

Gender & Cash Cropping: Cotton in Sub-Saharan Africa

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*Prepared for the Science & Technology Team
of the Bill & Melinda Gates Foundation*

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January 18, 2010

Crop production and farm labor in Africa are often divided by gender.¹ While the generalization is frequently made that women grow subsistence crops while men grow cash crops, research indicates that no major crops are grown exclusively by men or women.² Rather, women's agricultural roles and practices across Sub-Saharan Africa (SSA) exhibit great heterogeneity and change in response to shifts in economic opportunities.³ For example, increasing male migration to cities and off-farm labor requires women to do a wider range of agricultural work, blurring "traditional" gender roles in agriculture.⁴ As a result women in many parts of SSA are becoming ever more involved in customarily male tasks, including the production of cash crops.^{5,6}

Estimates suggest that women grow 70-80 percent of Africa's food crops, which may constrain their involvement in cash crop production, if food crop production places additional demands their time, resources and labor.⁷ There is little evidence regarding women's motivations or decisions to grow cash versus food crops. Similarly, the policy literature on African cotton production and markets does not explicitly address the issue of gender, further limiting the information available on the impact of cotton production on women.

Cotton Production in Africa

Cotton is an important cash crop grown predominantly by smallholders in SSA.⁸ Over 2 million smallholder farms (averaging 2-10 hectares)

are estimated to be involved in seed cotton production in SSA.^{9,10} Farmers typically sell their harvest to locally operated ginning companies that process seed cotton (the entire cotton boll) into cotton lint before it is ready for export or local sale.¹¹ The seed cotton market refers to farmer sales of cotton bolls to processors, while the cotton market in general also includes the trade in processed cotton lint.

Table 1. Characteristics of Cotton in SSA

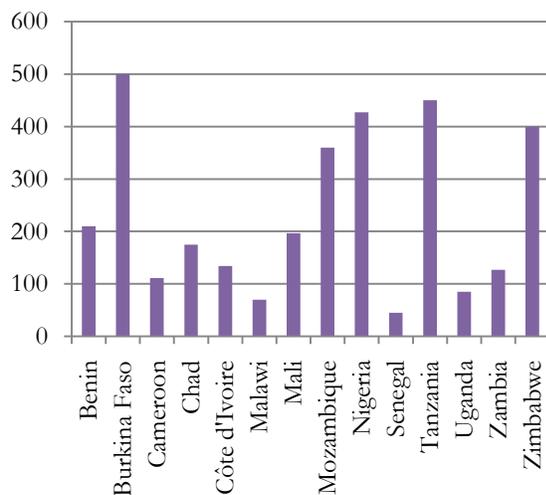
History	Colonial powers promoted intense cultivation for European textile markets, current variety (North American) introduced in the 1800s
Uses	Textiles
Demand	From 1960-2000, demand grew at the same rate as population, suggesting that per capita cotton consumption has remained stagnant
Primary Cultivation Challenges	Bollworm and foliage feeders threaten up to 85 percent of crops if no pesticides are used
Current Technology Efforts	Bt Cotton is officially cultivated in South Africa, other countries are currently experimenting with trial plots
Inputs	Seeds, pesticides, fertilizer
Major SSA Producers	Mali, Cote d'Ivoire, Benin, Burkina Faso, and Zimbabwe
Major Importers	Indonesia, India, Mexico, Thailand, Turkey, Russia, Italy, Korea ¹

¹ Eight largest importers of global cotton supply; 44 percent of cotton exports flowed from developed to developing countries in 2000.

Sources: Baffes, J. (2004a), Moseley, W. & Gray, L. (2008), Custers, P. (2002) & Bassett, T.J. (2008)

Africa produces approximately 15 percent of the world's cotton exports, with 37 different countries engaged in some degree of production.¹² However, five countries (Mali, Cote d'Ivoire, Benin, Burkina Faso, and Zimbabwe) produce nearly 60 percent of SSA's cotton.¹³ As opposed to cotton cultivation in much of the developed world, African cotton is almost entirely rain-fed and uses a low amount of inputs; but is far more labor intensive, relying on oxen as well as male and female household and hired labor in most areas.^{14,15}

