Policy brief | April 2014

Building result-based biosafety systems in Sub-Saharan Africa

African
Biosafety
Network of
Expertise

NEPAD Planning and Coordinating Agency

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Brief background

Ten years after the adoption of the Cartagena Protocol on Biosafety and almost 20 years after the first genetically modified (GM) crop was released, only a very limited number of African countries have commercialized GM crops. African leaders however recognize that agricultural biotechnology can play an important role in enhancing agricultural productivity in Africa and in addressing the food security challenges that many countries in Sub Saharan Africa are facing. Last year in Ethiopia leading scientists from the African continent have called on the continent leadership to adopt biotechnology for sustainable development. Two years ago in Accra, Ministers of Agriculture from 24 African countries during their annual meeting endorsed the adoption of modern technologies including biotechnology to enhance agricultural production. Earlier in 2006, African Union Ministers of Agriculture pointed to the low use of biotechnology and the need to establish biosafety systems in Africa.

As of today a substantial number of studies and publications have clearly explained the issues and challenges for such a limited adoption of agricultural biotechnology on the African continent. We now understand what the major issues are, i.e. (i) lack of functional biosafety systems in most countries, (ii) lack of scientific capacity in individual countries to undertake risk assessment, (iii) the negative impacts resulting from the misinformation spread over the continent which leads to controversies and an overemphasis on risks, and (iv) the lack of consensus over the safety/risks of GM products. Nevertheless noticeable progress is being made in some regions of the continent, especially in West Africa which could be considered a promising region for the uptake of this agricultural innovation. Progress made in the region so far includes: (i) Ghana has started confined field trials(CFTs) of three GM crops only one year after the passage of the biosafety law, (ii) Togo is currently revising its biosafety law to create an enabling environment for testing GM crops, (iii) Benin has lifted the moratorium on genetically modified organisms (GMOs) after ten years and seeks to move forward on biotech research and development, (iv) Senegal is approaching partners to implement a clear roadmap for modern biotechnology, (v) Cote d'Ivoire is working actively to pass a biosafety law while progressing with the ratification of the Cartagena Protocol. These noticeable positive developments in West Africa are probably influenced by the successful experience Burkina Faso has had with Bt cotton.

While many publications have explained the issues and challenges facing the continent as it embraces biotechnology tools and products, very few clearly show the practical paths and steps to guide decision makers in countries that are moving forward. Hence, this policy brief provides some suggestions, some guiding actions and steps to assist countries to achieve the safe adoption of agricultural biotechnology. For each suggested step, we give examples drawn from the Burkina Faso success story and from ABNE's experience working in other countries in Sub-Saharan Africa.

1. Turn agricultural challenges into opportunities

Agricultural biotechnology is adopted where a specific challenge is faced. Weed competition with soybeans is an example of a major problem addressed by GM herbicide tolerant soybeans. In the same way, damage caused by cotton bollworms (*Helicoverpa armigera*) was a major threat to the Burkina Faso cotton sector. This pest evolved resistance to chemical insecticides, to the extent that in the late 90s from 8 to 12 sprays were required within a single cotton growing season. Farmers, cotton companies and the government were all seriously affected by this situation. This prompted the full safety review and adoption of genetically modified (Bt) cotton in

the national interest. Today, Burkina Faso farmers openly express their appreciation for this technology. Recently one of them talking to the Minister of Science and Technology stated “We, Burkina Faso farmers, are very grateful to our government for providing us with the Bt cotton which has greatly contributed to solving the difficulties we have been facing for many years with insect pests”. A visiting government official from another African country reacted as follows to the farmer’s statement: “This is the first time I hear farmers talking so nicely of their government; they usually express requests”.

