

Genetically modified cotton in South Africa

Introduction

The biotechnology industry has really tried to win small-scale farmers over to genetically modified (GM) cotton, especially in Africa and Asia. Getting cotton approved in a country is a good way for the industry to pave the way for the entry of the GM food crops. It is estimated that farmers around the globe planted about 21 million hectares of GM cotton in 2011. According to the biotechnology industry, about 15 million peasant farmers planted pest resistant Bt cotton last year, mostly in India. They also claim that South Africa is one of the countries in the global South where cotton has “made a significant contribution” to improving smallholder livelihoods. They say that the adoption of GM cotton by small-scale farmers is a success story, however reports from the ground tell of social upheaval, heavy debts, poor quality produce and environmental and health problems.

GM cotton in South Africa

Cotton is not a major commercial crop in South Africa. However, the first genetically modified crop grown in South Africa was a pest-resistant cotton variety, belonging to Monsanto. Since then, the government has approved five more varieties of cotton owned by Monsanto for cultivation.

Almost all of the cotton grown in South Africa today is genetically modified to protect against certain pests, such as bollworm. In addition about 95% of all cotton is stacked; this means it is pest resistant and can also survive applications of chemicals that kill weeds (herbicide tolerant). Farmers initially bought GM cotton seeds because they were told that they would save on chemical sprays for pests. However, now that almost all of the varieties are stacked, it is likely that they will use **more** chemicals for weed control than they did before. This is because the herbicide won't damage their crop so they don't have to be very careful about how they use it. In the end



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farmers might save on chemicals to control pests but spend more on poisons for weeds. However, in many countries around the world, where GM cotton has been grown for some time, secondary pests become a problem that increases pesticide use.

Monsanto is not the only one involved in the GM cotton market. The world's second biggest agro-chemical company, Bayer has received permits to run field trials on six new GM cotton varieties. Field trials are experiments where they will test the performance of the cotton. They will submit the results of these tests to government authorities when they apply for a permit to sell the seed to farmers.

Even though GM seeds go through a few years of experiments in the field before the government allows them on to the market, things can still go horribly wrong. For example, in December 2010 thousands of hectares of Monsanto's new cotton variety, called Bollgard 2¹ did not produce cotton. The affected area was in the Northern Cape, particularly in the Lower Orange River region. Monsanto had not tested the cotton in enough different climates and environments because they did not have enough seed to do so. We also understand that the GM cotton seed in this region struggled to germinate in an unusually cold winter. Farmers were compensated with lower prices for seed the following year, but many of them chose not to try cotton again.

Small-scale farmers and GM cotton in South Africa

The cotton industry has set targets to involve more small-scale producers in the industry. According to their targets they would like to see small-scale farmers producing 35% of our local cotton by 2014. Programmes to support emerging small-scale farmers have been established in Mpumalanga, Limpopo and KwaZulu Natal to try and help achieve this goal. These programmes are supported by government. Farmers in these programmes receive production inputs and in some cases, machinery. The provincial departments of agriculture provide seed to the projects.

They obtain the seed through an open tender process. It has been reported that this tender process is very corrupt. Unfortunately this means that the seed suppliers often do not understand anything about the seed that they are supplying. As a result, farmers are not given the correct information about how to cultivate the crop. An important part of growing GM crops is to grow "refugia". This is a portion of the crop that is not GM and helps to stop the insects from becoming immune to the poison that the GM plant produces. When farmers cultivate GM crops they usually need to sign a contract agreeing to this and other crop management practises. Many farmers are not planting these refugia; some because they don't know about it or because it is not feasible for farmers to do so, where they are farming on small plots of

land. If insects become resistant to the Bt poison in the cotton, farmers will no longer get the crop protection promised by more expensive GM seed and may lose their yield. This will have dire consequences for small impoverished farmers.

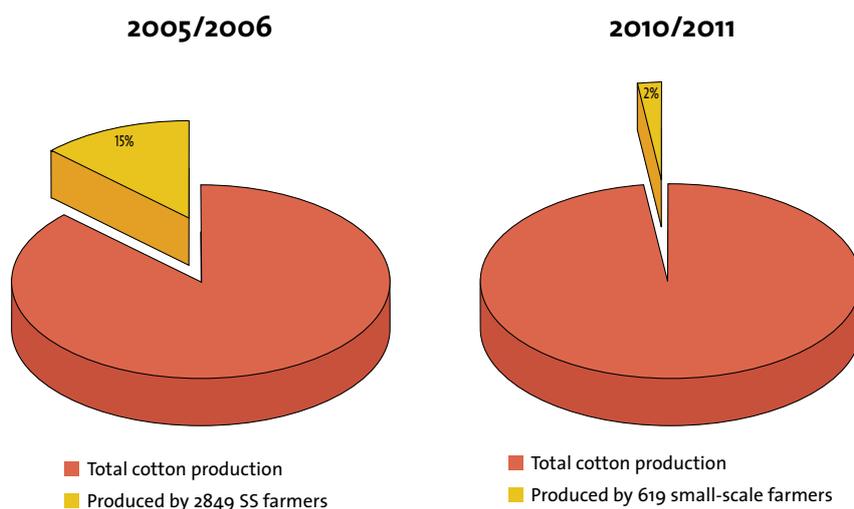
Even though there are programmes to try and include small-scale farmers in cotton production, the numbers of farmers planting cotton are falling every year (see the charts below). Making a livelihood from cotton is extremely difficult because of uncertain weather conditions and an unstable



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international market. Small-scale farmers suffer even more because they have little bargaining power when selling their crop. Ultimately they have to take what they are offered, even if it means they don't make a profit.

