



# **2014: THE THIRD YEAR OF BT COTTON CULTIVATION IN SUDAN**

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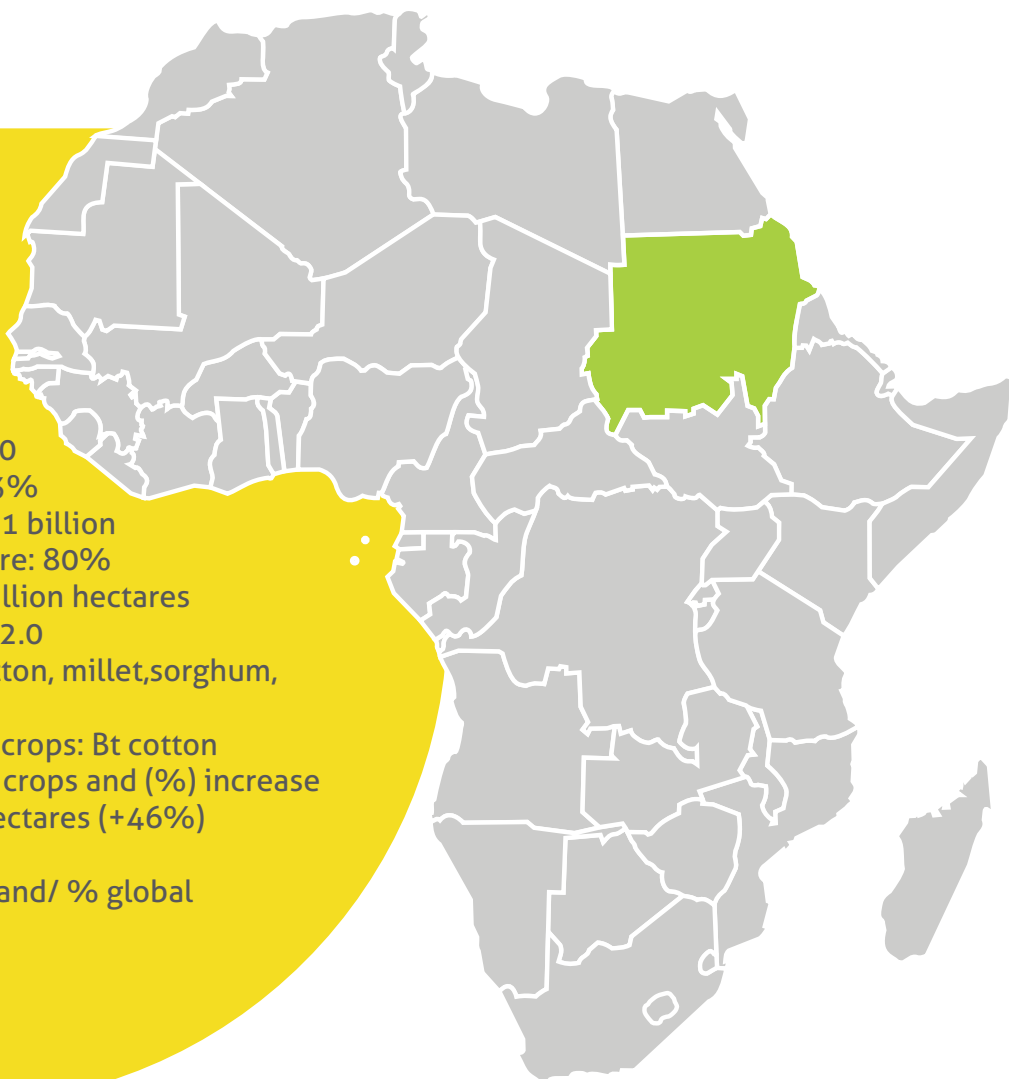
# Introduction

The year 2014 was the third in a row for commercial planting of Bt cotton in Sudan. A total of 90,000 hectares up from 61,530 hectares in 2013 were planted in both rain-fed and irrigated areas by close to 30,000 farmers, a three-fold increase from the initial 10,000 beneficiaries. The total hectarage of Bt cotton of 90,000 was distributed in six of the major irrigated areas: Gezira, Rahad, New Halfa, Suki, Sennar and White Nile; and in the rain-fed areas of Blue Nile State, North Kurdufan, Arab Company Sudan and Egyptian Company under large scale mechanized production system.

