

Editorial

Dear readers,

Agricultural Technology is constantly evolving. Despite these mutations, *daba*¹ which is the main working tool for farmers in Africa needs to be honoured. Thanks to it, brave men and women of the continent have always contributed to secure food in our households, villages and cities. Such a tribute largely deserved by this very farming tool has inspired the Agripol pole of Enda Prospectives Dialogues Politiques (enda diapol) in naming its quarterly newsletter on agriculture and biotechnology issues « **DABA** ».

For a few years now, African cotton has become less and less competitive. This situation results not only from the decrease of output, but also from the U.S., Chinese and European Governments subsidizing their farmers. As a solution to this thorny problem, many producing countries have been suggested to resort to genetically modified organisms (GMOs) presented as the alternative. Bt cotton (Editor's note: *Bacillus thuringiensis*) is a case in point. However, this choice did not win unanimous support. Some actors (civil societies, environmentalists, global activist movements, producers, researchers ...) put forward risks linked to using GMOs in cotton growing. Moreover, the low results in some countries have contributed but to amplify the debate.

With regard to this situation, **Agripol**, through its various issues of « **DABA** », aims at availing reliable information intended for platforms, members of the Association of African Cotton Producers (AProCA). Moreover, « **DABA** », is an information medium on agriculture and biotechnology intended for various stakeholders of the African cotton sector including those settled in the cotton belt of West and the Central Africa (AOC). To achieve this, « **DABA** » is structured into four columns: “*Behind the Scenes*,” “*Breaking News*”, “*What is New in Agri-Business*”, “*Focus On ...*”

In this initial issue of « **DABA** », **Agripol** tries to deal with Bt cotton-related information. It also holds a review of the Chinese and Indian respective experiences. Then, it focuses on Mali where Representatives have recently passed a Bill on biosafety before moving to its

neighbouring country, Burkina Faso, for an interview with Mr François Traoré, President of the National Union of Cotton Producers (UNPCB) who said that “*Bt cotton growing has helped increase the outputs*“ in his country. Finally the initial issue of « **DABA** » casts a glance on Monsanto, the world leader in transgenic seeds marketing since 2005.

No human work is perfect. Yet, we wish « **DABA** » were a reliable medium of information, communication and learning that could provide all the stakeholders interested in GMO related issues with the same level of knowledge.

Enjoy your Newsletter!

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¹ The short-handed hoe

Transgenic plants, an expanding farming



Bt cotton field in South Africa

As plants of which genetic materials have been modified to make them more resistant to diseases and extreme weather conditions among other things, transgenic plants growing is imposing itself to the agricultural sector. And, this accounts for its recent years exponential growth.

According to the International Service for the Acquisition of Agri-biotech Applications (ISAAA), it shifted from 1.1 million hectares in 1996 to 125 million hectares in 2008. Acres dedicated to that farming have been multiplied by 100 in ten years", showing, by the same token, a revival in transgenic plants growing. "In 2008, genetically modified plants sown areas were 8% of worldwide cultivated acreages globally estimated at about 1,530 million hectares. To date, 13 million farmers spread over the five continents devote themselves to this farming

practice" according to the same source. Those farmers are mainly concentrated in twenty (20) countries of which more than half are developing countries.

The latter are located in Asia, Europe, Latin America, and to a lesser extent, in Africa (South Africa and Burkina Faso). According to ISAAA, "*the 125 million acres devoted to genetically modified plants in the world are mainly dominated by four varieties of plants*", that is to say, soya, maize, cotton and colza. Colza alone represents 95% of GMO sown acreages. As far as transgenic cotton is concerned, it could be noticed that acres devoted to its growing are widening every year.

If some people believe that 30% of the produced and marketed cotton is from transgenic origin, for others, on the contrary, those figures are underrated. And according to

estimates, "*this rate may increase the coming years.*"

To avoid being left behind, African cotton growing countries have started pondering over opportunities offered by such a polemical technology that is subject to various and contradictory interrogations, as it is the case in China and India. Hence, the need to analyze separately the various experiences of the pioneer countries on the issue.