2. Create open platforms to discuss applications of agricultural biotechnology

For an identified agricultural constraint, a platform is needed where stakeholders and farmers can discuss possible solutions with scientists and product developers. This platform enables regulators to explain the role and the value of biosafety review processes. In Burkina Faso, the government facilitated open discussions between the cotton sector stakeholders and product developers, with support from regional organizations such as the Economic Community of West African States (ECOWAS), international donor agencies, and partners. Conferences, seminars and workshops were organized where potential benefits of Bt cotton technology and experiences from other countries were discussed openly. This is time consuming and burdened by mistrust that surrounds relationships with international technology developers, especially GM product promoters. Fortunately, with the adoption of the Nagoya Protocol, trust between industry, indigenous and local communities over the equitable sharing of benefits is expected to improve. Therefore it is up to countries to build their biosafety confidence and improve their bargaining power in order to conduct efficient business negotiations with product developers over the share of new technology benefits. Burkina Faso’s stakeholders were instrumental in conducting these negotiations, which secured a good share of benefits for the local farmers. The African Agricultural Technology Foundation (AATF) also helps negotiate royalty free use of proprietary agricultural technologies for African farmers.

3. Ensure that the biosafety system is workable.

Most African countries have signed the Cartagena Protocol on Biosafety and many have drafted biosafety laws. However, most of these laws are based on an overly precautionary approach with prohibitive clauses related to liability and redress. This approach negates the possibility of developing a trustful partnership with private and public sector product developers. Issues common in unworkable biosafety laws include (i) a broad scope that includes non-living GM derived products, (ii) the inclusion of socio-economic, cultural and ethical considerations in the risk assessment process, (iii) a strict liability regime, with prohibitive penalties, etc. The presence of these provisions is an indicator that the biosafety law may need to be revised to ensure a workable review process that is aligned with international best practices.

Generally biosafety processes cover the development, testing and general release of GM crops while the biosafety law is being developed. Some countries have approved the general use of new GM crops under interim biosafety processes. The establishment and use of institutional biosafety committees within biotech research centers and universities can help to ensure high levels of compliance with the terms and conditions of approvals for development and testing in laboratories and greenhouses.

Scientists in Burkina Faso started CFTs of Bt cotton early in 2003 before the Government had passed the 2006 biosafety law. Uganda, Kenya and Nigeria have also approved CFTs during the passage of their biosafety law through parliament. A workable biosafety law with implementing regulations and guidance facilitates approvals for commercial cultivation of GM crops.

4. Sign and ratify the Nagoya Kula Lumpur Supplementary Protocol on Liability and Redress

The liability and redress issues have been the subject of heated discussions and debates globally and by African stakeholders. Many African stakeholders still express skepticism over liability in relation to the use of GM technology. They ask among other questions, *"Who is liable if a GM material causes a damage?"* It is believed that the Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress provides answers to those concerns. It is also a fact that after nearly 20 years of commercial production of GM crop, no redress has ever been required since no damage has ever occurred.

In ratifying this supplementary protocol a country has an opportunity to revisit its existing biosafety law and make appropriate revisions. In West Africa, Togo was among the first countries to sign the Nagoya supplementary protocol and has undertaken to revise its 2009 biosafety law.

5. Ensure the regulatory system empowers sound decision making

Experience shows that the first review of a GM crop application and the subsequent decision making comes with challenges. A technical advisory committee to the national biosafety committee (NBC) carries out risk assessment supplementing information and data provided by the applicant with their own experience and expertise. The composition and size of such as a committee varies with countries. In Burkina Faso it comprises 12 members selected from different Ministries and different individual competencies. Once an application is received, the members are convened for a retreat outside the city for up to 5 days focusing only on the review of the application.

The technical advisory committee members often need training and assistance to undertake risk assessment with confidence. Over the past two years, ABNE has provided such trainings and technical assistance in a number of countries in West Africa.

Concerns have been raised over the credibility of the data made available to the committees, because these data are provided by the applicants. Such concerns are expressed through statements such as *"our scientists should be the ones generating and providing the data*" or "*we want homemade biotechnology"* or "*we don't have any means to challenge the data provided*".

It is important to note that for any new technology it is the developer or the promoter who provides the required safety data and information. This practice is not specific to GM technology. Biotechnology regulatory data are generated following the best practices and internationally validated methods and procedures. The credibility of the data and the validity of conclusions drawn from the data are reviewed by biosafety technical advisory committees.

