

# A DECADE OF SUCCESS IN AGRI-BIOTECH GRASSROOTS OUTREACH IN KENYA

(COUNTY EDITION)



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## Acronyms

<b>AATF</b>	African Agricultural Technology Foundation
<b>CEC</b>	County Executive Committee member
<b>CBU</b>	Crop Biotech Update
<b>CFT</b>	Confined Field Trial
<b>CMA</b>	Cereal Millers Association
<b>GM</b>	Genetic Modification
<b>ISAAA</b>	International Service for the Acquisition of Agri-biotech Applications
<b>KALRO</b>	Kenya Agricultural and Livestock Research Organization
<b>MLN</b>	Maize Lethal Necrosis
<b>NBA</b>	National Biosafety Authority
<b>NPT</b>	National Performance Trials
<b>OFAB</b>	Open Forum on Agricultural Biotechnology
<b>RIVATEX</b>	Rift Valley Textiles
<b>VIRCA</b>	Virus Resistant Cassava for Africa
<b>WEMA</b>	Water Efficient Maize for Africa
<b>KNBS</b>	Kenya National Bureau of Statistics



## Executive Summary

Over the past decade, adoption of genetically modified (GM) crops on a commercial basis has increased steadily around the world with significant impact in food security, socio-economic, environment and human health benefits. Integration of this technology in farming systems in Kenya, offers a bright prospect of meeting the growing demand for food by improving both yield and nutritional quality of crops. However, like in many other African countries GM technology is still surrounded by controversial debates resulting in slow acceptance, and sometimes opposition. It is therefore imperative to have consistent communication which will help the public get the right information on the technology. In this context, Open Forum on Agricultural Biotechnology in Africa (OFAB)-Kenya Chapter, provides a platform that brings together stakeholders in agriculture to share knowledge and experiences on agri-biotechnology.

Since its inception in 2006, OFAB- Kenya has played a big role in providing an opportunity for scientists, journalists, environmentalists, students, civil society, industrialists and policy makers to interact, network, share knowledge and explore new opportunities of enhancing access to benefits of agri-biotechnology to Kenyan farmers and agricultural investors. After promulgation of the Constitution of Kenya, 2010, county governments were mandated to 'promote social and economic development'. This offered the new administrative structures an opportunity to make strategic decisions for enabling social and economic development within their boundaries. In a bid to align its awareness creation activities to the new constitution, OFAB-Kenya adopted a bottom-up communication approach to spark change from the grassroots.

To date, the approach has reached over 7000 farmers, 500 decision makers and 1000 journalists in Coast, Nyanza, North Rift, Lower eastern, Western, Central, Upper eastern and South Rift regions in Kenya. From these events, a wide range of topical agri-biotech issues relevant to the specific host regions have been addressed. The awareness creation events included meetings, exhibitions, sensitization workshops, media communication trainings, study tours and field visits.

In the ten years of existence, OFAB-Kenya celebrates several notable achievements. These include; passing of the Biosafety Bill that led to the enactment of the Biosafety Act No.2 2009, the partial approval for National

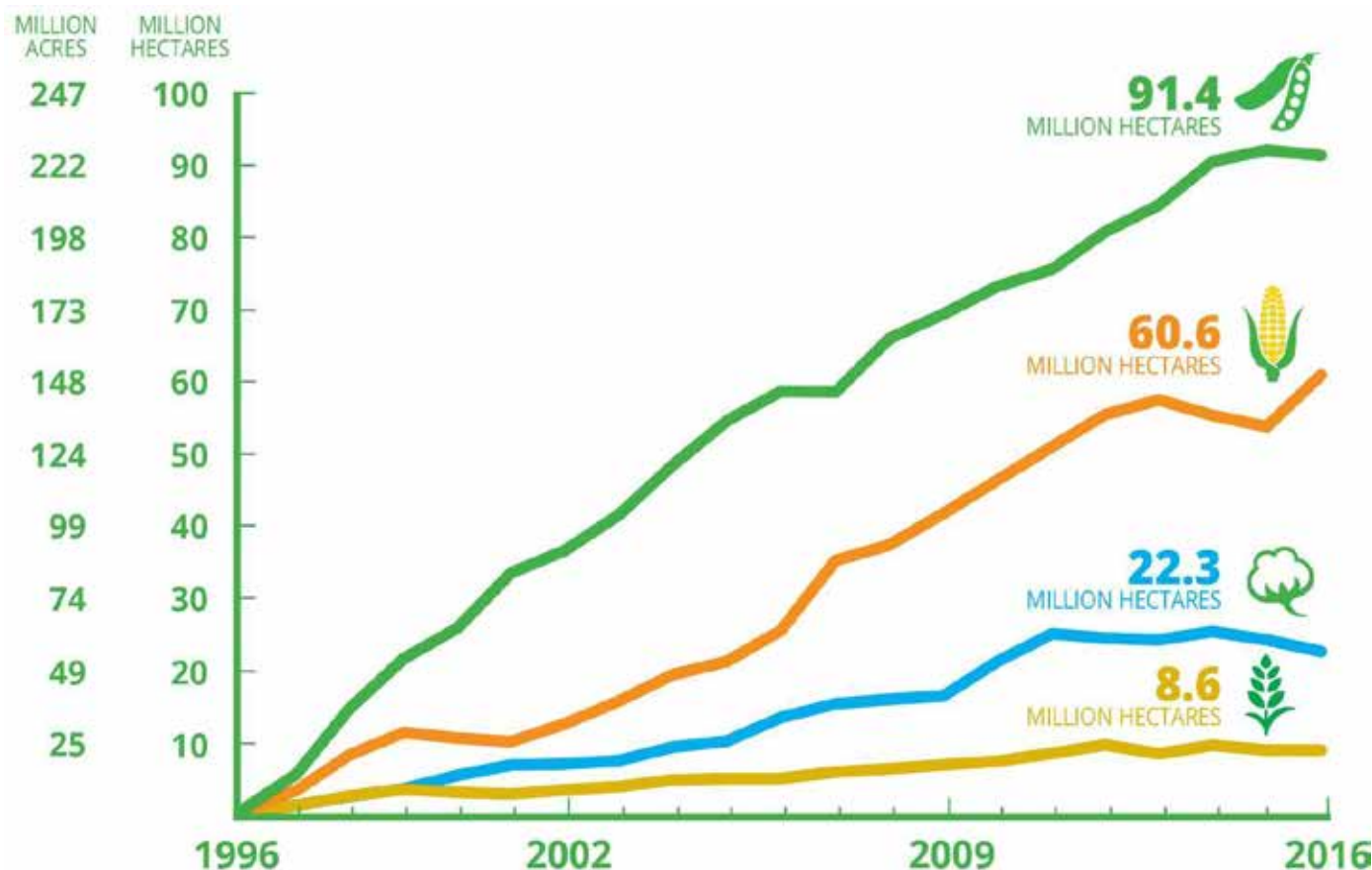
Performance Trials (NPTs) on WEMA maize, increased voices of stakeholders calling the government to lift the ban on GM food imports, increased awareness on crop biotechnology at the grassroots, changed public perception on GM crops, increased reporting by the media and increased supportive voices from policy makers. This publication captures highlights from the regional grassroots outreach events over the 10 years. OFAB-Kenya acknowledges its partners and stakeholders in helping achieve its objectives over the decade.

## Introduction

Open Forum on Agricultural Biotechnology in Africa (OFAB) – Kenya chapter has over the last 10 years been on the forefront of awareness creation on agricultural biotechnology. Although the first 21 years of global cultivation of biotech crops has achieved significant agronomic, environmental, socio-economic and health benefits to farmers, Kenya has seen a period of unfounded controversies surrounding the technology. This has necessitated vibrant responses by multiple stakeholders to provide factual information to the public and policy makers and debunk misconceptions put forward by GM technology opponents.

Since the first commercialization of biotech crops in 1996, a record US\$167.8 billion additional gain in farmer income has been realized. This has been shared by more than 18 million farmers worldwide in 28 countries that planted biotech crops in a cumulative 179.7 million hectares by the year 2015. Two crops, biotech cotton and maize achieved a global increase in income benefits of US\$52 billion and US\$50 billion respectively. Kenya, with prime agricultural lands suited for cotton and maize could tap into benefits arising from cultivating biotech crops. The country has been doing research on these two crops and are now almost going out to the farmers. However, the debate surrounding biotech crops has created fear and misinformation that might impact negatively on acceptance. Thus, OFAB-Kenya embarked on region-targeted outreach activities for networking, engaging and sharing factual agri-biotech information towards achieving positive public attitude and political goodwill from the government. During this time, the chapter was able to reach 13 counties in 8 agroecological regions where biotech crops would make the most impact on improving agricultural output and benefits to farmers and consumers.

## Global Area of Biotech Crops, 1996 to 2016: By Crop (Million Hectares, Million Acres)



- Biotech soybean reached 50% of global biotech crop hectarage

ISAAA 2016

## Map of Kenya showing GM Research Trials and OFAB Kenya County Events





## Upper Eastern Kenya Region OFAB Events

The upper eastern region of Kenya covers three counties namely; Meru, Tharaka Nithi and Embu, situated in the North East of Nairobi. The region's position on the eastern slopes of Mt. Kenya and proximity to the equator highly influences its atmospheric conditions leading to a wide variety of microclimates and agro-ecological zones. These zones range from upper highlands, lower highlands and upper midlands with moderate to high amounts of rainfall.

Due to the enabling agro-ecological conditions, agriculture is the main source of livelihood of the people directly supplying their food demand and creating employment. The crops grown in the region include banana, maize, beans, cotton, cassava, sorghum among others. Crop production has however declined in the recent past due to a myriad of challenges, key among them pests and diseases, high costs of inputs and lack of improved planting material. The poor crop production has led to dismal raw materials for processing industry such as cotton ginneries leading to reduced operations and closure.

For cotton farming, the main challenge is pests infestation that has reduced the average harvest of cotton lint and seed to 250 kg/ha and 572 kg/ha respectively, compared to a potential of about 1000 kg/ha cotton lint and 2500 kg/ha cotton seed. The farmers have been growing conventionally bred cotton, which is susceptible to a host of sucking and chewing insects, key among them cotton boll worm. This pest destroys the whole cotton boll leading to almost zero yields. This challenge can be addressed by planting Bt cotton, that is genetically engineered to be resistant to bollworms. Bt cotton will ensure control of bollworms as well as reduction of pesticides use.