Figure 1. Cotton Cultivation (thousands of ha) in 2008



Source: FAOSTAT

West and central Africa (WCA) produces the largest share of SSA's cotton. In 2008, 209,830 hectares of cotton were cultivated in Benin, 500,000 in Burkina Faso, and 427,000 in Nigeria.¹⁶ Women in West Africa historically grew cotton on small plots; today cotton grows almost entirely on household plots in the region.^{17,18} In eastern SSA, Tanzania, Zimbabwe and Mozambique dominate cotton production cultivating 450,000, 400,000 and 360,000 hectares, respectively, in 2008.¹⁹ Cotton comprises 50-70 percent of Benin's exports and is the second largest export product in Tanzania.²⁰ In Mali, Benin, Burkina Faso, Chad, and Cote d'Ivoire cotton accounts for 5-10 percent of GDP.²¹

Cotton's shift from a "female" crop to a "male" crop in WCA appears to correspond with its transition from a product for local cloth production to an export cash crop, but information regarding women's roles in cotton production remains limited.²² In Mali, for example, cotton grows mostly on men's fields but uses both men's and women's labor. Survey data from 1999 showed that women in Mali generally did not grow cotton on their own plots because they had less access to cotton extension services and because it did not alleviate food security concerns.²³ Similarly, in Burkina Faso, women cultivate shea nuts, peanuts, and oil seeds on their personal plots but cotton is grown mainly on household fields.^{24,25}

Land Preparation and Soil Fertility

Cotton in SSA is primarily rain-fed. While cotton is a perennial crop, it is now commonly grown as an annual crop to interrupt any development of pests and diseases by re-planting each season.²⁶ Timing is critical for successful cultivation, with sowing and planting determined by rainfall patterns.²⁷ Similar to maize, cotton extracts large amounts of nutrients from the soil and can degrade soil quickly. Sound management practices to maintain soil fertility include fertilizers, organic inputs, and crop rotation.²⁸

Land preparation for cotton is often done by hand or with animal assistance.²⁹ As with most staple crops, plowing is generally done by men, and even female cotton farmers are likely to hire men to plow their fields. Hiring labor, however, results in less control over scheduling land preparation and sowing activities.³⁰ Farmers in a Burkina Faso study emphasized the importance of early planting at the start of the rainy season. They noted that without oxen, the ability to sow cotton early enough is severely limited because the ground is not soft enough to till until the rain begins.³¹ Women across Africa tend to own fewer oxen because they are a significant capital investment.³²

Land Tenure

Land title and tenure tend to be held by men in SSA. When women do secure property (formal ownership or usufruct rights), it tends to be dispersed, smaller plots, often on marginal land.^{33,34} Female cotton farmers generally depend on their husbands for land and inputs as well as to agree to their labor allocation on those fields.³⁵ For example, a study of organic cotton farming in Benin shows that most households have a common farm managed by the husband, who provides his wife with a small plot to grow crops of her choice. A woman must contribute to the common farm before working on her own plot.³⁶ Evidence from Burkina Faso suggests that women prefer growing cash crops that also provide food, such as groundnuts, on their personal plots.³⁷

Crop Maintenance

Planting and Weeding

Women's roles in cotton cultivation include sowing, fertilizing, weeding and harvesting.³⁸ In cases where women farm cotton on their personal plots, men generally do not provide any labor contribution except for physically demanding tasks such as plowing and spraying.³⁹ On their own plots, however, men frequently command household labor for planting, weeding, and harvesting.⁴⁰ In Zimbabwe where cotton is farmed on communal lands belonging to the male head of household, women's work is typically not compensated financially and in most cases they do not inherit the land if their husband dies.⁴¹

Harvesting

African cotton is particularly high quality because it is handpicked. Women and children are preferred for this work because their smaller fingers can harvest the cotton bolls faster and with less damage.⁴² Gendered labor relations during harvest season have shifted with cotton's transition from a female to a male crop. Women have begun to hire themselves out to harvest cotton – even charging their husbands for work on household fields in one village in Burkina Faso.⁴³ Wage labor on cotton farms offers an important source of income for

women in Burkina Faso.⁴⁴ However, other studies in Burkina Faso note that women often need to seek their husband's permission to work off-farm.⁴⁵ The ability of women to hire out their labor appears to vary by ethnic group.⁴⁶