## Sudan

Population: 33.6 million  
GDP: US\$ 64.1 billion  
GDP per Capita: US\$2,330  
Agriculture as % GDP: 33%  
Agricultural GDP: US\$21.1 billion  
% Employed in agriculture: 80%  
Arable Land (AL): 17.1 million hectares  
Ratio of AL/Population\*: 2.0  
Major crops: Cassava, cotton, millet, sorghum, sugarcane, wheat  
Commercialized biotech crops: Bt cotton  
Total area under biotech crops and (%) increase in 2014: 0.090 million hectares (+46%)

\*Ratio: % global arable land/ % global population



## Sudan's Biosafety Status

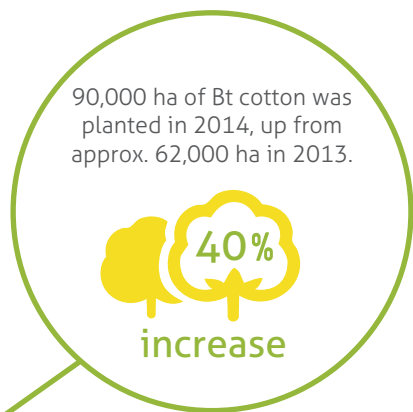
Sudan ratified the Cartagena Protocol on Biosafety in 2005. In the same year, the National Biosafety Policy was developed. The country subsequently passed the biosafety law in June 2010, which led to the establishment of Sudan National Biosafety Council (SNBC) in June 2012. The Council was established to exercise supervision and control over the development, transfer, handling and use of genetically modified organisms (GMOs) with a view to ensuring and assuring safety of human and animal health and provision of an adequate level of protection of the environment. The first cotton variety for commercial planting was released in 2012 after the setting up of SNBC following Confined Field Trials (CFTs) since 2009.

# Agriculture

Agriculture in Sudan is the principal source of income and livelihood for between 60% and 80% of the population (Elgali, Mustafa et al. 2010). It is the engine of growth for other economic sectors such as trade, industry and transport. The country is endowed with large areas of cultivable land, which are situated between the Blue Nile and the White Nile, and in the region between the Blue Nile and the Atbara river. Arable land constitutes approximately one-third of total area of the country, of which 21 per cent is cultivated with fluctuating productivity. Generally speaking, in terms of availability of arable land and different water resources, the country has the potential to become the main food provider for Africa and the Middle East.

Cereals such as sorghum, millet and wheat dominate crop production in the country. Cotton and gum Arabic are some of the dominant commercial crops. Cotton alone forms a source of income for more than 200, 000 farmers and their families. The crop's extra-long staple variety has a long history of cultivation, though recently long, medium and short staple varieties are also being produced. The crop is exported as lint while other products such as cotton seed and other residues become fodder and a source of proteins for livestock.

Cotton industry employs a considerable amount of seasonal labour during picking and ginning operations. The production is mainly done by male farmers who plant and irrigate the crop while women offer the manual labour activities such as weeding, fertilizer application and hand picking. Majority of the crop's agronomic activities are mechanized. Production has been declining over the last 5 years due to bollworm infestation. The introduction of Bt cotton in Sudan was therefore a welcome change expected to boost cotton productivity and restore cotton as a main cash crop and a major contributor to the country's economy.



Close to 30,000 farmers planted Bt cotton compared with the initial 10,000 beneficiaries.



**37%**  
reduction in direct cost of production was realized.

The cost of producing non Bt cotton was much higher at the cost of US\$ 886/hectare compared with US\$ 586 for Bt cotton.

