

Bt Cotton at Mali's Doorstep: Time to Act!

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1. Introduction

Agriculture in Mali, as in most African countries, is characterized by small-scale, family farming. But now, transgenic agriculture (the adjective referring to Genetically Modified Organisms - GMOs) is set to enter the country, through the introduction of Bt cotton. The risks associated with this kind of agriculture and the controversies it has generated on the scientific, economic, socio-cultural and ethical levels are so important that the debates are raging throughout the world. Mali's farmers and their unions have fought hard to win their proper place in decisions that concern them, and to obtain their share of the country's cotton production revenues. These gains, however, are in danger of disappearing. Multinational corporations are at the gate, ready to squeeze the country's farmers for everything they can. Transgenic cotton, called Bt cotton, is their Trojan horse, their entry point into West Africa, to assure their take-over of cotton production, and eventually to control all agriculture in the sub-region.

Certain confidential documents currently circulating in Mali leave little doubt that Bénin, where a moratorium was declared March 6, 2002, Burkina Faso, which officially announced its field trials in July 2003, Ivory Coast, and other countries of the sub-region are potential candidates for transgenic crops. Already, in November 2003 in Nigeria, USAID with the official support of the International Institute of Tropical Agriculture, had declared that it wants to "GMize" Africa. But the consequences of transgenic crops for the genetic resources of Africa and for the social realities of the farmers are so massive that from now on one can bid goodbye to the successes achieved by the region's farmers, to their autonomy and to their control of their seeds.

2. What is Bt cotton?

The letters "Bt" stand for *Bacillus thuringiensis*, a toxin-producing bacterium found naturally in soils. Scientists have isolated certain genes responsible for the production of these toxins and have then used genetic engineering techniques to insert them into cotton. The resulting cotton plants produce the Bt toxins and susceptible pests die when they eat them.

Almost the entire global acreage of Bt cotton is currently sown to Monsanto's "Bollgard" variety. This company has developed a second Bt cotton variety, "Bollgard II", which produces two different toxins. In 2004, Dow Agro-sciences hopes to introduce "Widestrike", another Bt cotton producing two toxins, while Syngenta is trying to introduce its Bt cotton, "VIP Cotton".ⁱ

3. What are the justifications for the Bt cotton invasion in West Africa?

Promoters give several reasons for wanting to introduce Bt cotton into West Africa, none of which stand up to scrutiny.

3.1. Can Bt cotton reduce pesticide use?

Bt cotton will not eliminate the use of pesticides; it can only reduce it. The experience with Bt cotton in other countries shows that:

The technology provides only partial control of several important caterpillar pests. In the United States in 2002, in spite of the use of supplementary insecticides, approximately 14,152 tonnes of cotton or 7.5% of the total Bt cotton crop was destroyed by bollworms and about 2600 tonnes or 1.4% of the total Bt cotton crop was destroyed by Spodoptera and *Pseudoplusia includens* caterpillars.ⁱⁱ In the Indian state of Andhra

Pradesh, where Bt cotton was grown for the first time in 2002, Bt cotton was not able to control *Helicoverpa armigera*.iii

There are various pests that Bt cotton cannot combat, especially sucking pests which explains why the use of insecticides remains high in Bt cotton fields. In Australia Bt cotton fields get an average of 4.6 insecticide applications each season, with 21% of the Bt cotton acreage receiving more than 6 applications.iv In the Indian state of Andhra Pradesh, farmers had to apply more insecticides against aphids in fields of Bt cotton than in those of conventional cotton.v In the United States, the insecticides use against bollworms and budworms declined significantly since the introduction of Bt cotton, but the total use of insecticides has remained relatively stable due to the increasing importance of secondary pests.vi

There are more effective and appropriate methods to reduce the use of insecticides, such as targeted application management (LEC), where insecticides are only applied when the level of damage from pests surpasses economic thresholds determined by researchers, threshold application management, which is a modified version of LEC, and Integrated Pest and Production Management (IPPM), which encourages the use of peasant knowledge and local resources, like neem. During the project's first season in 2002, cotton farmers practising IPPM eliminated all use of pesticides without reducing yields. But, despite the success of these three strategies, few Malian peasants use these techniques or even know about them, because of the lack of training programmes and publicity.

Table 1. Insecticide reduction programmes in Mali

Programme	Reduction of insecticides	Area in 2002/2003	% of total cotton area
LEC	50%	28 980 ha	7%
Threshold application	70%	2 515 ha	1%
IPPM	100%	-	-

(Source : CMDT and Programme GIPD – Mali)

3.2. Will Bt cotton increase yields?

In India, a comparative study of Bt cotton and conventional cotton carried out in 2003 showed that conventional varieties produced more bolls (95 bolls per plant for conventional varieties vs. 50 bolls per plant for Bt varieties) and that the bolls of the conventional varieties were larger.vii Another study, from August 2002 to April 2003 involving 225 farmers in the Warangal District of Andhra Pradesh showed that the farmers' yields fell by 35% when they grew Bt cotton.viii

3.3. Will Bt cotton increase farmers' incomes?

When they buy Bt cotton seed, farmers are obliged to pay technology fees, added to the price of the seed.