KALRO has been conducting research on Bt cotton which has now been completed and conditional approval for National Performance Trials (NPTs) by NBA granted. With some of the Bt cotton field trials located in this area, OFAB-Kenya saw it necessary to organize several events in this region to create awareness among farmers and communities on Bt cotton and agri-biotech in general. The events included seeing-is-believing study tours, visits to cotton ginneries and Bt cotton CFTs, exhibitions and workshops. From these events, stakeholders were sensitized on the progress of GM crops' research in the country with an emphasis on Bt cotton and its potential benefits. OFAB-K activities in the region attracted participation of farmers, ginners, CECs of agriculture and health as well as media personnel.



*Farmers listening to a presentation at an OFAB-Kenya exhibition*

During the grassroots outreach events, presentations by scientists and regulators of biotechnology research demonstrated that the country has capacity for safe development of GM crops. Experiences shared from other countries revealed the benefits that cotton growing counties stand to gain from adoption of Bt cotton. After the series of sensitization events, farmers wrote communiques and spoke out in the media in demand for access to Bt cotton and other biotech products.

## Stakeholders' concerns

**Question:** Is the current ban on GM crops on all crops or on food crops only?

**Response:** The ban affects food product that relates to GMOS. This creates a negative outlook to would be farmers

**Question:** How is the government ensuring quality cotton seeds?

**Response:** Kenya seed will multiply certified seeds at Bura and get them ready for the next planting

**Question:** How does the ginnery address the fluctuating cotton prices from a policy point of view?

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

## Outcome

Some of the outcomes from these activities included; product demand from farmers, increased and balanced media reporting and positive policy pronouncements as highlighted below.

### i. Product demand

Kenyan Governors called on the government to lift the ban on GM food imports to allow farmers access the various GM crops ready for planting.

Farmers from Upper Eastern Kenya counties of Embu, Meru and Tharaka Nithi signed a communiqué to the Kenyan President demanding for Bt cotton seeds and calling for the lifting of the ban on GM food imports.

In the communiqué, farmers noted systematic failures in the cotton value chain, including pests and diseases as factors that have contributed to the collapse of the once vibrant cotton sector in the country. They also emphasized the need to reap from research efforts such as development of insect resistant cotton (Bt cotton) by Kenya Agricultural and Livestock Research Organization (KALRO).

### ii. Quotes from farmers

*"We are ready to plant the cotton, adoption of Bt cotton will contribute to reviving the economy of this country and improve farmers' income."* **Mr. Gregory Kaburu Ntoburia** - a cotton farmer from Meru County.

*"We petition the government to lift the ban on GM crops and impose a ban on second hand clothes instead."* **Mr. Peter Njeru** - a cotton farmer from Embu County.

*"It is time for the country to adopt biotech cotton that will give farmers more returns to their investments"* - a cotton farmer from Tharaka Nithi County.

### iii. Policy pronouncements



*"We must adopt these crops to help us improve food production and deal with some of the challenges in Agriculture."* **H.E. Peter Munya**, Governor, Meru County and Chairman, Council of Governors, Kenya.

*"It is evident that countries that have embraced biotech crops are more food secure and have a thriving economy. The Senate will soon hold discussions with the Health and Agriculture Cabinet secretaries in a bid to see how the country can reap benefits of biotechnology and demystify myths confronting it."* **Hon. Daniel Karaba**, the Senate Education Committee Chairman.



*"There is need to embrace emerging technologies in the agricultural sector so as to create more job opportunities for the youth and increase income for farmers."* **Hon. Dorothy Ndit**, Deputy Governor, Embu County.



#### iv. Media coverage

The events were covered by local media with about 2,150,000 media impressions as per below links. A video of one of the events was aired on citizen TV which has 85% viewership in Kenya.

**Table 1. Impressions from media stories covered from outreach events in the region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Standard Newspaper	Kenyan Governors rally behind GM crops	10th May 2016	<a href="https://www.standardmedia.co.ke/mobile/article/2000201201/governors-rally-behind-gm-crops">https://www.standardmedia.co.ke/mobile/article/2000201201/governors-rally-behind-gm-crops</a>	750,000
The people daily Newspaper	Governors now back push to lift GMO ban	11th May 2016	<a href="http://www.mediamaxnetwork.co.ke/business/219387/governors-now-back-push-to-lift-gmo-ban/">http://www.mediamaxnetwork.co.ke/business/219387/governors-now-back-push-to-lift-gmo-ban/</a>	400,000
Citizen TV	Bt cotton push	11th Feb 2015	<a href="https://www.youtube.com/watch?v=LjNC-xHZK7o">https://www.youtube.com/watch?v=LjNC-xHZK7o</a>	1,000,000

Source: ISAAA AfriCenter files

#### Media articles

### Poor returns from cotton drive Embu farmers to more lucrative crops

By Joseph Muchiri  
Updated Tue, February 3rd 2015 at 00:00 GMT +3



### Kenya soon to lift ban on production of genetically modified cotton, maize

By Joseph Muchiri  
Updated Tue, February 3rd 2015 at 00:00 GMT +3



**IN SUMMARY**

- Kenya will soon start cultivation of genetically modified cotton and maize, making it the first East African country and fourth in Africa after South Africa, Burkina Faso and Sudan to grow GM crops in open fields.
- The two crops are among the six that have been under confined field trials at the Kenyan Agricultural Research Institute (KARI).

### Embu > DAILY NATION 11/7/2016 Senator lobbies for laws on genetically modified crops

A senator has urged the government to speed up passage of laws to allow growing of genetically modified crops for food security. Senate Education committee chairman Daniel Karaba said countries that had embraced the technology were more food secure and had a thriving economy. Addressing a Biotech communication and sensitisation training for journalists and extension officers at Mountain Breeze Hotel in Embu County, Mr Karaba said Kenya risked not realising the ambitious Vision 2030 if it did not embrace the technology. The Kirinyaga senator also dismissed talks of GMO foods as being responsible for cancer as myth. "We should not talk about cancer as being a result of biotechnology. This is a propaganda that will not help us," he said.

—Charles Wanyoro

### Pests, low returns diminish cotton industry in Embu county

By Joseph Muchiri Monday, August 24th 2015 at 00:00





## Coastal Kenya Region OFAB Events

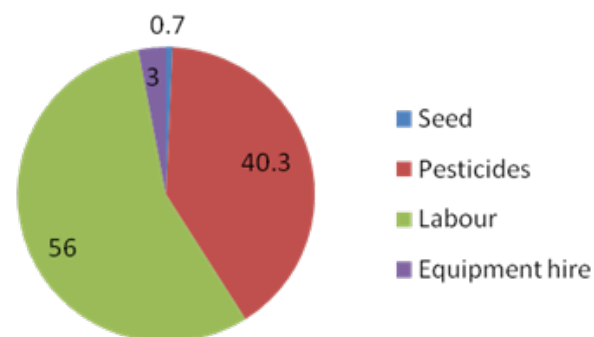
The coastal region of Kenya has six counties; Kilifi, Mombasa, Kwale, Lamu, Taita Taveta and Tana River, all covering a total area of 79,686.1 sq km. Due to its proximity to the ocean, the region experiences conventional rainfall of between 1,000-1200mm in a bimodal pattern and daytime temperatures in average of 28-31°C.

The climatic conditions of the region support cultivation of crops such as maize, cassava, cowpea and cotton at subsistence level. However, the production of these crops is far below the potential, a situation that has led to perennial serious food deficits. The dismal production has been occasioned by poor planting material, pests and diseases and climate change challenges such as drought. Farmers here are resource poor and most of the times unable to procure adequate inputs for meaningful crop production. They are unable to meet costs associated with pest control, weeding and harvesting leading to poor yields which have led to collapse of the once vibrant sectors such as cotton, cassava, maize and others.

Low cotton lint production has led to closure of two major cotton ginneries, Mpeketoni and Malindi for the last five years, rendering about 5,000 workers jobless. The remaining three in Lamu, Hola and Voi face challenges of low ginning outturn and high operational costs.

### Cost distribution in the production of one hectare of cotton

Percentage cost (KES/ha)



Source: Kenya Fiber Crops Directorate

In an effort to address these concerns, the government of Kenya through KALRO and other partners embarked on intensified research to develop biotech crops for cultivation by farmers in the region. These crops include genetically engineered Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD) resistant cassava, insect resistant (Bt) cotton and insect resistant and drought tolerant maize- WEMA-Bt maize. OFAB-Kenya has been sensitizing stakeholders in the region severally over the last decade, ahead of introduction of the crops. The sensitization events provided a platform for farmers to interact with scientists, county leadership and regulators. The events included workshops, visits to cassava and maize CFTs, and seeing-is-believing study tours outside the country. During these activities, the major focus has been on the various projects underway in the country, meant to solve the challenges that affect farmers with an emphasis on the biotech crops that stand to benefit farmers in the coastal region.

The benefits of these crops over their conventional counterparts cannot be over emphasized. Studies have shown that since 1996, farmers planting biotech crops have reduced pesticide inputs in their fields by 8.2% or over 581 million kg. In India, impact studies of Bt cotton showed that yield increased by about 31% and insecticide spraying reduced by 39%, which translate to 88% increase in profitability (US\$250/ha). Experiences of small farmers from China, South Africa, the Philippines and other developing countries clearly show that small holder farmers have benefited the greatest from GE crops. The most consistent observation from these countries is that growing GM crops is a profitable farming endeavor. It is therefore evident that these benefits can be applied to other countries with similar agro-ecological conditions and production potential, Kenya is among those striving to do so or introduce the crops.

**Table 2. Global farm income benefits from growing GM crops, 1996-2014 (US\$ million)**

GM Trait	2014 increase in farm income	1996-2014 increase in farm income
HT Soybean	5,221.4	46,643.4
HT+IR soybean	853.5	1,174.7
HT maize	1,600.1	9,050.4
HT cotton	146.5	1,654.2
HT canola	607.1	4,860.0
IR maize	5,296.0	41,407.3
IR cotton	3,940.8	44,834.3
Others	79.7	652.4
<b>Totals</b>	<b>17,745.1</b>	<b>133,487.0</b>



*A farmer in Kilifi County displays a wilting maize crop in his drought affected field*

## Stakeholders' concerns

**Question:** How are we going to market our products if we adopt GM crops since the European Union is against GMOs?

**Response:** The main reason of GM crop improvement in Kenya is food security. Further, crops such as cassava are not meant for export. Nevertheless, EU is not against GMOs contrary to the public perception. They understand the importance of the technology and have invested in developing such crops. Notably, they are leading in GM pharmaceuticals. Strong activism against the technology has however barred commercialization of the technology in most countries with effects of the activism reaching some African countries.