DABA

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GMO LEGISLATION

The malian government has passed the bill

As a major cotton growing country, Mali which at the outset was reluctant to welcome GMOs in its agriculture has finally set up a legal framework to see to that issue. The bill went through the National Assembly on 13 November 2008, after several deferments due to the reluctance of some stakeholders among the Civil Societies.

1 3 November 2008 is a date that will be engraved on the agricultural history of Mali. Indeed, that very day, the Malian National Assembly passed the bill on GMOs, entitled "Safety in Biotechnology." In doing so, Mali opens its territory to biotechnology and consequently, allows multinationals endowed with this new technology to operate on its territory.

The process that led to the adoption of this law was not easy. Hence its repeated deferments. Considering the rejection of GMOs by some countries because of their mixed results in other countries, Malian actors expressed concerns, rather than remaining out of the debates. Broadly speaking, these concerns were related to the idea according to which the GMO law conflicted with three international stipulations yet approved by Mali. These include the Convention on Biological Diversity (CBD) and Cartagena Protocol, which advocate a broader consultation of stakeholders (farmers and consumers) while drawing up such types of law. To these agreements, can be added the Agricultural Orientation Law (LOA), which provides for drawing up a seed and biosafety law. Therefore, actors of such



civil societies as the Coalition for the Protection of African Genotype (COPAGEN), the Biosafety Interdisciplinary Network (RIBios), the National Coalition of Farmers' Organizations (CNOP) had put forward the lack of a consultation framework for the various stakeholders to express their concerns on so a sensitive issue.

The 13 November 2008 Act consists of 78 articles divided into 14 chapters. The scope of the Act is stated in Article 1 which stipulates that "*this law applies to the import, export, transit, private or commercial uses of any genetically modified organism (GMO), be it intended to be released into the environment, or to be used as foodstuffs or food for livestock, raw products, or as a genetically*

modified organism derived product. It also applies to GMOs with both pharmaceutical and food uses".

Even if the bill has been passed in spite of the strong opposition of civil society, it is up to the individual actors then-scientists, researchers, and members of civil society among others to make sound proposals to better monitor the adoption of this technology in the Malian agricultural sector, and particularly in the cotton one.

The idea of introducing biotechnology in Mali has initially been advocated by technical and financial partners (TFP), especially the World Bank through USAID. For the latter indeed, this initiative could be a solution to the recent years drop in production.



● Cross-perspectives

Bt COTON

A controversial farming

The introduction of Bt cotton, supposed to be more profitable to farmers, still raises debates. If the experience in such a country as China has been conclusive, it is not the case in other countries. In India for instance, the introduction of GMOs has led to enormous disruptions. This very situation has prompted some farmers to commit suicide, according to an ENS study published on 03 October 2007.

Not all is rosy in the use of Bt cotton! It is the least that can be said. Depending on whether we are in China or in India, the results are poles apart. While in China the introduction of Bt cotton has helped to revolutionize the industry, in India on the other hand, Bt cotton has drastically changed the agricultural landscape. And this situation still raises the nerve-shattering and contradictory debate on whether GMOs should be introduced or not.

Bt Cotton in China, a success story!

As a world leading Bt cotton producer, China is regularly

portrayed as the best example of successful GMO adoption. The Chinese experience in GMOs dates back to the early 90s. It was during this period that China started experimenting transgenic cotton. The aim was to find out ways of fighting against the various parasitical attacks some of which began resisting to treatments. Among these resistances, those of cotton anthonomus and related pests, as well as those of Lepidoptera family were reported. Those problems were solved thanks to the adoption of Bt cotton which also made it possible to significantly reduce the number of sprayings.

Whereas conventional cotton

required 20 sprayings, only seven sprayings would be enough for Bt cotton. The fact of reducing insecticide treatments has had a positive impact on the health of people in living cotton growing areas.