Table 2. Technology fees for Bt cotton around the world

Country	Technology fee for Bollgard	Technology fee for Bollgard II (proposed)
United States	\$US 79/ha	\$US 99/ha
Australia	\$US 98/ha	-
Argentina	\$ US 78/ha	
China	\$US 60/ha (approx.)	-
India	\$US 60/ha (approx)	-
South Africa	\$US 50/ha (approx.)	-

Taking into account the seed prices indicated above, one can assume that in West Africa, where Monsanto plans to introduce Bollgard II, the technology fees for Bt cotton seed will be more than \$US 50/ha, or 30,300 CFA/ha. In Mali, the total price for insecticides is, on average, around 37,600 CFA/ha (\$US

62/ha). At this price, even if Bt cotton were to reduce insecticide use by half, which is difficult to imagine, the costs of the seeds would still outweigh the savings and expenditures on insecticides.

4. Bt cotton is a poisoned gift

4.1. Criminalising farmer practices

In general, cotton planting seeds are not sold in most West African countries; they are distributed for free. For farmers, the seeds belong to them because they are derived from their previous harvests and because they have paid for the breeding programs that have developed the regions cotton varieties. Moreover, farmers customarily exchange seeds with their neighbours, friends and family members.

The introduction of Bt cotton will upset these traditional practices. Farmers will be obliged to pay for seeds and to sign Monsanto's infamous Technology Use Agreement. According to this contract:

- farmers cannot save seeds for replanting
- farmers are prohibited from supplying seeds to anyone else
- farmers must pay 120 times the technology fee, plus the legal fees of Monsanto, if they violate the contract.

Monsanto takes the application of its contract seriously. In the countries where the company has introduced Bt cotton, Monsanto keeps lists of all farmers who are growing transgenic varieties and monitors them closely. This is as true for countries of the South like Argentina and Mexico as it is for countries of the North.^{ix} In West Africa, where the majority of farmers are illiterate, one wonders if they will even understand the clauses of the contracts. The fact that there will not be any visible difference between Bt cotton and conventional cotton will create even more confusion. In this chaotic situation, farmers risk being prosecuted and judged as criminals.

4.2. Bt and contamination: Pandora's Box

Bt cotton is not visibly different from conventional cotton, and mixing is therefore inevitable. Significant amounts of Bt cotton will be able to easily slip into stocks of conventional cotton. Contamination can also come about through cross pollination of Bt and conventional cotton plants, particularly via insect pollinators. Such contamination has serious consequences:

- Once the transgene is introduced into the environment, it is difficult if not impossible to remove it if harmful effects for human or environmental health are discovered.
- Monsanto holds patents on the transgenes of Bt cotton and claims intellectual property rights on all plants containing these transgenes, even if they arrived in farmers fields through accidental contamination.
- Gene flow could occur between Bt cotton and local varieties or wild species of cotton—important reserves of biodiversity.
- Contamination by Bt cotton could compromise the entire production of organic cotton in the sub-region, since organic certification criteria prohibit GMOs.

Despite these risks, field trials of Bt cotton have already been undertaken in the sub-region, in Sénégal and in Burkina Faso, without monitoring by regulatory authorities and without appropriate public information or consultation. The same situation is set to play out in Mali, where the national agricultural research centre (Institut de l'Économie Rurale), USAID, Monsanto, Syngenta, and Dow Agrosiences have just completed a five-year plan for the introduction and development of Bt cotton in that country.

5. Conclusion

Bt cotton has to be seen in comparison with the current alternatives. As François Traoré, President of the National Union of Cotton Producers of Burkina Faso, says: "If we already have the means to reduce pesticide use, why look for things that are going to complicate life?"^x The IPPM project in Mali clearly shows that farmers can minimize if not totally eliminate the use of insecticides in a sustainable way, without having to rely on costly foreign technologies like Bt cotton. Instead of introducing transgenic

cotton, it's time to ask why the national cotton companies and the state authorities are not capable of promoting practices that are less costly and have fewer risks, such as IPPM.

Farmers, since they will be the people most affected by the technology, must be at the centre of decisions on Bt cotton. Unfortunately, it is unlikely that the state, in each of the countries of the sub-region, or Monsanto, will engage in the major effort required for serious consultations with farmers, who, for the most part, lack even minimal knowledge of genetic engineering. In this context, it is up to farmers, and especially the farmer organizations, to insist that they be fully informed and consulted before a decision is taken to introduce transgenic cotton, even for field trials.

The implications of GMOs are too serious for farmers to ignore. Bt cotton is the first transgenic crop to be introduced into West Africa and it is essential for farmer organizations to inform their members of what is at stake and to take a position based on a full understanding of the issue. The question of Bt cotton is part of an historic moment for African farmers. The continent is confronted with the machinations of great powers and it is time to take a decision. Either to be carried along by the neo-liberal and colonial interests of foreigners and their destructive technologies, or to take charge of their own destinies with a pro-farmer agriculture for Africans.

This summary is drawn from a larger study on Bt cotton in West Africa, which will be published by GRAIN in March 2004.

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