**Question:** Can GM cassava cuttings be replanted?

**Response:** The planting process for conventional and GM cassava is the same. Therefore it can be replanted. Indeed GM seeds from other crops can be replanted too. However, like hybrid maize, farmers are advised to plant new seed each season to reap the benefits of hybrid vigor.

**Question:** Is there sufficient market for cassava taking into account public fear of cyanide poisoning?

**Response:** The demand for cassava as food is indeed high. If farmers could collect their produce through Community Based groups (CBOs), they would supply enough to meet the market demand. The county government will educate the population progressively about how to avoid cyanide poisoning.

## Outcome

### i. Product demand

Farmers from this region voiced their support for agri-biotech and signed a communique asking the president to lift the ban on GM foods imports. In the communiqué, farmers appreciated the potential of biotech in solving some of the agricultural challenges they faced noting that the current impasse created by the ban impedes this realization.

County Executive Committee members (county ministers) for health, environment and agriculture in the country expressed their support for crop biotechnology and called for lifting of the ban on GM foods imports.



## ii. Policy pronouncements



*"We want to embrace biotechnology in Kilifi because we understand its potential benefits."*  
*Hon. Mwalimu Menza, County Executive for Agriculture, Kilifi County.*

*"I urge all CECs to engage the national government in order to create an environment that will enable Kenyan farmers benefit from GM crops."* *Dr. Andrew Mulwa, Chairman of the 47 County Executives of Health.*



## iii. Media coverage

The events were covered in the local dailies with 1,650,000 impressions. They were also published in the ISAAA e-weekly newsletter, Crop Biotech Update increasing the audience reach beyond Kenya. The articles can be accessed through the following links:

**Table 3: Impressions from media stories covered from outreach events in the region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Star Newspaper	Kilifi farmers call for the lifting of GMO ban	4 August 2015	<a href="http://www.the-star.co.ke/news/2015/08/04/the-week_c1174104">http://www.the-star.co.ke/news/2015/08/04/the-week_c1174104</a>	250,000
The Nation Newspaper	Cotton farmers ask president to lift ban on GM crops	10th Feb 2015	<a href="http://www.nation.co.ke/counties/lift-ban-on-GM-crops-cotton-farmers/1107872-2619050-2vghpbz/index.html">http://www.nation.co.ke/counties/lift-ban-on-GM-crops-cotton-farmers/1107872-2619050-2vghpbz/index.html</a>	400,000
The people daily	Allow GMOs to tame food insecurity, farmers tell state	16th July 201	<a href="http://www.mediamaxnetwork.co.ke/people-daily/155577/allow-gmos-to-tame-food-insecurity-farmers-tell-state/">http://www.mediamaxnetwork.co.ke/people-daily/155577/allow-gmos-to-tame-food-insecurity-farmers-tell-state/</a>	
Crop biotech update-weekly newsletter	Farmers in Kenya support government plan to lift ban on GM crops	16th Sep 2015	<a href="http://www.isaaa.org/kc/cropbiotechupdate/newsletter/default.asp?Date=9/16/2015#13766">http://www.isaaa.org/kc/cropbiotechupdate/newsletter/default.asp?Date=9/16/2015#13766</a>	1,000,000

Source: ISAAA AfriCenter files

## Media articles



H.E Salim Mvuria (3rd from left), Governor Kwale County during field visit to St. Louis Missouri, USA



James Nyoha, a maize farmer in Kilifi-Kenya's Northern Coast show maize infested with stem borer.



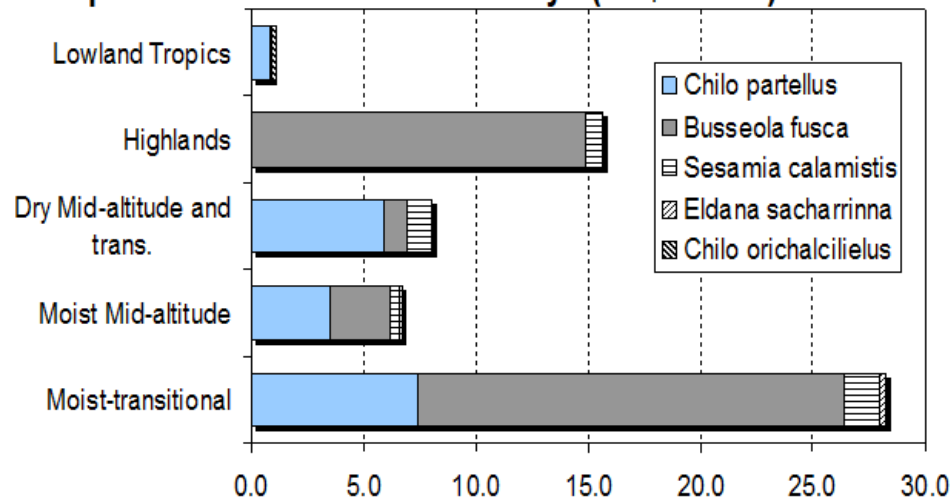
## South Rift Kenya Region OFAB Events

Standing on the edge of Mau forest, south rift region in Kenya is the major grain producer of the country. The area receives an annual relief rainfall of 1400 mm, with moderate temperatures of 17°C. The region comprises the following counties: Kericho, Narok, Nandi, Nakuru, Bomet, Laikipia, and Kajiado. Based on the favourable climatic conditions for agriculture, the region is characterized by large scale production of maize, wheat and tea.

In the recent years, maize farming in this region has been faced by a numerous of challenges leading to low production. The effects of climate change especially prolonged dry spells have greatly reduced the crop's yields, particularly due to over-dependence on rain-fed agriculture. Areas which previously received adequate rainfall now receive insufficient amounts reducing the land that can support crop farming. Pests such as African stalk borer (*Busseola fusca*) and diseases such as Maize Lethal Necrosis disease (MLN) also contribute to maize grain yield loss annually. Besides, inadequate extension services due to a high farmer-to-staff ratio cause lack of access to emerging knowledge on modern farming practices. In most cases, farmers turn to traditional food crops, including millet, sorghum, cassava, sweet potatoes and bananas, to mitigate the effects of new maize diseases. The potential for biotech crops that can mitigate these challenges cannot be overemphasized.

The technology utilizes molecular genetics and genetic engineering to help increase the efficiency of crop production. In Kenya, it is being used in projects such as Water Efficient Maize for Africa (WEMA) with a goal of developing drought tolerant and disease resistant (Bt) maize varieties. Results from the trials have shown that Bt-maize has recorded successes in pest control especially stem borers, farming cost reduction and increase in yields. Bt maize therefore seems to represent a promising technology for reducing losses from stem borer infestation in Kenya.

**Crop loss from stem borers in Kenya (US\$ million)**

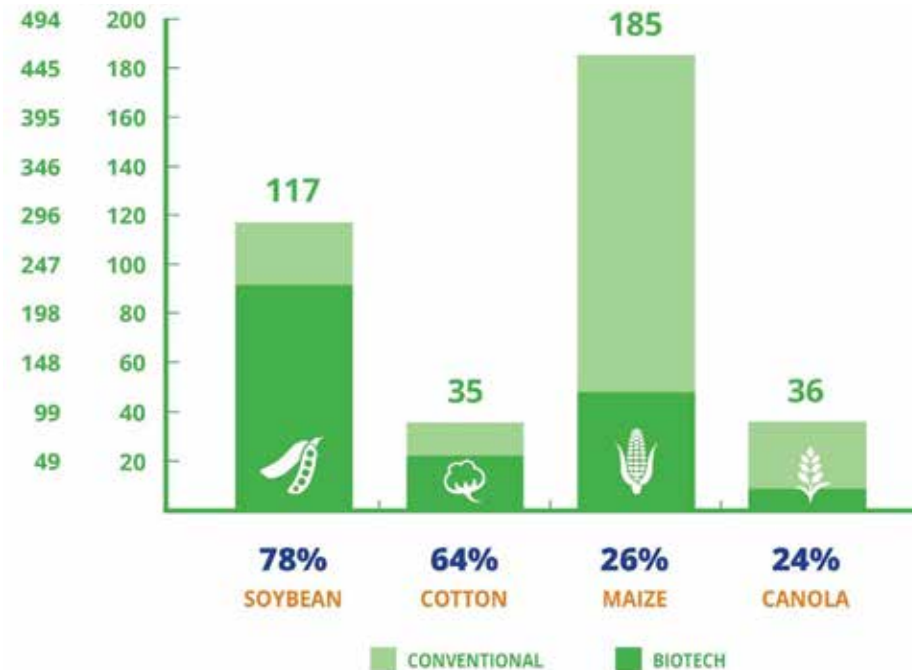


Source: Groote, H. D et al., (2011)



With the region being ideal for growing of Bt maize, OFAB-K, with other partners organized several events aimed at increasing awareness on agri-biotech. The events attracted the participation of young farmers, university students, youth groups, members of the civil society and policy makers from the region.

Some of the highlights during the events included potential benefits of agri-biotech contribution to food self-sufficiency and wealth creation and bi-economies resulting into jobs for the youth. The events also provided an opportunity for updating participants on trends with adoption of biotech crops over the years globally and regionally.



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## Stakeholders' concerns

**Question:** What is the reason for the ban of the Mon 810 in about 8 European countries?

**Response:** The bans result from political decisions, contrary to the scientific evidence and against the existing European market approval. In fact, over the years, the European Food Safety Authority (EFSA) has examined each of the scientific publications that member states used to justify their decisions to ban MON810. EFSA has not found any convincing proof that would change on the safety or to scientifically justify a legal ban.

**Question:** Do regulatory bodies that can control the GM food exist in the country

**Response:** The national biosafety authority created by the biosafety act, 2009 is the regulatory body mandated with general supervision and control over the transfer, handling and use of genetically modified organisms (GMOs).

The authority works in partnership with other institutions to ensure safety of biotech products developed or introduced.

**Question:** How are scientists preparing to prevent the emergence of bioterrorists?

**Response:** Emergence of bioterrorists is a pertinent issue. The development process of GM crops however, has no connection with bioterrorism. It is a highly regulated process which would not be easily compromised by people with ill intentions.

## Outcome

### i. Product demand

About 2000 youth expressed support to the Deputy President H.E William Ruto's call to lift the ban on GM foods importation, and called on the government to fast-track the process. The young farmers signed a communique to the President requesting him to lift the ban on GM foods importation that continue to be a major stumbling block to the adoption of GM crops in Kenya.