## Bt Cotton Production

The evaluation of Bt cotton started in 2009 using Chinese varieties, which demonstrated efficient control of the cotton bollworm. The commercially grown Bt cotton variety named "Seeni 1" was released by the National Variety Release Committee in March 2012 and approved by the Biosafety Authority for commercial production in June 2012.

The Sudan-China Technology Transfer Center (SCTTC) is involved in the production of foundation seeds for cotton varieties. The Center is looking into the possibility of incorporating the Bt gene into local varieties that are more productive than the exotic Chinese varieties.

In the third year of commercialization, 30,000 farmers planted 90,000 hectares of Bt cotton compared to 10,000 who planted 61,530 hectares in 2013. This translates to 80% adoption rate. Notably, Bt cotton saved 37% of the direct cost of cotton production. This cost, for the conventional cotton was much higher at USD 886 per ha compared to USD 586 per ha for Bt cotton. The economic benefits gained by farmers planting Bt cotton were USD 405 per hectare.

Three years of Bt cotton production has clearly demonstrated the efficacy of the technology in controlling bollworms. It has reduced the use of pesticide, consequently lowering the cost of production. This has resulted in increased productivity and improvement of cotton quality by reducing stickiness. The experiences in growing the crop reinforces the importance of good farm management, timely availability of seeds and inputs as well as sustained communication with stakeholders to address misinformation. The communication will require coordinated awareness and outreach strategies.

Bt cotton is responding to a real need and is poised to position Sudan back on the global map as a major player in the world cotton trade. Sudanese farmers are already reaping benefits as witnessed by the many testimonies they are easily providing. Bt cotton has also renewed policy makers' hope in agriculture as cotton is perceived as a performance measure for other crops.



## Farmers' Voices

For many farmers, Bt cotton growing is a real life-changer. Bt cotton farmers were interviewed on site and below are some outstanding comments:



Mr. Haider Anwer Yasin, a cotton farmer in the Gezira Irrigation Scheme

*“ I expect more than 20 'quintars' of cotton. Before the GM cotton I hardly obtained more than 4 quintars per feddan. This is the first time I do not see immature bolls on the ground. ”*

*“ This technology is ours and we will fight for it. Not having to spray so many times is the biggest achievement. Some people said that we have to spray for the worms but we insisted not to do so. The crop is healthy and we expect high returns since we have already saved some money from less spraying. ”*



A leader of Nurdini Men Farmers' Group in the Gezira Irrigation Scheme



Mr. Hamza Abdel Gadir, a large scale rain-fed cotton farmer in Gedarif State

*“ I have planted cotton all my life. Some seasons are good and others are bad. But I didn't see cotton like this before. It carries bolls from the base of the stem. This season I will be able to go to Mecca. Thanks my sons. ”*

## Scientist and Policy Maker's Voices

Political goodwill has to a large extent provided an enabling environment for commercialization and research with Bt cotton. The scientists on the other hand have been keen to ensure that the technology works through introgressing the Bt gene into locally adapted farmer preferred varieties. They are also conducting research to establish effective temporal control of other insect pests other than boll worms.



Dr. Mohammed Abdalla,  
Director General, Rahad  
Agricultural Corporation

*“ Scientists in Agricultural Research Corporation are in advanced stages of trials with Sudanese cotton varieties introgressed with the Bt gene. Once complete, the new varieties will bring to an end the importation of cotton seed from China. ”*

*“ The Government of Sudan has had to invest in tenacious extension service provision, to inform that Bt cotton is not an end in itself and needs proper agronomy just like the conventional varieties. We have seen the need to do this to curb misinformation by activists who would want to reverse the gains the country and farmers have made by adopting Bt cotton ”*



Gedarif State's Minister for  
Agriculture, Dr. Mohamed  
Osman Nour




**"Sudan is the first COMESA member state to commercialize GM cotton, thus providing good experiential learning ground for cotton-growing COMESA countries. The lessons learned by Sudanese farmers should be shared for the benefit of member states within the region."**

- Dr. Getachew Belay, Senior Biotechnology Policy Advisor - Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA/COMESA).




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