A decline in poisonings related to the use of pesticides and insecticides was also to be noticed. As for the Bt variety outputs, they were 10% higher than non-Bt varieties, that is to say, 3,481kg/ha against 3,138kg/ha. Reducing Costs, increasing outputs (of 343kg/ha), in addition to reducing the volume of insecticides and saving working time thanks to the decrease of spraying times, are the major elements that contribute to the overall economic benefits of Bt cotton in China.

China generalizes Bt cotton growing

After several conclusive experiments, Chinese authorities, via their Ministry of Agriculture through its biosafety committee, have since 1997 authorized Bt cotton marketing. Three years later (2000), the results were beyond all expectations. Also, the rate of Bt cotton adoption

respectively reached 97 and 80% in such provinces as Hebei and Shandong. Bt cotton growing has been successful in China as evidenced by the substantial profits earned by farmers. And this success partly owes to a series of technical achievements that preceded its adoption. Indeed, since 1956 China has got interested in creating hybrid varieties of cotton in which Bt gene was to be introduced later on. Today, there is no doubt about the success of this project. The example of China shows that GM plants can provide for indisputable economic and agronomic benefits to farmers, especially in countries heavily dependent on agriculture. Yet, it should be acknowledged that the case of China cannot be over-generalized. While in China the results are satisfactory for all the stakeholders, in its neighbouring country India, on the other, the adoption of Bt cotton has led to an unprecedented outcry.

India: When a dream turns into nightmare

The example of China currently positioning itself as a world leading Bt cotton producer has inspired its neighbouring country India as far as opportunities linked to Bt crop adoption is concerned. With 60% of the population earning their life thanks to agricultural related activities, India is hampered by poor weather conditions due to rainfall deficits. Also, a low infrastructural level is to be noticed in this country. Then, the lack of access to credits, and the higher input prices coupled with the lower purchase price have led the sector into a crisis. In order to help the cotton sector find its place in the development process of the country, the Government had adopted transgenic cotton marketing in 2002. But, very soon, this experience turned into a nightmare. That Bt cotton commercialization was marked by

huge losses for cotton growers. Settled in different cotton zones of the country, the latter suffered heavy losses partly due to the adoption of GMOs.

Two phenomena were said to be responsible for the lowness of outputs. On the one hand, the high price of the seed which incorporates the payment of an intellectual property right. On the other hand, the massive use of pesticides to prevent insect pest attacks. There have been horrendous and unprecedented consequences following to these experiences. Lured into the vicious circle of poverty, many farmers who were heavily indebted simply committed suicide as a way of relieving their pain. According to a study by ENS, published on 3 October 2007, *"in the Vidarbha region alone (i.e. cotton belt of India) in the eastern part of Maharashtra, 900 suicides were to mourned at the end of 2007, that is, an average of 3 suicides a day."*

The Indian Government Brought an Action against Monsanto

After this tragedy, further research was carried out by Indian researchers. It spanned over a period of four years. The aim of this work was to assess the impact of Bt cotton adoption in India. The results were soon to be seen. The report produced by the researchers stated that *"transgenic cotton did not significantly reduce the use of pesticides. Its production cost was higher. On average, farmers using Bt spent 12% more than their counterparts who stuck to conventional cotton growing"*. And the report went on further to point out that: *"Bt cotton output is 8% lower than that of conventional cotton, the average return on these four years was 57% lower for farmers using the Bt variety provided by Monsanto"*. Therefore the report concluded: *"Bt cotton has not created a healthier agricultural environment. On the*

contrary, symptoms of the toxicity of the soil were found, jeopardizing thus animal and human health".

With all those results at their disposal, the Indian Government immediately reacted. They first refused to renew the contract for Monsanto which was thus forbidden to operate in the cotton zones of India. Indian authorities went further. They filed suit against the U.S. firm and its subsidiary Nahyco for misleading advertising. In the same vein, an NGO (Coalition of Andhra Pradesh) was created. And its role consisted into protesting against the use of Bt cotton from Monsanto. It should be mentioned that *Bollgard I* varieties were replaced by *Bollgard II* ones.