In support for crop biotechnology, three County Executive Members for agriculture revealed a plan to set up a tissue culture facility in the region to enhance capacity building among biological science students. This would also help in availing clean planting materials to farmers.

### ii. Policy pronouncements



*"GM technology is one of the best solutions to the rising food security challenges and as a country we need not be left behind in embracing it. This County is ready to embrace agri-biotechnology because it is the sure way to refill our granaries that have been left empty by the Maize Lethal Necrosis disease".*  
*Prof. Chepkwony, Governor, Kericho County.*



*"We support the technologies aimed at achieving food security not only in this region but the country at large."* *Mr. Mathew Kipkirui, Youth President, Kericho County.*



*"Food production has been decreasing drastically. GM crops need to be adopted for purposes of food security."* *H.E Kinuthia Mbugua, Governor, Nakuru County.*



*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 by increasing productivity while protecting the environment."*  
*Hon. Cecilia Ng'etich, Women Representative, Bomet County.*



### iii. Media coverage

The events were covered by local media garnering 1,750,000 media impressions. The articles can be accessed on the following links:

**Table 4: Impressions from media stories covered from outreach events in South Rift Kenya region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Star Newspaper	GMO crops safe	8th Sep 2015	<a href="http://www.thestar.co.ke/news/2015/09/08/gmo-safe-says-chepkwony_c1200038">http://www.thestar.co.ke/news/2015/09/08/gmo-safe-says-chepkwony_c1200038</a>	250,000
The Daily Nation Newspaper	Kericho> Farmers push for lifting of ban on biotech crops	7th Sep 2015	<a href="http://www.nation.co.ke/news/Farmers-push-for-lifting-of-ban-on-biotech-crops/1056/2636990/-/kt3vn/-/">http://www.nation.co.ke/news/Farmers-push-for-lifting-of-ban-on-biotech-crops/1056/2636990/-/kt3vn/-/</a>	500,000
The daily nation newspaper	Commercialize GM foods	25th May 2016	<a href="http://www.nation.co.ke/news/commercialize-of-GM-foods/1056-3217804-14w7w64/index.html">http://www.nation.co.ke/news/commercialize-of-GM-foods/1056-3217804-14w7w64/index.html</a>	1,000,000

Source: ISAAA AfriCenter files

### Media articles



## North Rift Region OFAB-Kenya Outreach

North Rift region in Kenya's Rift Valley to the north west of Nairobi comprises of five counties: Uasin gishu, Trans-nzoia, Baringo, Elgeyo marakwet and West pokot. It is known as the 'bread basket' of Kenya due to its high production of maize and wheat owing to the prevailing favourable agro-ecological conditions. The annual rainfall in the region is in the range of 900-1400 mm while annual temperature varies from 10 to 30°C. It has four main ecological zones: Upper Highlands (UH), Lower Highlands (LH), Upper Midlands (UM) and Lower Midland (LM).

Out of the total land area of the region, 10% is under maize production. However, like other regions, various challenges impedes optimum agricultural crop production. Some of them include over-reliance on rainfall which exposes farmers to drought, emergent pests and diseases. These challenges lead to low crop yields, post-harvest losses and high cost of production.

Maize, being the main crop of the region has been badly hit by these challenges coupled with low prices for grain. The outbreak of maize diseases such as MLN has left many farmers in the region uncertain of their harvests putting the country's food security at risk. Pests such as maize stem borer locally known as "tsingetse", has been a big problem resulting to about 13% loss of the crop. This translates to an estimated 4,000,000 metric tonnes of maize, worth USD 90 million loss annually. The low level government investment in preventive measures against crop diseases has been a matter of great concern. Harnessing biotechnology to develop maize seed varieties with traits of pest resistance and drought tolerance is therefore a key mitigation and adaptation strategy.

The technology has made important contributions to increasing global production levels of maize and other crops, having added 273 million tonnes to the global production since introduction of the technology in 1996. The global farm income gains from using biotech maize in 2014 were US \$ 7 billion. Cumulatively since 1996, the gains were US \$ 50.6 billion by 2014.

**Table 5. Additional crop production arising from positive yield effects of GM crops**

	1996–2014 additional production (million tonnes)	2014 additional production (million tonnes)
Soybeans	138.20	15.91
Corn	273.48	44.21
Cotton	21.70	2.78
Canola	8.00	1.07
Sugar beet	0.76	0.15

Source: Graham Brookes and Peter Barfoot

With the goal of widening its reach, OFAB-K held several events in the region that were tailored to meet information needs of the farmers. Various stakeholders including maize farmers, cereal millers association, research scientists, consumer groups, public health officers, and science journalists actively participated in the events. The events included meetings with specific stakeholders, visits to Bt maize CFTs, exhibitions, and workshops. OFAB-Kenya sought to dispel myths and fear that surround GM technology through sharing evidence based knowledge on benefits of agri-biotech bearing in mind the region's importance in maize production.

The events also provided a platform for regulators and media persons to interact with scientists conducting research on Bt maize. Visits to confined field trials provided stakeholders with an opportunity to appreciate the role that Bt maize can play in managing the African stem borer menace. Experiences shared by participants of 'seeing is believing' study tours further provided deeper insights on how the technology has benefited other countries. According to researchers, the new maize variety will increase yield by 25% compared to the current varieties. This increase could translate into about 2 million additional tonnes of maize capable of feeding about 10.4 million people.

## Stakeholders' concerns

**Question:** Does genetic modification of maize improve its storability?

**Response:** The Bt maize is insect protected against stalk borer damage in the field. However, since the integrity of the grain is protected before harvest, it may not be prone to fungal infection during storage.

**Question:** What are chances for cross pollination between GM and non-GM crops?

**Response:** The GM crops have been tested for safety as food, feed and to the environment and found to be safe. Proper agronomic practices and stewardship ensures co-existence.

**Question:** What are the expected price for the GM seeds?

**Response:** The Bt technology has been donated royalty free to AATF meaning that the seeds will be available at the prevailing market price.

## Outcome

### i. Product demand

About 700 farmers signed a declaration supporting the Deputy President H.E. William Ruto's call to have the ban on GMO foods importation lifted. They declared that delivery of the technology to farmers would avail quality seeds and reduce the cost of farming.

During these fora, farmers expressed their willingness to grow Bt maize once it is commercialized. They requested researchers to hasten so that farmers can have access to the seeds within the shortest time possible. Strengthening awareness creation on agri biotech was emphasized.

Uasin Gishu county government sent a memo to the Cabinet Secretary of Agriculture, Livestock and Fisheries requesting him to intervene and have the ban lifted.

### ii. Quotes from farmers



*"Time is long overdue for Bt maize to be adopted among other crops because there is no doubt that with Bt maize we have a future."* Mary Nzomo, Chief Officer for agriculture, Trans-Nzoia County



*"I have seen that apart from increased productivity, there is also cost saving, environmental and health benefits associated with GM maize and as a farmer I want to benefit from these technologies."* Dr. Gilbert Bor-a maize farmer from Uasin Gishu County



*"With the first season of the trial almost out, farmers can be assured of a solution to the pest in the near future, should the approval to grow the maize commercially be granted."* Dr. Murenga Mwimali - A lead scientist of WEMA project.



*"It is clear that maize production in this region has declined in the recent years and this county is ready to adopt technologies that will reverse this trend."* Dr. Ambrose Cheruiyot, the County Executive for Agriculture, Uasin Gishu County.



*“Our team is working around the clock to deliver disease resistant and drought tolerant planting materials to our farmers and we ask them to be good ambassadors of the technology so that we clear all misconceptions that may affect decision making.”* **Dr. Eliud Kireger, the Director General of Kenya Agricultural and Livestock Research Organization (KALRO)**



*“I am happy to learn that Bt maize has self-protection against stalk borer which is a major problem here, this means that I will no longer have to use pesticides which are costly. As farmers, we welcome the technology and we ask the government to provide us with these seeds so that we can address the pest menace in our farms.”* **Beatrice Kariuki- A maize farmer from North Rift region**



*“In my opinion, I think GMO technology is a good solution. The world is moving forward with new technology and things are changing, we cannot remain in the 19th century. Farmers in other countries are already enjoying the benefits of technology and this can be replicated here in Kenya if we don’t politicize the issue.”* **Mr Edward Kairo- A farmer from Trans-Nzoia.**



*“Baringo County government remains committed to supporting initiatives such as biotechnology which are geared towards improving the livelihoods of the farming community.”* **H.E Benjamin Cheboi, Governor, Baringo County.**

#### iv. Media coverage

The events were covered by Kenyan local media as per below links:

**Table 6: Impressions from media stories covered from outreach events in North Rift Kenya region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The People daily	Kenya losing billions in biotech delay	8th Nov 2014	<a href="http://epaper.peopledaily.co.ke/default.aspx?iid=106209&amp;startpage=page0000026#folio=26">http://epaper.peopledaily.co.ke/default.aspx?iid=106209&amp;startpage=page0000026#folio=26</a>	750,000
The Daily Nation Newspaper	Nod on GM cotton field trials shifts focus to release of biotech maize	16th Sep 2016	<a href="http://www.nation.co.ke/news/Lift-ban-on-biotech-foods-say-scientists/-/1056/2636990/-/kt3vn/-/">http://www.nation.co.ke/news/Lift-ban-on-biotech-foods-say-scientists/-/1056/2636990/-/kt3vn/-/</a>	1,000,000
Standard Digital	Researchers dispel rumors on GMOs	9th Sep 2015	<a href="https://www.google.com/gws_rd=ssl#q=Researchers-dispel-rumors-on-GMOs-standard-digital-9-september-2015">https://www.google.com/gws_rd=ssl#q=Researchers-dispel-rumors-on-GMOs-standard-digital-9-september-2015</a>	625,000



## Media articles

People Daily-Monday, September 7, 2015

# Scientists launch drive to debunk GMO myths

**Government-sponsored awareness programme kicks off in North Rift to sensitise farmers**

by Winstone Chiseremi  
@WinstoneChiseremi

The government has rolled out massive awareness campaigns across the country to sensitise farmers to heed the introduction of newly developed genetically modified (GM) maize seeds.

However, the move faces stiff resistance from a cross-section of farmers and lobby groups in the agriculture sector.

The initiative has started in Kih Valley region, which is the leading producer of maize and wheat and where hundreds of farmers have vowed to oppose the adoption of genetically modified seeds.

Agriculture experts through Kenya Agriculture and Livestock Research Organisation (KALRO) and University of Nairobi's Centre of Biotechnology are spearheading the programme.