Small-scale farmer contribution to South African Cotton production



Compiled from **Hazardous Harvest: Genetically modified crops in South Africa, 2008 – 2012**

GM Cotton in Burkina Faso flops

Burkina Faso is the only other African country growing a GM crop on a commercial scale, besides South Africa.² The planting of GM cotton was to spearhead the introduction of GM cotton in West Africa where cotton is an important cash crop. When Bt cotton became commercially available in 2008, about 2% of cotton farmers planted it. By 2010 about 65% of cotton farmers were willing to give it a try. That equalled about 80 000 farmers, of which at least 65 000 were small-scale. The biotech industry claimed that farmers would benefit about US\$80 million from increased yields and reduced chemical use that season.³

On the 10th May 2012 a French news agency called RFI reported that GM cotton farmers in Burkina Faso had “abandoned” Bt cotton and would return to their traditional seeds in the next planting season. Farmers complained that they were led to believe they would have a 30% increase in yield using GM cotton, but this did not happen.

What was even more troubling was the quality of the cotton; it was way below the usual standard for West Africa. The variety, developed by Monsanto, was a cross between a local cotton and an American variety. The cotton produced very short fibres, which are difficult to spin. As a result the cotton was downgraded and farmers got very low prices for their produce.

Farmers also found managing the crop difficult because it requires a new approach to farming. The GM cotton needs very specific doses of



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fertilizers and farmers are not used to such regiments. It is usual practice for these farmers to divert some of their subsidised agricultural inputs into their food crops, which is what they did with the GM cotton. This affected the performance of the cotton and reduced their cotton yield.⁴

A spokesperson for the cotton industry has denied these reports, saying that farmers have not abandoned the crop. He did, however, admit that there was a problem with the fibre and that Monsanto was working on fixing it. In addition, he also mentioned that small-scale farmers had found the crop more difficult to manage.⁵

Farmer suicides in India and GM cotton

The history of Bt cotton in India has been tumultuous and tragic. Bt cotton was officially adopted in the country in 2002, although there are reports that it was illegally available and planted earlier than this⁶. Reports of farmers committing suicide in despair due to overwhelming debt and financial ruin have been common in the last decade.

A study published by the Center for Human Rights and Global Justice (CHRGJ) reports that over the last sixteen years India has seen the largest wave of recorded suicides in human history – in this period more than a quarter of a million Indian farmers have taken their lives. The majority of these were cotton farmers. In 2009 official figures recorded 17,638 farmer suicides – that's one farmer every 30 minutes. These suicides have far reaching ripples on the estimated 1.5 million surviving family members who inherit the debt and hardships that go with it⁷.

The report is very clear about the cause of these suicides, stating that, “cotton exemplifies India's general shift toward cash crop cultivation, a shift that has contributed significantly to farmer vulnerability, as evidenced by the fact that the majority of suicides are committed by farmers in the cash crop sector. The cotton industry, like other cash crops in India, has also been dominated by foreign multinationals that promote genetically modified seeds and exert increasing control over the cost, quality, and availability of agricultural inputs”⁸.

Health impacts in India

In 2005 people working with GM cotton in the Barwani and Dhar Districts of Madhya Pradesh in India, started reporting allergic reactions. All of them had red itchy skins, many of them had sores. This occurred on their faces, hands and feet – all places that could be exposed to the cotton plant. Other symptoms were itching and swollen eyes, throat problems, runny noses and sneezing. These were all new symptoms that began after the introduction of Bt cotton.⁹

What is new about this case is that GM testing procedures typically look at the effects of GM products when they are **eaten**, but had not considered that there could be problems arising out of touching the plants or breathing in the pollen. This study suggests the need for a lot more research, but finding funding for research in the public interest is very difficult. In the meantime, the biotechnology industry continues to tell us that GM crops are exactly the same as non-GM crops and just as safe.

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References and notes

Unless noted otherwise, information in this factsheet comes from the in-depth publication by the African Centre for Biosafety, “Hazardous Harvest: Genetically modified crops in South Africa, 2008 – 2012” available at <http://www.acbio.org.za/images/stories/dmdocuments/Hazardous%20Harvest-May2012.pdf>

1 Also known as DP210 BRF

2 Egypt has given approval for the commercial planting of GM maize but is yet to cultivate it on a large scale.

3 James, C. (2010). **Global Status of Commercialized Biotech/Gm Crops: 2010**. ISAAA Brief No.42 ISAAA: Ithaca, New York

4 Fages, C. Rfi. (10.05. 2012) <http://www.rfi.fr/emission/20120510-cette-annee-le-burkina-faso-abandonne-le-coton-ogm>

5 Tao, A. (18.05.2012). Bt Cotton in Burkina Faso. <http://www.nepadbiosafety.net/bt-cotton-in-burkina-faso>

6 Gruere, G.P. and Sun, Y. 2012. Measuring the contribution of Bt cotton adoption to India’s cotton yields leap. International Food Policy Research Institute (IFPRI)

7 Center for Human Rights and Global Justice, Every Thirty Minutes:

Farmer Suicides, Human Rights, and the Agrarian Crisis in India (New York: NYU School of Law, 2011).

8 *ibid*

9 Gupta, A. et al. (2005). “Impact of Bt Cotton on Farmers’ Health (in Barwani and Dhar District of Madhya Pradesh),” *Investigation Report*, Oct–Dec 2005 [http://www.gmwatch.org/latest-listing/1-news-items/1657-new-report-on-bt-cotton-and-farmers-health-](http://www.gmwatch.org/latest-listing/1-news-items/1657-new-report-on-bt-cotton-and-farmers-health-published-)published- accessed 13 August 2012