The latter is a more improved variety which adapts to the bad weather conditions. It is more resistant to attacks by second insect pests. After all these measures, there is now a revival of cotton growing in India. Paradoxically, this return to normalcy coincides with favourable weather conditions. Therefore, a nagging question must be put: Is there any link between rainfall and the good results? The debate between GMO supporters and opponents has fine days ahead.

The results obtained in China and India since the introduction of Bt cotton in the two countries are cases in point. If in China the results had been by far beyond all expectations, in India, on the contrary, the results were mixed, and had sometimes turned out tragically. In front of this situation, new ways need to be explored so as to find out agricultural techniques that could help achieve a sound development through a rational use of natural resources, that is, through an option that would not jeopardize the future of either the present or the next generations. For the time being, organic farming seems to meet these criteria.

● Alternatives

GROWING ORGANIC COTTON

An appropriate answer to new challenges?



Cotton market in Cameroon

Commonly known as *bio-cotton*, organic cotton seems to be a true track that can be explored to address the difficulties facing cotton sectors. In addition to preserving the environment, organic cotton growing will allow cotton producers in Southern countries to earn better incomes from their crops. However, the global financial crisis seems to be an obstacle that can prevent the organic cotton growing from being a panacea to the problems faced with by this sector.

The increasing cost of fertilizers, insect infestations and damage to soil by chemicals have led some cotton growers in West and Central Africa (AOC) to resort to the organic cotton. The latter resorted to organic cotton growing because of the various benefits they can derive from it. And thanks to the results already achieved both at the economical and environmental level this alternative seems to be more reliable.

Grown with natural products only, organic cotton rules out any use of pesticides, insecticides or fertilizers. Also, only compost and manure are used to fertilize the soil. As for the essence of plants or sandstone powders, they help to fight against pests and diseases. That is why, organic cotton is said to

be a crop that is in tune with the nature, since it is much less harmful to the environment. In addition to preserving water tables and soil fertility as well as the ecosystem, organic farming also requires much less water, since this precious liquid is often used to dilute insecticides and pesticides. Besides contributing to a better fertilizing of soil through the use of natural inputs, organic cotton growing allows farmers to be in line with sustainability policies. According to experts, *"in Africa, there is a market to be developed for this type of cotton which is more eco-friendly"*.

Next to its various environmental benefits, organic cotton growing also has an economic asset that should not be glossed over. Indeed, organic cotton price is 15 to 30% higher than that of conventional cotton. A real boon for producers who can, therefore, better live from their work. Besides, the latter will not be subject to the strong volatility of world prices of conventional cotton. That is why, some countries, in addition to growing conventional, fair and Bt cotton, have introduced organic cotton.

Despite all these advantages, few African producers embarked on organic cotton growing. Indeed, according to Organic Exchange, an organization which promotes and

monitors the organic farming sector, *"although the global production of organic cotton has increased by over 150% and reached 145, 000 tons in 2008, that is to say, about 0.55 % of the total production of cotton, West African growers have produced only about 2% of this amount. Nevertheless, it is worth mentioning that compared to the previous year, this production has doubled in this region."*

According to a comparative study between organic cotton and conventional cotton carried out in Mali in 2008 by the Canadian University of Moncton, *"organic cotton growing will be profitable in the long run, as long as the labour is cheap. It will help reduce poverty in rural areas by employing more and more women, and improve land managements."* But, according to a corporative association, *"the international recession has led to setting a ceiling on demand for the new crop"*. This opinion is shared by the Swiss NGO Helvetas helping farmers who have opted for organic farming including cotton. According to the NGO, *"with the crisis, companies are less incline to take a risk. They still honour their organic cotton purchase contracts, but the demand does not increase."* Thus, the global financial crisis has become serious matter for organic cotton promoters.