Speaking in Eldoret during a one-day forum for cereal farmers from North Rift region on the need to embrace the GM technology, team leader Dr Joel Ochieng said there should be no cause for alarm over the introduc-



## STRONG VOICE

Kairo director-general Dr Elmad Koneger said that the country is losing a lot of revenue because of maize disease and asked cereal farmers to embrace the new technology.

tion of GM crops in the country.

Ochieng, a researcher on GM at the University of Nairobi, said the locally-developed maize seeds have gone through rigorous safety tests and were only awaiting the greenlight from the National Biosafety Authority for roll-

**A maize crop in healthy bloom. Scientists say GM technology will boost food security. PHOTO FILE**

longest to the market.

He took issue with critics of the genetically modified seeds for claiming that the crops would cause cancer and infertility, terming the information as misleading.

"The locally developed GM crops will ensure the country is food secure and, besides, has no health risks as being peddled by some NGOs and activists who are fighting the introduction of the seeds," said Orchieng.

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## Nod on GM cotton field trials shifts focus to release of biotech maize

MONDAY SEPTEMBER 12 2016



## UASIN GISHU COUNTY

### Researchers dispel rumours on GMOs

By SILAN KOSKEI

Next, RIR farmers are to be sensitized on the benefits of adopting genetically modified crops. Researcher in charge of the project, Kenya Agricultural Research Institute, Nairobi, Dr. Joseph Njiru, said the RIR farmers will be asked to sign a list bearing their names and the benefits they expect to realize from the adoption of improved seeds, to increase production, and to ensure food security.

He said "if the Government approves the release of modified Wema 81 maize seeds to the market, farmers will be able to counter diseases associated with poor yields."

"We are currently waiting for the National Bio-safety Authority to give a green light so that we can develop breeds of the maize crop, which we believe has the potential of enhancing food security in the country," said Dr Kiroga.

He added: "We want to allay fears and misrepresentation from individuals who do not have correct information about genetically modified crops."

The director maintained that it will take 12 to 18 months to produce the modified maize seeds where farmers will be given an opportunity to witness its trial.

Kirger said the Government loses billions of shillings in purchasing pesticides and herbicides affecting crops, a waste which can be controlled through modified seeds, which

Damages caused by stalk borer results in 13 per cent loss of crop production, which is equivalent to 300,000 metric tonnes of maize harvested.

Kenya Universities Biotechnology Consortium Secretary General Joel Ochieng' called on the need for change in farming systems.

**BusinessHub** Subscribe | December 16, 2012 | 7 PAGES

## Kenya losing billions in biotech delay, say experts

[illegible][illegible]



## **OFAB-Kenya Programming Committee Members**



## Western Kenya Region OFAB Events

Western region of Kenya borders Uganda to the north, Lake Victoria to the south and Trans-nzoia to the east. It has four counties: Busia, Kakamega, Bungoma and Vihiga. The region sits on potentially productive land and is strategically located as a major trade hub, supporting a thriving market for farm produce. Western Kenya is hot and wet throughout the year, with average daytime temperatures of 27-29°C.

The region has a high potential for agriculture, which supports nearly 70% of the population. Some of the crops grown in this region include maize, millet, cassava, bananas, sweet potatoes and cotton. Production of these crops has lately been on steep decline owing to various challenges. Longer periods of drought caused by erratic and below-average rainfall has made farming increasingly difficult over the years. Other challenges include declining soil fertility, weak research-extension-farmer linkages, and limited access to farm inputs, such as certified seed and fertilizer.

A few decades ago, the region was known as a leading producer of cotton, supplying various thriving textile industries in the region and beyond. Before the collapse of cotton sub sector in the region, textile industries such as Kisumu Cotton Mills and Rift Valley Textiles (RIVATEX) were household names. Systematic failures in the cotton value chain including pests such as the African cotton bollworm are largely attributed to the collapse of the once vibrant cotton sector in the region. Cotton bollworm is one of the most destructive pest of the cotton crop that causes up to 60% yield loss. As a result of low production, all the 5 ginneries in this region: Luanda, Malaba Malakisi, Nambale, Amurai and Amukura, closed down further presenting additional difficulties to the industry. It is also estimated that as a result of the collapse of the sector, the region has lost more than 300,000 job opportunities.

Revamping the sector would require farmers to access the best cotton seed varieties that aren't prone to attacks by pests and diseases as well as addressing other challenges along the cotton value chain. The cotton sub-sector has been identified by the Kenyan government as key in the fight against poverty and a major driver towards industrialization pillar of Vision 2030.

**Table 7. Status of ginning operations in western region**

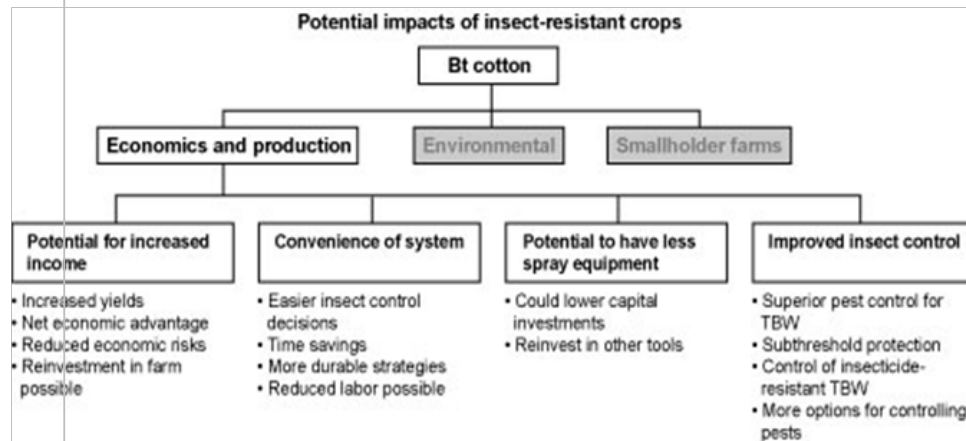
Ginnery	Location	Ownership	Remark
Malakisi	Western	Farmers	Ceased operations in 1995
Luanda	Western	Farmers	Ceased operations in 2004
Nambale	Western	Farmers	Ceased operations in 2006
Amurai	Western	Private	Ceased operations in 2007
Amukura	Western	Private	Ceased operations in 1996

The insect resistant cotton whose research is complete at KALRO, once commercialized will go a long way in reducing the input costs of the cotton farmers in the area, increase yields and hence raw materials for the textile sector. Globally, Bt cotton is grown in 28 countries with farm income gain associated with it estimated at US \$ 4.9 billion for 2014 alone. This is attributed to: reduced pesticide use, savings in labour, time, higher yields, better quality and improved productivity. These cumulative benefits positively impact the quality of life for farmers and their families and have dramatic social relevance for the society.

Over the 10 years, OFAB-Kenya held several events in the region to create awareness on agricultural biotechnology. The activities brought to the limelight the failed ginneries and the status of declining cotton industry in the region. The sensitization drew attention of policy makers to the deplorable conditions that farmers who previously depended on cotton are forced to live in. It highlighted the numerous jobs that have been lost and the low productivity and competitiveness of farmers in the region. The events included meetings, workshops, exhibitions, and seeing is believing tours for some key policy makers to cotton producing countries. In these events, participants were acquainted with the potential of GM crops in addressing pest challenges faced in cotton farming and global status of commercialized GM crops. Additionally, delegates who had participated in the study tours used the events to share their experiences with the local residents of the region. The awareness events served as a major boost to a campaign that had been started by both county and national governments to revive cotton farming in the region.

The events attracted the participation of; farmers, religious leaders, consumer protection groups, policy makers among others. This broad stakeholder categories' participation offered an opportunity to better understand end user's perceptions on the technology.

### Potential economic and production benefits of Bt cotton.



Source: Purcell et al., 2015

### Stakeholders' concerns

**Question:** What is Bt cotton's potential? Wouldn't a biotech lab around western Nyanza be more appropriate to cater for the needs of cotton growing counties in the region?

**Response:** Local universities in the western region have biotechnology programmes and good laboratories. It would be worthwhile to approach them to help the counties address local problems in crops.

**Question:** How long is it going to take to get Bt cotton commercialized?

**Response:** Once approval is granted for environmental release, the crop will be planted on national performance trials (NPTs) in various parts of the country to select appropriate varieties for specific localities. This will be followed by the variety release process after which the crop will be grown commercially.

**Question:** Can biotechnology help suppress the cassava gene that causes cyanide and add genes that improve vitamins and other nutritional content?

**Response:** With biotechnology, there are enormous possibilities because specific genes for specific purposes are used. However, research looks at the most challenging issues first. For cassava, so far the priority that KALRO has identified is viral diseases, as a first step. The second phase will address nutritional improvement.

## Outcome

### i. Remarks and quotes by participants in support of the technology

*"I have benefited from OFAB's training and am asking that these insect resistant varieties be given to us."* **Consolata Aluoch Ongidi**- a cotton farmer from Matayos sub-County, Busia County

*"I was reserved with the issue of GM products, but with information from experts, I believe that GM technology can boost our produce and income."* **Wycliffe Arika**- a cotton farmer from Busia County

### ii. Policy pronouncements



*"We need to put into action what we have learnt. We have seen that our colleagues went to India and they are witnesses of the solution to African bollworms."* **Francis O. Omuse** - a cotton farmer from Teso South Sub-County, Busia county



*"Genetic modification technology is the key to reviving the cotton industry which is on the verge of collapse not only in Busia county, but also in neighboring counties that depend on it."* **Hon. Sospeter Ojaamong**, the Governor, Busia county.





*"If we are to bring profitability to cotton farming in Kenya, we have to embrace Bt cotton."*  
*Hon. Moses Mwanje, CEC of agriculture, Busia county and Chairman of the county Executive Members for agriculture in the 47 counties.*



*"The government must take the most appropriate step to lift this ban and allow National Biosafety Authority (NBA) to play its supervisory role on the technology."* *Hon. Florence Mutua, Women representative, Busia County and member of the Departmental Committee on Agriculture, Livestock and Cooperatives.*



*"This technology is benefiting other people all over the world including here in Africa, therefore I don't see why we should not implement it here."* *H.E Kenneth Lusaka, Governor, Bungoma county.*



*"As Busia County we are investing a lot in cotton, therefore getting improved varieties of the crop will help us improve on yields and at the same time reduce the cost of production."* *Silas Juma, Devolved Functions Coordinator, Busia county.*

### iii. Media coverage

The events were covered in the media through prime time news on citizen TV (with 1,700,000 impressions).