Marketing

Many SSA countries reformed their commodities sectors in the 1990s, eliminating monopolies and liberalizing trade.⁴⁷ World Bank and IMF restructuring stressed privatization and price liberalization in cotton markets.⁴⁸ Compared to East Africa where reforms came quickly, parastatals in West Africa played a larger, more functional role in all aspects of production prior to reform. This institutional history complicated privatization efforts and resulted in national monopolies in most countries in WCA.^{49,50} The four most common seed cotton marketing structures in SSA today are national monopolies, local monopolies, concentrated market-based sectors, and competitive market-based sectors.⁵¹

Single buyers in the local and national monopolies facilitate a contract farming system whereby ginning companies provide extension services and inputs on credit with the debt deducted from their purchase of the harvest at the end of the season.^{52,53} National monopolies in Mali, Cameroon, Chad and Senegal and local monopolies in Mozambique and Burkina Faso function under this contract system in which producer prices are announced at planting and input credit and output markets are vertically integrated.⁵⁴ Mozambique is the only country in the region to operate under a concession system in which the government grants local monopoly status to ginning companies and sets a country-wide price every season.^{55,56} Benin has a hybrid market with one firm controlling 50 percent of the market and roughly ten local firms sharing the rest; strong government regulation limits competition through price-setting and the allocation of purchase quotas.⁵⁷ A private trade association in Benin provides input credits so ginning companies are not involved.⁵⁸ In the more market-based sectors of Zambia and Zimbabwe,

several large multi-national firms dominate the cotton market. These firms are vertically integrated and likely to offer extension services and inputs on credit through exclusive purchase agreements with farmers. In contrast, Tanzania's cotton sector is more competitive with no dominant firm. Vertical integration is limited and as a result ginning companies rarely provide farmer services or credit.⁵⁹

Contracts

Little data exist to indicate the level of women's participation in cotton contracts or receipt of credit and services to grow cotton. Nor are there data to indicate whether women fare better under any particular cotton production system. Evidence shows that in general, women may not receive much of the money from cash crop production or contribute to decisions about how to spend revenue from cash crops.⁶⁰ This may be especially true in the case of cotton grown on household fields. For example, Ugandan data show that while women are responsible for 50 percent of the country's cash crop cultivation, they seldom benefit from its sale since they are not involved with marketing.⁶¹ Similarly, in Zimbabwe, 86 percent of women involved in cotton farming work on communal cotton farms that are divided by a traditional chief among male heads of household.⁶²

The institutional structure of cotton contracts and payments may tend to make female participation less likely, since participation often requires larger parcels of land, ownership rights, or participation in farmers' groups that provide access to inputs. A case study of cotton production in Zimbabwe suggested that ginning contracts favor larger farms to mitigate risk, thereby systematically discriminating against female farmers who tend to have smaller plots of land.⁶³ This study also showed that women in Zimbabwe have traditionally had little access to the income from cotton, in part because women's household duties preclude them from traveling to collect payment from ginning companies.⁶⁴ In order to allow women better access, ginning companies in Zimbabwe implemented a system to provide

payment within an hour of farmer delivery to eliminate the need for a return trip. However, even with this improvement, men are still more likely to deliver the cotton and therefore collect payment.⁶⁵ For this reason, the Fairtrade Labeling Organizations International (FLO) standards for seed cotton require that in the case of women farmers, payment must be given to female growers directly.⁶⁶ Currently, there are few FLO certified producers in SSA; four in Burkina Faso, three in Cameroon, five in Mali and 11 in Senegal.⁶⁷

Bargaining Power & Intra-Household Decision Making

Time and resource allocation decisions within families reflect gendered balances of power.⁶⁸ Resources are not allocated evenly within the household and allocation preferences are not always held in common. Therefore, relative bargaining power between men and women affects resource allocations and the distribution of benefits.^{69,70} In general, increases in household cash income from the sale of cash crops tend to reduce gender disparities in access to education, health and nutrition.⁷¹ However, a study of Burkina Faso suggested that cash crop income was largely in the hands of men, resulting in lower investments in children's health and education than if women alone determined how to spend the income.⁷²

