Cottoning on to the lie:

the introduction of genetically modified cotton in Africa will harm, not help, smallholder farmers

Opinion by Haidee Swanby
Senior Researcher, African Centre for Biodiversity (ACB)

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On the 7th of April 2015 the African Centre for Biosafety officially changed its name to the African Centre for Biodiversity. This name change was decided upon by mutual consultation within the ACB to reflect the expanded scope of our work over the past few years.

All ACB publications prior to this date will continue to go under our old name of African Centre for Biosafety, and should continue to be referenced as such.

We remain committed to dismantling inequalities in the food and agriculture system in Africa and believe in peoples' right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems.

www.acbio.org.za
PO Box 29170, Melville 2109 South Africa
Tel: +27 (0)11 486 1156

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Cover design: Adam Rumball

Cover Illustration: Vanessa black

Introduction

Cotton is cultivated on about 2.5% of the world's arable land across 80 countries which, after wheat, rice, maize and soybeans, makes it one of the most important global crops in terms of land area. It is grown mainly for lint, which can be spun and woven to make cloth. The seeds also yield edible oil used in a variety of foodstuffs and industrial products. Once the oil is extracted the dry meal is used to produce animal feed. One hundred countries are involved with cotton imports and exports. China, India, the USA and Pakistan are the major global cotton producers, followed by Brazil and Uzbekistan. Together these countries account for 80% of the world's cotton, while 28 African countries contribute about 5% to global production. The top five producers on the African continent, between 2007 and 2011, were Burkina Faso, Egypt, Mali, Zimbabwe and Tanzania, who together accounted for 54% of Africa's total production. Most of Africa's cotton is produced by smallholder farmers for whom the cotton sector is a vital source of employment and income.

Genetically modified (GM) cotton has been produced globally for almost two decades, yet up to the present time only three African countries have grown GM cotton on a commercial basis—South Africa in 1997, Burkina Faso in 2008 and Sudan in 2012. According to unverified industry figures these three countries together grew GM cotton on about 616 000 hectares. African governments have been sceptical of genetically modified organisms (GMOs) for decades and have played a key role historically in ensuring that international law—the Cartagena Protocol on Biosafety—takes a precautionary stance towards genetic engineering in food and agriculture. They have also imposed various restrictions and bans on the cultivation and importation of GMOs, including on GM food aid. But now, almost two decades later, this resistance is crumbling as a number of African countries such as Ghana, Malawi, Swaziland and Cameroon seem set to allow the commercial cultivation of their first GM crop—cotton. Nigeria and Ethiopia are planning to follow suit in the next two to three years and further down the line.

http://images.jagran.com/cotton_07_06_2013.jpg

Some African governments and local cotton producers have high hopes that GM technology will boost African competitiveness in the dog-eat-dog world that characterises the global cotton market. At the moment African cotton productivity is declining—it now stands at only half the world average—while global productivity is increasing. The promise of improving productivity and reducing pesticide use through the adoption of GM cotton is compelling. However, our African leaders and cotton producers need to take a close look at how GM cotton has fared in South Africa and Burkina Faso to date, particularly its socio-economic impact on smallholder farmers. Scrutiny of actual experiences reveals a tragic tale of crippling debt, appalling market prices and a technology prone to failure in the absence of very specific and onerous management techniques, which are not suited to smallholder production. As stated by a farmer during a Malian public consultation on GMOs, "What's the point of encouraging us to increase yields with GMOs when we can't get a decent price for what we already produce?"

In Malawi, Monsanto has already applied to the government for a permit to commercialise its GM pest resistant cotton, Bollgard II. There has been a strong reaction from civil society to this development and an alliance of organisations has submitted substantive objections. Even Malawi's cotton industry, the Cotton Development Trust (CDT), has publically voiced its concerns over a number of issues, including inadequate field trials, the high cost

of GM seed and related inputs, and blurred intellectual property arrangements. In addition, CDT has expressed unease over the potential development of pest resistance and the inevitable applications of herbicide chemicals.