**Table 8: Impressions from media stories covered from outreach events in Western Kenya region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Star Newspaper	Busia farmers want ban on biotech cotton lifted	4th Dec 2015	<a href="http://www.thestar.co.ke/news/2015/12/04/busia-farmers-want-ban-on-biotech-cotton-lifted_c1254013">http://www.thestar.co.ke/news/2015/12/04/busia-farmers-want-ban-on-biotech-cotton-lifted_c1254013</a>	500,000
The Kenya news agency Newspaper	Cotton farmers want ban on biotech cotton lifted	3rd Dec 2015	<a href="http://kenyanewsagency.go.ke/en/cotton-farmers-want-ban-on-biotech-cotton-lifted/">http://kenyanewsagency.go.ke/en/cotton-farmers-want-ban-on-biotech-cotton-lifted/</a>	200,000
Citizen TV	Busia Governors tell government to commercialize GM cotton	4th Dec 2015	<a href="https://citizentv.co.ke/news/busia-governor-tells-govt-to-commercialise-genetically-modified-cotton-107966/">https://citizentv.co.ke/news/busia-governor-tells-govt-to-commercialise-genetically-modified-cotton-107966/</a>	1,000,000

Kenya Farmers Association head Kipkorir Menjo said GMO products had been condemned in the country without farmers being involved. "This is an idea we cannot run away from," he said.



## Lower Eastern Kenya region OFAB Events

The lower eastern part of Kenya, is a semi-arid area boasting of large swathes of land with scanty vegetation. It covers three counties: Machakos, Makueni and Kitui. The region experiences two rainy seasons, the long rains occurring in March /April and the short rains in November/December. Farmers are involved in subsistence agriculture - mainly growing of maize, cassava, pigeon pea, green grams and sorghum, with cotton being one of the principal cash crops. Here, farming is a challenging activity as the region receives roughly 600-800 mm of rainfall per year.

Farming in the region is rain-fed. This leaves farmers highly vulnerable to the effects of climate change such as erratic rainfall patterns and prolonged dry spells. This situation has contributed to low investment and returns in the agricultural sector and prompted migration to the urban centers by the youthful productive population. As a result, the region has high levels of poverty which currently stands at 64.3% according to Kenya Integrated and Household Budget Survey (KIHBS) 2006 compared to 47% nationally.

In order to improve on agricultural production, appropriate measures need to be employed which include application of modern technologies in agriculture, use of drought tolerant seeds as well as access to improved agricultural extension services.

Agricultural biotechnology is one such technology that can be utilized to address some of the concerns in a more sustainable manner through development of improved crop varieties appropriate for small holder farmers in arid regions. The technology can also be used to improve the nutritional content of staple cereals such as sorghum. Today, agricultural biotechnology has been adopted by farmers worldwide at rates never before seen by any other advances in the history of agriculture. It has enabled the improvement of farming techniques and crop production around the world by increasing plants' resistance to diseases and pests; reducing pesticide applications, maintaining and improving crop yields.

This region hosts the Confined Field Trial site for WEMA Bt maize and the African Bio-fortified Cassava. The maize, with a trait for drought tolerance has been approved by NBA for National Performance Trials (NPTs), the penultimate step prior to commercialization. OFAB-K has in the last 10 years undertaken awareness

creation activities to raise understanding of GM crops among communities in the region. The activities included study tours, visits to the maize CFT, meetings and seminars. The events brought together scientists, members of the academia, journalists, university students, farmers, policy makers and regulators. Notably, the activities attracted participation of extension agricultural officers from the region, ensuring they get the right information on GM crops. One of the study tours in the region aimed to create awareness among key parliamentarians on modern biotechnology, in order to build confidence in the research process and eventual adoption of the WEMA maize varieties in Kenya.

Participants of these activities were acquainted with information on the progress made towards commercialization of biotech crops in the country and the benefits reaped by other countries through utilization of GM crops. The activities served as a platform to deliberate on the landscape for biotechnology in the country.

## Stakeholders' concerns

**Question:** When will the water efficient maize for Africa be commercialized?

**Response:** The commercialization date for the water efficient maize for Africa (WEMA) in Kenya has been set for 2017 subject to regulatory approvals. Meanwhile, the conventional hybrids with the brand name Drought Tego under the WEMA project have been released to farmers in eastern and western Kenya.

**Question:** Does genetic modification of maize improve its storability?

**Response:** The Bt maize is insect protected against stalk borer damage in the field. However, since the integrity of the grain is protected before harvest, it may not be prone to fungal infection during storage.

**Question:** Does consumption of dairy products from a cow that has consumed aflatoxin infested maize cause health problems?

**Response:** Aflatoxin is a secondary metabolite produced by a fungus (*Aspergillus sp.*) that infects maize. A certain concentration is required in the body for it to cause an infection. High levels of aflatoxins in the feed can be tracked down to the dairy products. Management can be done by avoiding feeding maize with aflatoxin to cows and ensuring the grains are well dried before storage.

## Outcome

### i. Product demand

A broad range of stakeholders expressed their concerns about the ban on GM food imports and its impact. Overall, they requested the government to lift the ban on GM crops to promote conducive environment for GM crops development and commercialization.

From these events, policy makers from the region promised to support the technology since it would lead to revival of the once vibrant cotton and maize farming.

### ii. Quotes



*"Modern biotechnology is crucial for sustainable development in every biological sector including agriculture, forestry, medicine and environment, it is high time the country transformed research into reality." Prof. Muluvi, Vice Chancellor, South Eastern Kenya University*

*"Scientists have done their part and therefore the government needs to move with speed and commercialize GM crops so that we can increase yields like our counterparts in Burkina Faso, South Africa and Sudan." Ms. Goretta Musau- A cotton farmer from Makueni County.*



### iii. Policy pronouncements for parliamentarians during Kiboko CFT study visits



*"We are in the process of constituting a Parliamentary Select Committee to independently gather information on GM food safety and ultimately advise the House and the Cabinet to lift the ban." Hon. Dr. Wilberforce Ottichilo, MP Emuhaya.*

*"It is evident that this technology is good and it is now for us parliamentarians to work around the politics hindering the commercialization of biotech crops for the benefit of poor farmers." Hon. John Serut, MP Mt Elgon.*



*"We know that GM foods are safe for human consumption, credible institutions have conducted trials on them and they have assured us of their safety." Hon. Fred Outa, MP Nyando.*



#### iv. Media coverage

Messages from these events were covered in the Kenyan local dailies (with 2.8 million impressions) as per the links below:

**Table 9: Impressions from media stories covered from outreach events in lower Eastern Kenya region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Daily nation Newspaper	GMO crops key to fighting hunger	14th March 2016	<a href="http://www.nation.co.ke/news/GM-crops-key-to-fighting-hunger/1056-3116238-t2urok/index.html">http://www.nation.co.ke/news/GM-crops-key-to-fighting-hunger/1056-3116238-t2urok/index.html</a>	1,000,000
The east African standard Newspaper	Kenya gives nod to open air trials of Bt maize	13th Feb 2016	<a href="http://www.theeastafrican.co.ke/scienceandhealth/Kenya-gives-nod-to-open-air-trials-of-Bt-maize/3073694-3075892-1291a7az/index.html">http://www.theeastafrican.co.ke/scienceandhealth/Kenya-gives-nod-to-open-air-trials-of-Bt-maize/3073694-3075892-1291a7az/index.html</a>	700,000
The daily nation newspaper	Kenyan researchers step up trials for genetically altered crops	14th March 2016	<a href="http://wema.aatf-africa.org/news/latest-news/kenyan-researchers-step-trials-genetically-altered-crops-bid-fight-hunger">http://wema.aatf-africa.org/news/latest-news/kenyan-researchers-step-trials-genetically-altered-crops-bid-fight-hunger</a>	1,000,000
Media max network	Approval paves way for GMO maize	15th Aug 2016	<a href="http://www.mediamaxnetwork.co.ke/news/243482/approval-paves-way-gmo-maize/">http://www.mediamaxnetwork.co.ke/news/243482/approval-paves-way-gmo-maize/</a>	100,000

Source: ISAAA AfriCenter files

#### Media articles





*From left to right Hon. Otichillo, Hon. Cecilia Ng'etich, Hon. Florence Mutua and Hon. John Serut during a field visit to the CFTs at Kiboko.*



## Nyanza region OFAB events

Nyanza region comprises of three counties: Homabay, Siaya and Kisumu. The region receives substantial mean annual rainfall that varies with altitude and proximity to Lake Victoria. Despite the good climate that is favourable for agriculture, farmers in this region still grapple with hunger and acute food shortage. About 60% of the population lives in extreme poverty against the national poverty level of 46%, according to the 2005/06 poverty survey by the KNBS. The increasing human population is exerting pressure on the available agricultural land. This increase in population calls for substantive intensification which is only possible with adoption of modern agricultural technologies.

The vast majority (80%) of the farmers grow maize and beans since these are considered the staple foods, with cotton being the main cash crop. These crops are a source of livelihood to thousands of households in the area. The region has a long history of cotton farming and there still exists huge potential for cotton production of about 1000 kg/ha cotton lint and 2500 kg/ ha cotton seed.

Production of these crops has declined following numerous of challenges including recurrent droughts, unreliable rainfall, weeds, pests and diseases. Most cotton farmers have quit cultivating the crop due to the ever increasing production costs occasioned by African bollworm infestation and high costs of pesticides which contribute up to 51.70% of the input costs. Low production of cotton due to infestation by insect pests has led to closure of major textile industries such as Kikomi adversely affecting the economy of the region. In most places, there are no ginneries as most of them closed down owing to challenges of low ginning outturn and high operational costs. Only one ginnery (Onoka) is operational in the region and this requires farmers to transport their produce for long distances across the country.

Despite these challenges, cotton remains an important cash crop in Nyanza that can boost rural income and contribute to poverty alleviation. Adoption of Bt cotton would reduce the number of sprays used to control the African bollworm consequently reducing cost of production, crop damage and increase harvests and reduce negative environmental impact.

The technology's adoption is however hampered due to strong opposing voices to the technology emanating from fear and misconceptions. OFAB-K

has been conducting sensitization activities in the region, to allay the fear with the public through provision of factual information about the technology. The sensitization activities conducted in the region in the last 10 years included seeing-is-believing study visits for farmers and policy makers, workshops and agricultural biotechnology exhibitions. Some of the grassroots outreach activities came at a time when Africa Growth and Opportunity Act (Agoa) had given Kenyan cotton producers direct access to the US market, an opportunity that called for an increased effort in the country in cotton production.

