



ORGANIC COTTON PRODUCTION IN WEST AFRICA



Location: Benin, Burkina Faso, and Mali

Cotton production presents a double bind for West African smallholder farmers, providing much-needed cash income through a chemically intensive production system that has a negative effect on human and environmental health. Global market volatility is also problematic, leaving many farmers saddled with debt when prices fall. In contrast, organic cotton production offers a safer and more profitable alternative, with up to two to three times more profit and safe, biological forms of pest control and soil fertilization.

CHALLENGE

Cotton production has been a mainstay of West Africa's agricultural economies since colonialism. Originally grown to supply France's demand, it still dominates several semi-arid francophone West African countries, notably in the "Cotton 4"—Mali, Burkina Faso, Benin, and Chad. To a lesser extent, production also takes place in eastern Senegal and the northern parts of Cote d'Ivoire, Ghana, Togo, Nigeria, and Cameroon. Cotton production has increased steadily across the region, growing annually at a rate of six percent since 1960. By 2000, West Africa was producing nearly 100 million tons each year—13 percent of the global supply.¹ Cotton is the principal cash crop for half a million producers and provides income to another five million growers.²

Cotton production expansion throughout West Africa has had a marked, if not deleterious impact on traditional farming practices and local agro-ecosystems. Farmers in the cotton belt are almost entirely smallholders; Mali's 180,000 cotton farms, for example, average only three hectares each, spread out over several separate fields.³ Chemical fertilizers, pesticides, and tillage—with ox, plows and, to a lesser extent, tractors—are responsible for cotton production intensification on these smallholdings. At the same time, however, declining prices have caused farmers to expand cotton cultivation onto fallow land reserved for grazing and soil regeneration.⁴

While farmers rotate cotton with subsistence and domestic market crops such as maize, sorghum, and peanuts, biannual cotton cropping rapidly depletes soil fertility, lowering subsequent cereal and cotton crop yields; the latter has declined by nearly half over the last two decades. Accessibility to chemical fertilizers and ease of application has caused most farmers to decrease organic inputs such as manure and compost. As a result, soil organic matter—vital to soil's long-term fertility and erosion resistance—is declining. Annual manure applications of 0.5 to 1 ton per hectare are insufficient to counter soil organic matter loss from cultivation. Additionally, excessive fertilizer application can increase soil acidity, which can then lead to aluminum toxicity. As elsewhere in the world, West Africa's soil degradation is exacerbated by the intense market demands of export crop production. The cotton belt's biodiversity is also threatened.⁵

Cotton production also has adverse public health consequences when pesticides are provided to farmers without sufficient training. Few farmers wear protective clothing, leaving their skin directly exposed to leakage from the pumps and sprayers. A 2000-2003 study in Benin's cotton producing region reported over 577 cases of poisoning, including 97 fatalities.⁶

Price volatility on the world cotton market ultimately threatens farmer livelihoods. Since most of the inputs—pumps, agrochemicals, and seeds—are received on credit prior to planting, climatic variability or a drop in market prices can saddle farmers with debt.⁷ Agro-ecosystem degradation and negative impacts on farmer livelihoods are sure to increase over the next decades as conventional cotton production rises to meet the growing demand of the global market.⁸

RESPONSE

Organic cotton production is quickly gaining popularity in West Africa. The production is entirely without synthetic inputs. Soil fertility is maintained through applications of manure, compost, and intercropping or rotation with nitrogen-fixing legumes such as *Mucuna*, *Crotolaria* and *Cajanus cajan*. When possible, fields are mulched with crop residues, branches from agroforestry species, and compost. Mulch benefits are well known: A thick layer of organic residues reduces erosion by dispersing the impact of raindrops and decreasing surface crusting. A layer of mulch also decreases the runoff velocity and increases the water infiltration rate, soil surface storage of run-off, and porosity. It improves soil structure and enhances soil organism activity, a key factor in soil quality. Decaying organic matter slowly releases nutrients, providing crops with a steady-release nutrient source.⁹ Pests are controlled through a natural pesticide made from neem seed (*Azadirachta indica*) extract and by cultivating “trap crops,” which are planted nearby to attract pests away from the cotton.¹⁰

Since 1998, Helvetas, the Swiss International Cooperation Organization, has worked with producer organizations in the four Cotton Belt countries. This collaboration promotes organic cotton, facilitates organic certification and establishes market access for organic producers, while also ramping up production and organic certification of other field crops—sesame, soya, and bissap (*Hibiscus sabdariffa*)—for export, domestic sale, and subsistence. Crop diversification, either as part of an annual rotation or intercropped in the same field as the cotton, helps protect farmers from cotton price drops, as well as from crop failure due to drought, flooding, pests, and disease. The organic system also includes several agroforestry species. Moringa is a multiple-use leguminous shrub species which fertilizes the soil, serves as a windbreak to reduce soil erosion, makes an effective live fence around fields and gardens, and is a high-protein fodder for livestock. Neem trees are also incorporated in the system for biopesticide production and used as windbreaks. Finally, shea or karité (*Vitellaria paradoxa*) is valuable on the export market and for subsistence—as a cooking oil and medicinal plant.¹¹

In Mali, the program started as a pilot project with 25 small farmers in 1998. It involves the Malian Textile Development Company (CMDT), the Malian research institute Institut d’Economie Rurale (IER) and the Organic Movement of Mali. In 2011, 6,000 farmers participated in organic cotton production in Mali.¹²



Cotton flower, Burkina Faso. © Juliette Martin-Prével

“I am proud of our organic cotton. It protects our health and gives us a better income.”