Regional trade bodies to open the way for GMOs

Regional Economic Communities (RECs), such as the Common Market for East and Southern Africa (COMESA) and the Economic Community for West African States (ECOWAS), are also key players in readying their Member States for the commercialisation of and trade in GM cotton, through harmonised biosafety policies. The COMESA Policy on Biotechnology and Biosafety was adopted in February 2014 and Member States validated the implementation plan in March 2015. The ECOWAS Biosafety Policy has been through an arduous process for more than a decade now and pronounced conflicts between trade imperatives and safety checks have stalled agreement between stakeholders. However, recent reports indicate that agreement between the Member States and donor parties has been reached and a final draft of the Biosafety Policy will soon be published. Together COMESA and ECOWAS incorporate 34 countries in Africa.

These regional biosafety policies and laws have been primarily controlled and funded by the United States Agency for International Development (USAID). USAID has financially supported an array of African expert legal and scientific bodies, working in collaboration with American experts to craft harmonised regional policies designed to maximise market size and minimise biosafety regulations, such as case-by-case risk assessments and 'strict liability' for producers if the technology goes wrong. Within these policies investor profits are high on the priority list while safeguards for human, environmental and socio-economic wellbeing are relegated to mere afterthoughts.

GM cotton in Burkina Faso and SA – crippling debt and technological glitches

Burkina Faso began cultivating pest resistant cotton (known as 'Bt' cotton) in 2008 and the media has since been awash with reports of miraculous performance and increased yields. In reality, the cultivation of Bt cotton has been dogged by technical problems for the short time that it has been in production in that country and in June 2015, media reports announced that GM cotton will be gradually reduced over the next three years and then stopped altogether. After only two seasons of cultivation farmers were up in arms because their cotton harvest was downgraded due to short fibres, causing them to lose out on decent prices while having paid for the more expensive GM technology. Many farmers also reported low yields and, amongst other things, this was ascribed to the need to apply very precise doses of fertilisers and pesticides for good yields, a practice that farmers are not used to.

In 2013/14 Burkina Faso's largest cotton company, SOFITEX, responsible for the production of about 40% of the national cotton seed production in that country, discontinued the use of FK96, one of the two available Bt cotton seed varieties, due to the short fibres it was producing. This created a shortage of Bt seed in the country.

The year 2014 also saw the development in some areas of insect resistance to the Bt toxin expressed in GM cotton. This is very surprising in such a short period and is a serious problem because farmers are led to believe that their crops will be protected against certain pests—and they pay extra for that protection. It is not clear if any compensation was given to farmers who experienced crop losses due to product failure. The issue of delaying insect resistance in Bt crops is somewhat of a conundrum in smallholder production systems and the biotech industry has yet to develop a workable solution. The standard method over the past 20 years has been to impose a contractual obligation on farmers to plant between 5%–20% of their field to **non-GM** cotton, to create what is known as a 'refuge'. The refuge provides a habitat in which insects can thrive as they are not exposed to the Bt toxin and therefore do not develop resistance to it. Insects feeding on the Bt crop are killed by the pesticide expressed in that cotton, while insects thriving in the refuge dominate season after season, delaying the onset of resistance. Managing 'refugia' can be onerous, and they have been difficult for large scale farmers around the world to implement and just as difficult for government

http://media.lemken.com/data/media/25/bge-xx-rubin9_demonstration_suedafrika-01-jb-052006-.007.JPG

and industry to monitor and enforce. When it comes to smallholder farmers, it is impractical for them to plant up to 20% non-GM cotton on small plots and economic losses in these refugia is a worry for them—refugia are cultivated primarily for insect resistance management and can therefore be damaged by pests. GM developers have suggested that in contexts where smallholders dominate, nearby wild vegetation would be sufficient to provide the necessary refugia, but many experts consider this strategy unrealistic. The introduction of Bt crops, in the absence of a credible system to manage the development of insect resistance, puts farmers at risk of crop failures due to insect damage. In addition, this risk is accompanied by higher seed costs and uncertain global prices.

