); National Environmental Management Authority (NEMA); Kenya Wildlife Service (KWS); Kenya Industrial Property Institute (KIPI) and Pesticide Control Products Board (PCPB). The roles of these regulatory agencies include monitoring the approved GMO activity to ensure compliance with conditions of approval, informing the Authority of any significant new scientific information indicating that an approved activity pose biosafety risks not previously known, inform the Authority of unintentional or unapproved introduction of a GMO into the environment and propose mitigation measures.

The Biosafety Act of 2009 makes provisions for a review as well as appeal mechanism. A review may be done by the Authority on its own volition or upon the request of an applicant. An appeal's board has been established to consider

applications from persons aggrieved by the decision of the Authority. Should the GMO activity pose harm to the environment, the Authority may invoke the following orders:

- Restoration orders: to restore the environment to as near as it may be to the state in which it was before the release of a GMO.
- Cessation Orders: issued for the immediate imposition of additional risk management measures with respect to such activity.

These orders are invoked if the Authority, in consultation with the relevant regulatory agency, determines that there is an imminent danger posed to the conservation and sustainable use of biological diversity, taking into account risks to the human health.

The Law provided for gazettment of regulations that would be important for the implementation of the Biosafety Act 2009 and to date, 3 regulations have been gazetted including: Regulations for Contained Use; Environmental Release; Import, Export and Transit and Regulations for Labeling (2012). NBA conducts risk assessment-as a basis for decision making with the objective of identifying and evaluating the potential adverse effects of GMO to human health and environment. Some of the key considerations are food safety assessment, environmental risk assessment and review of risk assessment dossier. It does these with collaboration over 15 PhD level experts and 7 MSc holders.



iii. Mrs. Paloma Fernandez, CEO -Cereal Millers Association

The Association advocates for safe food in Kenya which is well spelt out in their mission, pointing out that country's staple food is maize. Challenges such as aflatoxin, restricted trade laws, high price on the local dry maize and insufficient storage are some of the impediments to safe and cost effective food in Kenya.

The GM food import ban has affected the capacity and competitiveness of the cereal millers to import maize. If the ban continues, it will restrict investment in Kenya's agricultural biotechnology sector. From the standpoint of the private sector, the areas affected most by the ban on the GM food imports are food security, investment and trade.



Participants follow proceedings at an OFAB session



OFAB Kenya Programming Committee Members

Dr. Margaret Karembu-ISAAA, Chair OFAB Kenya



Dr. Karembu is the Director of ISAAA *AfriCenter* and also the Chair of OFAB Kenya Chapter Programming Committee. She has vast experience in managing, implementing and coordinating technology transfer projects as well as diffusion studies on modern biotechnology. A Science Communications specialist, Margaret holds a PhD Degree in Environmental Science Education from Kenyatta University, Kenya.

Mrs. Nancy Muchiri – AATF

Mrs. Muchiri is the Communications and Partnerships Manager at AATF. She is responsible for managing the Foundation's public and partnership relationships through strategic communications to enhance visibility and positioning of the Foundation and its projects. Nancy has an MSc Degree in Organisational Development from the United States International University, Kenya



Dr. Dan Kiambi-ABCIC



Dr. Kiambi is the Executive Director of African Biodiversity Conservation and Innovations Centre (ABCIC). He has vast experience in agrobiodiversity and plant genetic resources conservation and sustainable utilization. Dan holds a PhD in Biological Sciences (plant molecular diversity and ecogeographic survey) from the University of Birmingham UK.

Dr. Simon Gichuki- KALRO

Dr. Gichuki is the Head of KALRO Biotechnology Centre. He is an active participant in biotechnology and biosafety policy development at the national, regional and international levels. Simon holds a PhD in Molecular genetics and Plant breeding from the University of Agricultural Sciences, Vienna (Austria).





Prof. Eucharia Kenya- Embu University College



Prof. Kenya is the Deputy Principal in charge of Planning, Administration and Finance, at Embu University College, a constituent of the University of Nairobi. She holds a PhD in Applied Entomology from the Rivers State University of Science and Technology, Nigeria.

Dr. Fred Kanampiu- IITA

Dr. Kanampiu is a project coordinator at IITA. He has vast experience and interest in Striga management, natural resource management and capacity building. Fred has a PhD Degree in Soil Fertility from Oklahoma State University, Stillwater, USA.



Mrs. Jane Otadoh - Ministry of Agriculture, Livestock and Fisheries



Mrs. Otadoh is an Assistant Director of Agriculture in the Ministry of Agriculture, Livestock and Fisheries. She currently represents the Principal Secretary of Agriculture in the National Biosafety Authority Board in the OFAB Programming Committee. She holds an MSc Degree in Plant Biotechnology from Center for Biotechnology and Bioinformatics (CEBIB), University of Nairobi.

Mr. Paul Chege - ISAAA, Liaison Officer OFAB Kenya

Paul is the Program Officer in charge of OFAB-Kenya secretariat at ISAAA AfriCenter. He holds an MSc Degree in Agricultural Biotechnology from Szent Istvan University in Gödöllő, Hungary.





Mrs. Brigitte Bitta-ISAAA, Secretary OFAB Kenya

Mrs. Bitta is a Program Assistant at ISAAA AfriCenter and also the Secretary of the OFAB Kenya Chapter PC. She manages the Biotech Information Centers in East and West Africa. Brigitte is currently pursuing an MSc in Agricultural, Information, Communication Management at the University of Nairobi.

Mrs. Doris Wangari, PBS



Doris Wangari is the PBS Kenya Country Coordinator. She was previously the Biosafety Officer at the National Biosafety Authority (NBA). She holds a Masters degree in Biotechnology from Jomo Kenyatta University of Agriculture and Technology.

About OFAB

The Open Forum on Agricultural Biotechnology in Africa (OFAB) is a platform that brings together stakeholders in agricultural biotechnology for frank discussions on all aspects of the technology. It aims to enhance knowledgesharing and awareness that will raise understanding and appreciation of agricultural biotechnology and contribute to building an enabling environment for decision making. OFAB is currently operational in eight countries: Burkina Faso, Egypt, Ghana, Kenya, Nigeria, Tanzania, Uganda and Zimbabwe.

OFAB Kenya is the pioneer Chapter of the Open Forum on Agricultural Biotechnology in Africa. It is currently hosted by the International Service for the Acquisition of Agri-biotech Applications (ISAAA), *AfriCenter*, under a collaborative agreement with the African Agricultural Technology Foundation (AATF).

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

African Agricultural Technology Foundation,
ILRI Campus, Old Naivasha Road,
P.O. Box 30709 - 00100, Nairobi, Kenya.
Tel: +254 20 4223700,
Email: aatf@aatf-africa.org
Website: www.aatf-africa.org



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