The stakeholders that participated in these activities benefitted from knowledge on the trend in adoption of the biotech crops, globally and regionally and the progress the country has been making in order for farmers to enjoy the benefits of the technology.

## Stakeholders' concerns

**Question:** What is Bt cotton's yield potential? Wouldn't a biotech lab around western Nyanza be more appropriate to cater for the needs of cotton growing counties in the region?

**Response:** Local universities in the western region have biotechnology programs and good laboratories. It would be worthwhile to approach them to help the counties address local problems in crops.

**Question:** When the ban was pronounced, what happened to the crops that were on confined field trials?

**Response:** The ban was on imports of GMO food imports. It did not stop research.

**Question:** There are reports that India's and South Africa's crop pests have developed resistance to genetically modified crops?

**Response:** Resistance development has been adequately addressed through planting of refugia, as well as crop rotation. The ever increasing number of farmers who have adopted the crops should be testament enough to the benefits accruing from their use. One other strategy of product stewardship and prevention of resistance build-up by pests is through gene pyramiding/ stacking.

### Outcome:

Governors from the region came up with a ten-point communique urging the government to lift the temporary ban and work towards providing a facilitative environment for deployment of biotechnology. The communique was broadcasted through several media outlets.

#### i. Remarks and quotes by participants in support of the technology

*"The time has come to stand and shout that we want the Bt cotton."* **Mr Mathew Olungati- A cotton farmer from Gem sub county**

*"We are ready to adopt any technology that will increase our income, reduce post-harvest losses, and safeguard our health."* **Mrs. Rachel Ouma- A cotton farmer from Ugenya sub county.**

#### ii. Policy pronouncements



*"The only way to achieve food security in this country is by adopting modern technologies such as tissue culture and genetic engineering."* **HE. Jack Ranguma, Governor Kisumu County and chairman Council of Kenyan Governors on Health and Biotechnology.**



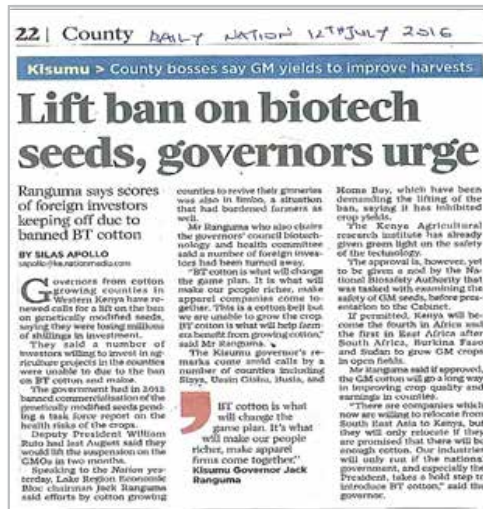
*"Kenya is lagging behind. GM crops have been adopted in developing countries successfully and we should adopt them ourselves. In Siaya, we would really like to grow cotton, but the only way to grow cotton would be through GM cotton to enable us reduce the cost of production."* **H.E Cornel Rasanga, Governor Siaya County.**

#### iv. Media coverage

The event was covered during citizen TV prime news time (Viewership 85% Kenyan viewers) with 1,000,000 impressions.

See link: <https://www.youtube.com/watch?v=XUTRjXqdiA>

#### Media articles



## Central Kenya Region OFAB Events

Central region is one of Kenya's prime agro ecological zones endowed with a wide variety of crop farming. It comprises of five counties: Nyeri, Kiambu, Murang'a, Kirinyaga and Nyandarua. Being a high altitude area, the region receives annual rainfall of between 1,200 mm to 2000 mm while temperature ranges from 12.8°C to 20.8°C. Due to the conducive climate of this region, agriculture is the major source of employment and income generation for farmers, youths and other players in the value chain. This is in addition to providing food for the local community and surplus for sale in the local markets. Some of the crops grown on small scale basis include maize, cassava, beans, bananas, sweet potatoes, coffee and tea.

However, erratic and adverse changes in weather patterns coupled with various crop diseases make growing of these crops challenging. Cultivation of crops such as maize and cotton has declined over time due to these challenges with farmers abandoning them and opting to grow other fast growing horticultural crops. Pests and diseases, high input costs, shrinking arable lands with the rise in population and lack of improved crop varieties capable of coping with the climate change challenges are some of the issues that have led to decline of the aforementioned crops. Research spearheaded by KALRO on crops such as cotton is geared to reverse this trend and restore crop productivity in the region. The efforts on especially Bt cotton, whose research was focused on providing an insect resistant crop, availing improved seed and reducing input costs are almost bearing fruits. The crop now awaits NPTs before it can be released to farmers. Other biotech crops such as WEMA Bt maize and biofortified sorghum are expected to lead to substantive intensification and nutritionally rich food for the population.

In light of the possible release of the biotech crops in the near future, OFAB-K organized several grassroots outreach events on agricultural biotechnology. The objectives of these activities were to allay fear and misconceptions about the technology and promote informed choice when the biotech crops get ready for farmers to plant. The activities included seeing-is-believing study visits, workshops and exhibitions. Other outreach activities included distribution of publications and dissemination of information on radio presentations in vernacular and Kiswahili languages. The events reached out to a broad range of stakeholders who included; policy makers, county executive members for agriculture, ginners and farmers from the larger central region.

## Outcome

### i. Product demand

Farmers requested researchers to hasten their research so that they can have access to Bt cotton seeds in the earliest time possible. They noted with concern that the only ginnery in the region, Mwea ginnery had collapsed due to lack of raw materials as farmers could no longer grow cotton. Emphasis was also put on the need to strengthen awareness creation programs for agri-biotechnology to allay fear and misconception and promote informed choice.

### ii. Policy pronouncements



*"Cotton is a crop that thrives even when others have failed due to drought and farmers should be encouraged to grow it in the arid areas." Mr. Joseph Thiga- a cotton farmer from Kirinyaga County.*

*"If the country allows commercialization of Bt cotton, both farmers and ginner's fortunes will turn around for the better and many will return back to cotton production." Mr Makanga, a cotton farmer from Kirinyaga County.*



*"We need this Bt cotton if it will reduce our production costs and increase our yields we have been recycling seed year in and year out with very low yields." Margaret Ngare- A cotton farmer from Mwea.*





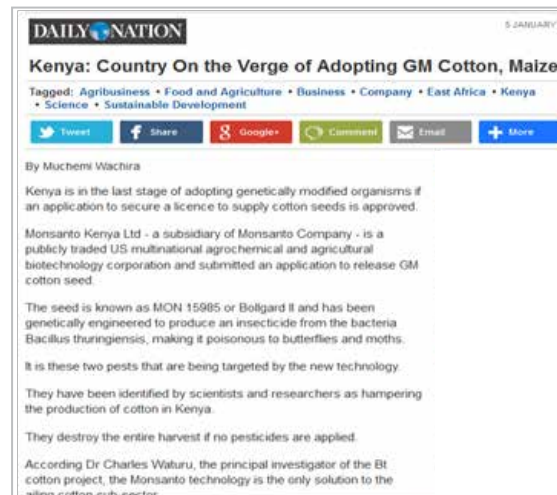
## ii. Media coverage

Messages from the events were covered in the Kenyan local dailies (with 5 million impressions) as per the links below:

**Table 10: Impressions from media stories covered from outreach events in the Central Kenya region**

Name of Media/channel	Title of story/article/news bulletin	Date of publication	URL	Impressions
The Star Newspaper	African countries conduct trials on biotech crops	2nd March 2014	<a href="http://www.theeastafrican.co.ke/news/African-countries-conduct-trials-on-biotech-crops/-/2558/2226972/-/ic77ul/-/index.html">http://www.theeastafrican.co.ke/news/African-countries-conduct-trials-on-biotech-crops/-/2558/2226972/-/ic77ul/-/index.html</a>	2,000,000
The east African standard Newspaper	Lift ban on biotech foods	23rd may 2016	<a href="http://www.theeastafrican.co.ke/news/-/2558/2217568/-/6p4uw8z/-/index.html">http://www.theeastafrican.co.ke/news/-/2558/2217568/-/6p4uw8z/-/index.html</a>	2,000,000
The business newspaper	Hope for farmers in GMO cotton deal	4th June 2016	<a href="http://www.businessdailyafrica.com/Corporate-News/Hope-for-farmers-in-GMO-cotton-deal/-/539550/954082/-/view/printVersion/-/15efn4fz/-/index.html">http://www.businessdailyafrica.com/Corporate-News/Hope-for-farmers-in-GMO-cotton-deal/-/539550/954082/-/view/printVersion/-/15efn4fz/-/index.html</a>	1,000,000

## Media articles





## Conclusion

The ten year period beginning 2006-2016 recorded substantial success in the OFAB-Kenya mission. From the grassroots outreach events, some of the counties singled out specific biotech crops of interest as their flagship agricultural products for promoting socio-economic development. Both parliamentarians and governors committed to work with like minded institutions to enhance public awareness on biotechnology in agriculture and industry. They also resolved to facilitate commercialization of GM crops' varieties for socio-economic development and competitiveness in the country. For instance, the Council of Governors sought to form a forum for promoting public biotechnology awareness through deliberative 'county groups' dialogue with factual evidence-based information about biotechnology applications, use and products. The period has also seen a significant outreach to farmers, whom after training and seeing-is-believing tours have expressed their demands and expectations from policy makers. In addition, the media environment after increased interactions with OFAB-K has recorded a remarkable increase in balanced reporting in agricultural biotechnology and biosafety. Going forward, OFAB-K will continue reaching out to policy makers and other stakeholders both at the national and county levels.

## Key opportunities, challenges and lessons learnt

### Opportunities:

The devolved government system provides a new center of power that can be used in engaging farmers and national government. The county governments can be sensitized to come up with enabling legislations for agri-biotech. Additionally, they can petition the national government to facilitate acquisition of GM crops relevant to their regions. OFAB therefore aims to reach out to as many counties as possible. Primarily, the champions formed at the grassroots in youth and farmers groups as well as media networks will be expanded to achieve a wider outreach in the country.

### Challenges:

The change of governments both at national and county level is a major challenge since sensitisation of the new officials begins all over again. There is need to mainstream biotechnology among the various concerned ministries and fast-track product delivery along the agri-biotech pipeline. It is an uphill

task to sensitize all parliamentarians given their large number. Additionally, the semi-autonomy of county governments requires proactive sensitization of County Assembly members. This is challenging given the enormous resources required to conduct OFAB County events. The regulatory process is inconsistent and slow which has seen a delayed transition from research to products. The ban on GM food imports has also delayed commercialization of GM crops making it difficult to manage farmers' expectations.