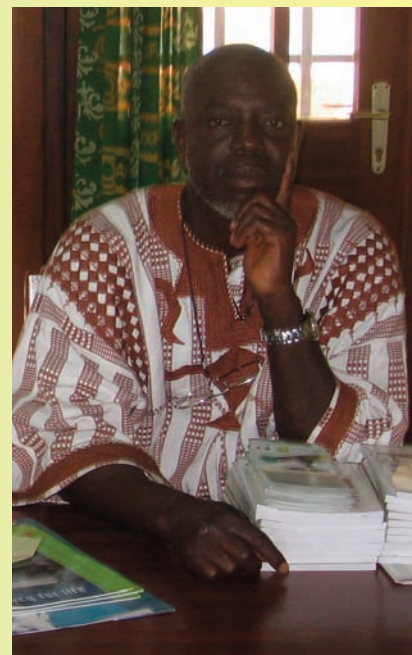
Therefore, it should noticed that if there had not been the current problems in selling the crops, organic cotton could have been a solution to crises African cotton sectors are undergoing now. Also, cotton growers of the continent should undertake research and develop organic markets before promoting and intensifying organic growing. If the option of African cotton growers consists in respecting the biodiversity of the continent, organic cotton should hold an important place among the new opportunities they will be offered.

● Focus on...

Mr. FRANÇOIS TRAORE, PRESIDENT OF UNPCB

“In Burkina Faso, Bt cotton growing helped increase its outputs”

Regarded as an alternative to the problems faced with by African cotton growers, Bt cotton growing was introduced in some countries. Though Burkina Faso is one of the pioneer countries in West Africa to have tried Bt cotton, it should be acknowledged that the introduction in the “Land of Honest Men” was confronted with some reluctance. As a President of both the National Union of Cotton Producers of Burkina (UNPCB) and the Association of African Cotton Producers (AProCA), Mr. François Traoré is an ardent African cotton advocate. He also stands for Bt cotton marketing. In this interview, the chief official of UNPCB gives an account of the conditions of Bt cotton adoption in Burkina Faso.



DABA: How was Bt cotton growing introduced in Burkina Faso?

François TRAORE: Cotton is a plant highly appreciated by parasites. Therefore, people sometimes have to use up to 18 distinct pesticide treatments, from sowing to harvest. The products we use to treat cotton plants are poisonous. It is a difficult task since farmers are obliged to cover from 12 to 15 km with a weight of 20 kg on their back in order to treat one hectare; and that action has to be repeated six to eight times a year. Despite all those efforts, there have been years when the use of pesticides has proved ineffective. This situation has caused a great deal of concerns among the cotton growers in Burkina Faso. In response to that, as officials of the cotton sector, we got in touch with those who are much more experienced in fighting against parasitic attacks. And through our investigations we found that major cotton growing countries managed to overcome this thorny problem

by resorting to genetically modified cotton (Bt cotton).

D: How did you do that exactly?

FT: We got in touch with those who have GMO technology. We had discussed with leading companies in this field: Monsanto and Syngenta to develop a partnership and see how Burkinabe producers could use this technology in their cotton sector. Following to these contacts, experiments had been carried out in 2003 in Burkina Faso by research centres notably INERA. Meanwhile, the Government had passed a bill on biosafety to regulate of GMO products growing, imports and sales.

After the experimentation stage conducted by INERA, its wide scale introduction in the different cotton zones of the country began with the targeting of some voluntary groups. This allowed seeing from the results, a significant decrease in the need for treatments of fields. Of the six treatments usually required, only two were needed

from the growing stage, to harvest though maturity stage. It helped reduce the cost of pesticides and subsequently their nefarious effects on the environment, and also, to slightly increase the output in comparison with conventional cotton.

D: Is there any agreement between Burkinabe farmers and Monsanto as far as GMO seed property is concerned?