6. Involve national scientists when experiments are required

Effective public – private partnership is required in carrying out experiments with GM crops. In Burkina Faso, it is required by law that agreements are signed between the national research institution and public or private product developers. This has allowed participation by local scientists in the testing and evaluation of imported technology such as Bt cotton and the Bt cowpea.

7. Increase capacity building and awareness creation among decision makers and stakeholders

The biotechnology regulatory landscape is evolving quickly. New knowledge and information require risk assessors and decision makers to remain up to date. But this is not easily achievable when using part time regulators.

Experience with the biosafety law review process two years ago in Burkina Faso and the sudden ban of GM food imports in Kenya show that a workable regulatory system can be derailed at any time by misinformation, though some may argue that if misinformation can derail a regulatory system, then that system was not workable. In 2011 Burkina Faso would have phased out the planting of Bt cotton if the first draft of the revised law with prohibitive clauses had been adopted by the National Assembly. Commenting later on the last minute reversal of some revisions, the Minister said he was fortunate he could get the correct information before the final adoption. He added that decision makers need to have access to the right information in a timely manner. But this is particularly difficult in the field of biotechnology and biosafety in Africa where misinformation is strategically planned and disseminated.

In the quest for the right information, the “Seeing-is-believing” approach has proven efficient as it allows stakeholders to see first-hand information on GM crops in the hands of farmers. Positive feedback has been received from senior officials who have participated in study tours to smallholder farmers growing GM crops in Burkina Faso, South Africa and India. Over the past four years organizations such as ISAAA, AfricaBio, Africa Harvest and NEPAD-ABNE with its partner Michigan State University (MSU) have been active in organizing such study tours for African regulators.

8. Facilitate mutual recognition and sharing of information, data and resources

The implementation of workable biosafety regulatory systems involves national, regional and global stakeholders. Information and data sharing is considered essential to help ensure a workable and sustainable safety review process that reduces duplication and unnecessary expense. Trust and mutual recognition are necessary to allow a country to tap into expertise available at regional and international institutions.

Mutual recognition of validated biosafety data can help (i) reduce the regulatory cost, for the final benefit of farmers and consumers; (ii) reduce the time to access technology for farmers; and (iii) ensure that data of a consistent and high standard is used in decision making. An example of mutual recognition of biosafety data is provided by Ghana’s recognition of the six years of field trial experience and data produced in Burkina Faso for Bt cotton. These data enabled Ghana to

move directly to multi-locational CFTs and will contribute significantly to speeding up the time until farmers have access to Bt cotton. This advantage addresses the recurrent question *"How soon will we get this seed for our farms?"*

Summary

With around 12% of the global arable land planted to GM crops, agricultural biotechnology has become part of global agriculture. African leaders align with global stakeholders and scientists in recognizing the potential of this new technology to address food and environmental needs in the years to come. Positive opinions have been expressed in declarations from African high level stakeholders, yet only four countries have been able to adopt this technology for farmers and harness its benefits. This is a very low rate of adoption and is insufficient to address agricultural and food security challenges in Africa. Nevertheless, some progress is being made and countries in West Africa are expressing their support and willingness to access GM crops. To assist these countries in developing workable biosafety systems for review of new GM crops, ABNE has proposed a few practical actions to consider. These include (i) turn specific agricultural challenges into opportunities; (ii) enable open dialogue and discussion on GM technology (iii) ensure that a workable biosafety law is in place, (iv) align the national provisions with the International treaties (e.g. the Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress), (v) access technical capacity in using expertise available at the national, regional and global level, (vi) involve national scientists where experiments are required, (vii) maintain capacity building and awareness creation among decision makers and stakeholders, (viii) facilitate use of validated data to reduce duplication and speed up access to new technology for farmers.

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This brief was developed by the African Biosafety Network of Expertise (ABNE) to address environmental safety aspects of Modern biotechnology and is primarily for regulators, policy-developers and decision-makers.

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Working towards building functional biosafety systems in Africa

April 2014

ABNE April, 2013