In May 2015 the Director General of the Gourma Cotton Company (SOCOMA) (a subsidiary of the French group Geocoton) in Burkina Faso announced that the country would reduce GM cotton production across the country, over the next three years, due to "technical problems". The final blow to GM cotton in Burkina Faso was announced the following month in the media, when the cotton industry umbrella body, Association interprofessionnelle du coton du Burkina (AICB), which includes notably Burkina Faso Textile Fibre Company (SOFITEX), public sector leader, Faso Coton, (SOCOMA) and Gourma Cotton Company announced that farmres have denounced their contracts with Monsanto and their intention to phase out GM cotton altogether over the 3-year period. Key issues of concern included lower yields than promised and low quality cotton. Stakeholders are currently assessing the amount of compensation they will demand for losses related to the cultivation of GM cotton since 2008.

The introduction of GM cotton in Burkina Faso has been made possible by the closed value chain in that country where one parastatal cotton company manages all aspects of production, including credit supply, seed production and distribution, extension support, transport ginning, etc. This arrangement assists farmers to access credit for the substantially

http://www.africafashionguide.com/wp-content/uploads/2012/02/CmiA-Welcomes-Mozambique-as-Sixth-Project-Country-e13299123697 37.jpg

more expensive seed—because the institution that gives the farmer credit is the same one to which he or she will sell the product, at which time repayment of the loan can be deducted from the price received for the harvested crop.

In South Africa, Monsanto mounted an aggressive campaign in the late 1990s to introduce GM cotton to smallholders in a poverty-stricken area called the Makhathini Flats, where farmers also operated within such a closed value chain. However, when a competitor moved into the game, farmers chose to sell their GM cotton to the new gin to avoid paying back their loans. In 2003 the entire system fell like a house of cards, with the local credit institution collapsing under the weight of unpaid debt to the tune of R22 million (approximately US$ 2 million). Without the certainty of using cotton harvests as collateral for loans, credit became unavailable in the area and cotton production dried up. Many farmers were left destitute and with their social relations in tatters due to these unpaid debts. In South Africa, GM cotton cultivation remains squarely and predominantly within the domain of large scale producers; in the 2014/15 growing season, about 747 smallholder farmers contributed to only 2.8% of South Africa's total cotton production.

GM cotton in Sudan is still very new and for now, the information available on the performance of GM cotton there consists mostly of media reports trumpeting 'world record breaking' yield gains. These echo the media reports from South Africa and Burkina Faso over the years. The true story in Sudan has yet to be revealed.

Resistance and obstacles on the African continent

Kenya

In 2012 the Kenyan Agricultural Research Institution (KARI), in partnership with Monsanto, was on the brink of commercialising Bt cotton, having concluded field trials and submitted the results to the National Biosafety Authority (NBA). However, in the same year, a Parliamentary Decree that banned the import of GMOs into the country was passed. This caused Monsanto to withdraw its funding and interest in the project, due to the uncertain environment the Decree had created. In May 2015 a national taskforce, mandated to advise the Kenyan Parliament on how to proceed with the ban, recommended that the ban be lifted on a case-by-case basis but only after new legislation dealing with the health impacts of GMOs has been implemented. The report

found that safety data on GMOs and health is completely lacking and that the country has limited capacity to regulate and monitor GMOs. Parliament has yet to announce how it will take up the recommendations of the taskforce, but its decision will have an impact on Monsanto's willingness to invest further in GMOs in that country.

Ghana

Multi-location field trials with Bt cotton began in 2013 and further trials with herbicide resistant cotton began the following year. Ghanaian authorities have expressed eagerness to commercialise GM cotton in the immediate future. There are plans to expedite the risk assessment and approval process by 'domesticating' research results from Burkina Faso, as the two countries share very similar ecological conditions.