FT: In Burkina Faso, seeds we use for our crops have always been found by our own researchers. And, it is in those seeds that the Bt gene has been introduced. This gene is from Monsanto. So today, the seeds of Burkina in which Bt gene has been introduced are a co-ownership of Burkina Faso and Monsanto. That is why seeds are multiplied by seedsmen in Burkina Faso. So, there is no worry as far as seed availability is concerned, since there is a protocol between the different stakeholders of the sector.

D: As a chairman of AProCA and with the experience of Burkina Faso, do you have any common strategy of information on GMOs concerning the different platforms of AProCA?

FT: AProCA is an organization that brings together various platforms of cotton growing countries in West and Central Africa. Each platform is autonomous as far as its way of handling its cotton sector is concerned. It is free, together with its authorities, to adopt Bt cotton or not. The underpinning idea of the creation of AProCA is above all the preservation of African cotton producers' interests, sharing experiences and information.

As far as GMOs are concerned, debates can only be led at the national level. The decision is primarily national. Burkina Faso has no lesson to give to anyone; and AProCA has never taken a common decision in any of its conferences on whether GMOs should be adopted or not.

AProCA has always worked on the basis of the two major guidelines I previously mentioned: preserving African cotton growers' interests, sharing experiences and information. My being a President owes to that and I am working for that.

Current News

In your next issue: Minutes of the enda diapol/ AProCA joint mission on agriculture and biotechnology in relation to BT cotton and GMOs.

This mission was carried out, from 03 to 12 May 2009 in Pretoria, Durban and KwaZulu Natal in South Africa.

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TRANSGENIC SEED SALE

Monsanto, the World leader since 2005

Created in 1901, Monsanto, a firm specialized in health, nutrition and agriculture, has become since 2005 the world leader in of transgenic seed marketing by taking over, the same year, seed companies such as *Seminis Inc.* and *Deltapine*.

2005 has been a pivotal year for Monsanto. The company has become the world leading Seed Company in that period. Monsanto owes this breakthrough to its taking over *Seminis Inc.* and *Deltapine* the same years. What a tremendous step forward!!

The company started asserting itself at the international level with the opening of a farming division in 1960. During that period, Monsanto had conducted intensive work in this division which resulted a decade later in the creation of a weedkiller: *Roundup*. That product was marketed in the United States, the United Kingdom and Malaysia. This successful attempt prompted the firm to increase its investment in molecular biology. This option led in 1982, to genetic transformation of plant cells, which was a first ever achievement in the world. The following year, the initial genetically modified plants were created in the company. Ten years later (1993), the initial biotechnology product - *Posilac*, a protein intended for bovine lactation - was marketed. Yet, Monsanto did not stop there because a few years later, many of its biotechnology products would receive marketing approval. These products are: corn, soya, colza, cotton and potatoes.

In order to extend its business further, Monsanto took over

companies working in three separate sectors of activities: health, nutrition and agriculture. These acquisitions helped increase its size. To cope with its new challenges, Monsanto got specialized in the three areas waiving by the same token its activities related to other sectors such as the one dedicated to plastic materials. Because of its specialization, the company distributed in 2000 its new charter entitled: *The New Monsanto Pledge*. It revolves around five points: dialogue, transparency, respect, sharing and use representing the values and commitments of the firm on biotechnology related issues.

South Africa is the first country in the African Continent to have tried the technology of the company through a *Roundup Ready* soya growing in 2001. The next country to have followed its step is India through the experimentation of the *Bollgard* cotton 2002. That variety of cotton is supposed to resist certain pests. Later on, in addition to the USA, Brazil, China, Uzbekistan, Argentina, Mexico and Australia adopted the Monsanto technology.

As a reminder, Monsanto, since its inception, has gone through several domains of activities before coming to its current field. The company began by manufacturing vanillin, caffeine and saccharin. Gradually, it got interested in chemicals such as insecticides and pesticides. In its scheme of diversification, the firm branched out into plastics business through the production of acrylic fibres. It owed its longevity in this sector to its collaboration with Nylon.