– Wimenga Kourita, organic farmer, Tenkodogo, Burkina Faso



Harvest and transportation of cotton from Boromo, Burkina Faso. © Juliette Martin-Prével

“I noticed that the earth became less and less fertile from year to year. I spent more and more money on manure and pesticides but the harvest became smaller and smaller. Now I am more independent and in the long-term our family will benefit and be able to survive.”

– Philippe Sangare, 59 year-old farmer, Mali



Cotton growers and their harvest, Burkina Faso. © Juliette Martin-Prével

In Burkina Faso, Helvetas has been working with the National Cotton Producers Union since 2004 to promote organic and fairtrade cotton. Since 2012, the French Development Agency has provided additional support to the development of organic cotton in Burkina Faso. Hence, Helvetas has been focusing on consolidating value chains, crop rotation and building farmers' business and management capacity. It provides technical advice and support to producer organizations.¹³

In 2006, Helvetas and the German Technical Cooperation began working in the Pendjari Biosphere Preserve in northwest Benin's Atacora district. The result was the Alafia Pendjar, an organic and fair trade cotton project. Farmers are organized into local Organic Cotton Producers Village Groups under the larger union AVIGREF, which is a partner in Helvetas' new projects (2013-2017) to continue developing organic crops producing near Benin's Pendjari and W natural parks.¹⁴

RESULTS

- In Burkina Faso, the number of organic cotton farmers grew from 72 to 7,000 between 2004 and 2007.¹⁵ In Benin, 220 producers switched to organic production during 2007-2008. The number of organic producers grew in Mali from 174 to 6,388 between 2002 and 2008.
- The total area under organic production has expanded considerably. In Mali, it went from 118 hectares to almost 4,000 hectares between 2002 and 2008. In Burkina Faso, from 30 hectares to nearly 2,000 hectares between 2004 and 2008.
- During global cotton market crises, organic cotton farmers still earn a premium for their product. In 2004, despite

a 50-percent drop in the global cotton price, Malian farmers received 1,020 FCFA (\$1.96) per kg of organic cotton, more than three times the government-supported cotton price of 306 FCFA (\$0.59) per kg. In 2006, Burkina Faso farmers produced 347 tons of grain cotton (141 tons of fiber) and received a guaranteed price of 306 FCFA (\$0.59) per kg, nearly twice the price of conventional cotton (\$0.31).

- Organic cotton may produce lower yields—in 2008, Burkina averaged 675 kg of organic cotton per hectare while conventional methods averaged 1,110 kg—but gross income for organic cotton was 11 percent higher than conventional cotton due to the 90 percent lower input costs. Conventional farmers were also far more dependent on credit for inputs, which made them more vulnerable to market fluctuations. Despite concerns that organic production requires more labor, labor costs for organic production were actually a third lower than for conventional methods. Overall, organic farmers' net profit margin per hectare was 2.5 times greater than for conventional farmers.¹⁶
- In Burkina Faso, 90 percent of organic cotton farmers experienced an improvement in the families' health thanks to both reduced chemical use and increased income. Ten percent of farmers interviewed specifically reported improvements to their diets, with increased quantities of rice, meat, and a diversity of vegetables.¹⁷
- Farmers also benefited from new markets for other crops. During the 2006/2007 season, neem trees were planted on 1,065 hectares in Burkina Faso. Certified organic production of sesame and sorghum grew to 400 hectares and 200 hectares respectively. That same year, Burkinabe farmers harvested between 350 to 500 tons of certified organic shea nuts (or 115 to 165 tons of shea butter) from roughly 50,000 shea trees adjacent to their fields.¹⁸
- In a 2009 survey, all Burkinabe farmers reported an increase in soil fertility on organic fields. The survey revealed that organic farmers used three times as much manure—two to three tons per hectare—on their fields as conventional farmers.¹⁹ Only two percent of farmers noted difficulty in obtaining sufficient manure.
- For the crop year 2011-2012, Helvetas recoded a 1,979 tons cottonseed production in Burkina Faso, superior to the set goal of 1,700 tons. This production is divided between certified organic production (879 tons) and in-conversion production (1,100 tons). It marks a sharp increase compared to the previous season (2010-2011), which had recorded only 575 tons and reflects the interests of producers for organic cotton in the country.²⁰

- In Benin, the project around the Pendjari and W natural parks has led to organic certification of 1,342 producers for both cotton (380 hectares) and soybean (245 hectares) in 2012, of which 68 percent are women. The production registered for the project was 109 tons of cottonseed in 2012.²¹

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ENDNOTES

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Cotton harvest in Boromo, Burkina Faso. © Juliette Martin-Prével