### Lessons learnt:

False negative information on genetically modified crops has highly infiltrated the public especially at the grassroots. Reversal of this requires sustained and harmonized awareness creation efforts with factual information from all relevant stakeholders. Currently, there is need to fast-track delivery of products. The media fraternity is proactive in providing credible information to the public but is getting fatigued as contradictions continue among the different policy makers. The grassroots outreach events have been commended for gradually enhancing visibility of the regulators.

### Recommendations

The grassroots outreach events proved to be good avenues for reaching out to farmers and policy makers across the country. It is important to continue sensitizing governors and their teams so that they can champion for biotech adoption in the counties.

Both county and national governments have a key role to play in revitalizing the agriculture sector. There is need to focus on small holder agriculture which has been identified as important for achieving high and sustainable growth, poverty reduction and food security in the country. Concerted efforts by all stakeholders are therefore needed to remove the existing bottlenecks in the adoption of agri-biotech as one of the tools for improving agricultural productivity.

#### **Annex 1: Eastern and Central Region Farmers' Communique to the President**

**WE DEMAND Bt COTTON SEEDS FOR OUR FARMS AND URGE THE GOVERNMENT TO LIFT GMO BAN IN KENYA**

We the Cotton farmers from the Counties of Embu, Kirinyaga, Kisumu, Kitui, Machakos, Makueni, Meru, Murang'a, Tharaka Nithi have on this 5th day of February, 2015 made the following observations and decisions on Bt cotton and the GMO ban in Kenya:

The cotton farmers of Kenya;

Take note that:

1. Systematic failures in the cotton value chain including pests and diseases are largely attributed as factors that led to the collapse of the once vibrant cotton sector in Kenya. From producing 70,000 bales of cotton in 1985, the country currently produces less than 20,000 bales of cotton. It is also estimated that as a result of the collapse of the sector, the country has lost more than 600,000 job opportunities.
2. Kenya has invested heavily in efficient agricultural technologies research. The Kenya Agricultural and Livestock Research Organization (KALRO) has been undertaking research on Bt cotton since the year 2000 with the goal of coming up with cotton varieties that are resistant to pests and diseases. The varieties tested by KALRO are Bolgard I and Bolgard II.
3. The GM technology of Bt Cotton incorporates resistance to the African bollworm, the most destructive pest for cotton which can cause up to 100 % yield loss. Bt cotton is however resistant to the pest. Bt cotton promises
  - Improved productivity of cotton yields
  - Increase in income from yields and cost saved from pesticide purchase thereby contribution to poverty alleviation.
  - Protects biodiversity due to reduced toxicity of the pesticide use in the environment and health of the farmers.
4. Education and awareness creation trips to Burkina Faso, South Africa and the United States of America on experience sharing workshops with fellow cotton farmers, technology developers and the ginners reveal comparative advantage and clear global competitiveness for Bt Cotton in Kenya.
5. The existing GM imports ban is however a stumbling block standing between farmers and this new improved cotton variety. The national regulatory and advisory agencies are committed to safe deployment of biotechnology alongside conventional techniques are appropriate for Kenya people.

#### **Annex 2: South Rift Region Youth Communique in support of the Deputy President's promise to lift the ban on GMO**

**WE SUPPORT THE DEPUTY PRESIDENT H.E. WILLIAM RUTO'S PROMISE TO LIFT THE GMO BAN AND CALL FOR ACCESS TO PRODUCTS OF MODERN BIOTECHNOLOGY TO RESOLVE SOME OF OUR COUNTRY'S AGRICULTURAL CHALLENGES**

We the young farmers from Rift Valley have on this 2nd day of September, 2015 in Kericho County made the following observations and decisions on biotech crops and the GMO ban in Kenya:

1. The government through the Deputy President H.E. William Ruto has made a commitment to lift the ban on GMOs in the coming weeks.
2. Kenya has invested heavily in efficient agricultural technologies research. We applaud the government for enabling the Kenya Agricultural and Livestock Research Organization (KALRO) to undertake research on a number of important food security crops including maize, cotton, cassava, sweet potato and sorghum, with the end goal of coming up with improved varieties that have various beneficial qualities such as drought tolerance, insect and virus resistance, as well as nutritional enhancement. We also acknowledge that the efforts to find efficient and effective solutions for Kenyan farmers started as far back as 1991 when KALRO first initiated the virus resistant sweet potato project.
3. In addition to GM technology having the potential to significantly improve farm productivity, household income and food security, it has the potential for job creation for a big number of youths through direct farming or other innovative bioenterprises. We are encouraged by the voices of our fellow young people in countries such as Burkina Faso, South Africa and Sudan who are reaping huge benefits accrued from adopting GM technology and whose lives are evidently improving as a result.
4. The existing GM imports ban is however a stumbling block standing between the youth and these benefits. We are confident that the national regulatory and advisory agencies are committed to the safe deployment of agricultural biotechnology products and acknowledge that these products are not a silver bullet to all our problems. We also appreciate that these modern technologies can be used alongside conventional techniques and are appropriate for the Kenyan people.
5. The debate around genetically modified products is often characterized by emotive and misleading information. We applaud the public and private sector's efforts to get credible scientific information down to the grass-roots and urge that the farmers' voices are made an integral part of the agricultural biotechnology discussion.

We hereby request that the government should:

- i. Put in place efficient programs to improve awareness on the benefits and safety of GM crops among young farmers.
- ii. Fast track the lifting of the ban on GMO to facilitate the commercialization of genetically modified crop varieties as products of modern biotechnology for socio-economic development and competitiveness

### Annex 3: North Rift Region Farmers' Communique in support of the Deputy President's promise to lift the ban on GMO

**WE SUPPORT THE DEPUTY PRESIDENT H.E. WILLIAM RUTO'S PROMISE TO LIFT THE GMO BAN AND CALL FOR ACCESS TO PRODUCTS OF MODERN BIOTECHNOLOGY TO RESOLVE SOME OF OUR AGRICULTURAL CHALLENGES**

We the maize farmers from North Rift Counties have on this 3rd day of September, 2015 made the following observations and decisions on biotech crops and the GMO ban in Kenya:

1. The government through the Deputy President H.E. William Ruto has made a commitment to lift the ban on GMOs in the coming weeks
2. Kenya has invested heavily in efficient agricultural technologies research. We applaud the government for enabling the Kenya Agricultural and Livestock Research Organization (KALRO) to undertake research on a number of important food security crops including maize, cotton, cassava, sweet potato and sorghum, with the end goal of coming up with improved varieties that have various beneficial qualities such as drought tolerance, insect and virus resistance, as well as nutritional enhancement. We also acknowledge that the efforts to find efficient and effective solutions for Kenyan farmers started as far back as 1991 when KALRO first initiated the virus resistant sweet potato project.
3. GM technology has the potential to significantly improve farm productivity, household income and food security. We are encouraged by the voices of our fellow farmers in countries such as Burkina Faso, South Africa and Sudan who are reaping huge benefits accrued from adopting GM technology and whose lives are evidently improving as a result.
4. The existing GM imports ban is however a stumbling block standing between farmers and these new improved crop varieties. We are confident that the national regulatory and advisory agencies are committed to the safe deployment of agricultural biotechnology products and acknowledge that these products are not a silver bullet to all our problems. We also appreciate that these modern technologies can be used alongside conventional techniques and are appropriate for the Kenyan people.
5. The debate around genetically modified products is often characterized by emotive and misleading information. We applaud the public and private sector's efforts to get credible scientific information down to the grass-roots and urge that the farmers' voices are made an integral part of the agricultural biotechnology discussion.

We hereby request that the government should:

- i. Further promote public biotechnology awareness implementation through deliberative farmer groups' dialogue with factual evidence-based information about biotechnology applications, use and products.
- ii. Fast-track the lifting of the ban on GMO to facilitate the commercialization of genetically modified crop varieties as products of modern biotechnology for socio-economic development and competitiveness.

### Annex 4: Coastal Region Farmers' Communique to the President

**WE URGE GOVERNMENT TO LIFT THE GMO BAN AND CALL FOR ACCESS TO PRODUCTS OF MODERN BIOTECHNOLOGY TO RESOLVE SOME OF OUR AGRICULTURAL CHALLENGES**

We the farmers from Kilifi County have on this 9th day of July, 2015 made the following observations and decisions on biotech crops and the GMO ban in Kenya:

Take note that:

1. Kenya has invested heavily in efficient agricultural technologies research. We applaud the government for enabling the Kenya Agricultural and Livestock Research Organization (KALRO) to undertake research on a number of important food security crops including maize, cotton, cassava, sweet potato and sorghum, with the end goal of coming up with improved varieties that have various beneficial qualities such as drought tolerance, insect and virus resistance, as well as nutritional enhancement. We also acknowledge that the efforts to find efficient and effective solutions for Kenyan farmers started as far back as 1991 when KALRO first initiated the virus resistant sweet potato project.
2. GM technology has the potential to significantly improve farm productivity, household income and food security. We are encouraged by the voices of our fellow farmers in countries such as Burkina Faso, South Africa and Sudan who are reaping huge benefits accrued from adopting GM technology and whose lives are evidently improving as a result.
3. The existing GM imports ban is however a stumbling block standing between farmers and these new improved crop varieties. We are confident that the national regulatory and advisory agencies are committed to the safe deployment of agricultural biotechnology products and acknowledge that these products are not a silver bullet to all our problems. We also appreciate that these modern technologies can be used alongside conventional techniques and are appropriate for the Kenyan people.
4. The debate around genetically modified products is often characterized by emotive and misleading information. We applaud the public and private sector's efforts to get credible scientific information down to the grass-roots and urge that the farmers' voices are made an integral part of the agricultural biotechnology discussion.

We hereby request that the government should:

- i. Further promote public biotechnology awareness implementation through deliberative farmer groups' dialogue with factual evidence-based information about biotechnology applications, use and products.
- ii. Lift the ban on GMO to facilitate the commercialization of genetically modified crop varieties as products of modern biotechnology for socio-economic development and competitiveness.
- iii. Improve the policy and regulatory environment so as to fast-track the adoption of agricultural biotechnology and accord farmers their right to choose.

## 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 at enhancing knowledge sharing and awareness creation that will raise understanding and appreciation of agricultural biotechnology, thus contribute to building an enabling environment for decision making. OFAB is currently operational in eight countries:

Burkina Faso, Ethiopia, 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).

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