However, the biotech industry faces a hostile environment in Ghana. In April 2015 a local activist group, Food Sovereignty Ghana (FSG), sought an injunction against the government in the Ghanian courts to stop the commercial release of GM crops, noting that decisions on GM activities were being made illegally—the National Biosafety Committee had not yet been constituted as required by their Biosafety Act of 2011. A temporary injunction was granted by the court and further proceedings are being delayed due to Ghana's largest farmer association, Ghana National Association of Farmers and Fisherfolk (GNAFF), having applied to join on the side of the defence. Prior to these events, a report written in 2014 by the United States Department of Agriculture (USDA) stated that the US Programme for Biosafety Support (PBS) had sought to neutralise the growing anti-GM campaigns in Ghana by arranging for GNAFF to come out in support of GM crops. The report said that going forward, "PBS in collaboration with the Open Forum on Agricultural Biotechnology (OFAB) and the African Biotechnology Network of Expertise (ABNE) are planning to have other farmer groups come out publicly in support of GM crops in Ghana. They also intend to buy space in key print media to highlight the benefits of GM technology; assist key farmer groups to make positions on the introduction of GM and identify individuals who will promptly respond to issues of GM on radio and in the newspapers".

Uganda

In 2009 open field trials on Bt cotton and herbicide resistant cotton were initiated and in 2010 field trials of 'stacked varieties' (combining both traits in one plant) were begun. These trials were run by Uganda's National Agriculture Research Organisation (NARO) and funded by Monsanto and USAID. The trials were supposed to run for three seasons but after just two seasons funding was withdrawn by Monsanto who, instead, concentrated its efforts in Burkina Faso. Monsanto said that the company withdrew due to the "the lack of a favourable legal environment to protect its interests in the country" but that it would consider returning to Uganda "if the legal environment improves, such as passing the proposed law on regulation of biotechnology". In May 2015 Uganda's Parliamentary Caucus gave the green light to the National Biotechnology and Biosafety Bill, signalling that it would soon be adopted. The passage of the Bill has been long, arduous and full of conflict, which no doubt fuelled Monsanto's discomfit.

Legal issues aside, the trials also did not go well. According to a lead researcher the "results were quite inconclusive; morphologically and chemically the GM plants expressed themselves in unexpected ways. Hence, management became intensive at times, especially due to secondary pests". (Secondary pests have often been a challenge with Bt crops, where non-target pests that were previously not a problem increase and need chemical applications to control them.) Recommendations were made that more research be undertaken to determine how to manage Bt crops effectively at the smallholder farmer scale. Other topics of concern included how small scale farmers could manage the onerous insect resistant management strategies that must be employed with Bt crops, plus issues such as the difficulty of small family labour teams handpicking uniform cotton bolls that all ripen at the same time.

Cameroon

Cameroon began greenhouse experiments on GM cotton in 2012, field trials followed in 2015 and the country hopes to commercialise a crop as early as 2017. However the Managing Director of a local cotton company, Sodecton, has said that the country is "far from the stage

of widespread cultivation," and that much more experimentation is still needed to ascertain safety.

Conclusion

Experiments and open field trials with GM cotton have been running for many years in a number of African countries and are increasingly at a stage where applications for commercial release are imminent. However, there are many obstacles to the birth of a new GM era in Africa, chief amongst them being the fact that this high-end technology is simply not appropriate to resource-poor farmers operating on tiny pieces of land, together with fierce opposition from civil society and sometimes also from governments.

Attempts by the biotech industry to impose policies that pander to investors' desires at the expense of environmental and human safety may be easier to realise at the regional level, through the trade-friendly Regional Economic Communities. This is where many biotech industry resources and efforts are currently being channelled. However, despite whatever legal environments may be implemented to enable the introduction of GM cotton regionally or nationally, the fact remains that Africa's cotton farmers are operating in a difficult global sector—prices are erratic and distorted by unfair subsidies in the north, institutional support for their activities is often lacking, and high input costs are already annihilating profit margins. Fighting for the introduction of more expensive technologies that have already proven themselves technologically unsound in a smallholder environment is deeply irresponsible and short-sighted.

It is time that African governments turn their resources to improving the local environments in which cotton producers operate, including institutional and infrastructural support that can bring long-term sustainability to the sector, without placing further burdens and vulnerability on some of the most marginalised people in the world. Civil society actions will continue to vehemently oppose and challenge the false solutions promised by Monsanto and its GM cotton and will insist on just trading environments and true and sustainable upliftment for African cotton producers.

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