One longitudinal study in northern Cote d'Ivoire demonstrated the role of collective bargaining power in facilitating cotton production by women.⁷³ Bassett (2002) pointed to high levels of female cotton cultivation in the late 1980s and early 1990s as evidence that women successfully elevated the decision making around cotton production from an intra-household negotiation to the community arena. During the study period (1981-1997), the land area cultivated by women quadrupled in size and cotton became the most valuable cash crop.⁷⁴ Women cultivated personal cotton fields once they successfully secured productive resources through community-level bargaining, such as women's

agricultural work groups and ox-plow rental markets.⁷⁵

While women increased their economic autonomy and power within the household by mobilizing resources at the village level to grow cotton, the macroeconomic conditions for cotton production subsequently deteriorated in the 1990s.⁷⁶ Facing increasingly adverse conditions as a result of currency devaluation and the removal of subsidies, men stopped supporting women's cotton production, which interrupted prior agreements and led to a decline in women's cultivation of cotton.⁷⁷

Constraints on Cotton Production

Pesticides and Fertilizers

Cotton accounts for 60 percent of all fertilizer and 80 percent of all insecticides used in West African agriculture.⁷⁸ Still, the total amount of fertilizer used in cotton production is far below levels in the developed world.⁷⁹ Conventional cotton is heavily dependent on synthetic pesticides because it is highly susceptible to pests, particularly the bollworm.⁸⁰

Across SSA, women are often responsible for mixing or applying pesticides, exposing themselves to health risks ranging from dizziness and headaches to respiratory paralysis and death.⁸¹ Cotton pesticides pose significant health risks, and few farmers have access to protective gear.⁸² Chemical pesticides pose a significant risk to women's health, particularly their reproductive health. When women work with pesticides, their household roles in food preparation and childcare may also place the entire family's health at risk.⁸³ Social norms of dress may increase women's pesticide exposure if their clothing leaves more skin exposed and more effective covering, such as overalls, are considered improper for women.⁸⁴

Because inputs are often provided on credit by ginning companies, competition among multiple ginners in an area can decrease farmer's access to inputs because the potential for side-selling increases

the risk of loan defaults. Farmers can accept inputs from one gin and sell their harvest to another, making the ginning company less likely to extend credit for inputs.⁸⁵ Finding alternative arrangements has proven difficult in several countries, including Tanzania, Uganda, and Zambia.⁸⁶

Credit

On average, pesticides account for 30 percent of cotton production costs. Without access to credit, most farmers cannot afford to purchase these inputs at market prices.^{87,88} Women in rural areas tend to face legal, social, cultural, and economic restrictions that limit their access to credit and this is true in vertically integrated cotton growing schemes as well.^{89,90}

Researchers have documented an increasing debt problem among smallholder cotton producers.⁹¹ Accepting inputs on credit at the beginning of the season requires that farmers take on much of the risk of cotton production.⁹² In a study of cotton production in Burkina Faso, Gray (2008) found that almost half of the eighty-two cotton farmers interviewed had, at least once in the previous five years, been unable to repay debt from the purchase of inputs at the end of the season. Indebtedness makes it even more difficult to access inputs through credit in future seasons.⁹³ The level of risk born by farmers is closely linked to market structure; in a competitive market farmers assume the most risk (but tend to receive a higher share of the export price) while farmers under contract share the risk with the ginning companies.⁹⁴

Farmers Associations and Extension Services

Data from Mali's cotton belt demonstrate that farmer associations can facilitate access to cotton inputs; however, these associations in SSA are often open largely to heads of household and landholders, limiting most women's ability to participate.^{95,96} Even when women farmers do form associations, evidence from Tanzania suggests that their groups are less successful than men's groups at searching for and accessing new contract arrangements

because agricultural companies are more likely to approach men.⁹⁷

Women's ability to access extension services is also often limited, curtailing their ability to cultivate cotton.^{98,99} Evidence from Benin demonstrated that strong government support of the cotton sector was systematically biased against women because financial and technical supports were provided through farmer's organizations composed mostly of men. Few women had access to these inputs through their husbands or male relatives, thus precluding their chances for conventional cotton farming.¹⁰⁰

Evidence shows that the promotion of extension services and technical innovation for cotton production can have a positive impact across farmers' fields.^{101,102} Cash cropping schemes often provide access to inputs and credit that would be otherwise unavailable.¹⁰³ Analytical work by the Sahel and West Africa Club of the Organization for Economic Cooperation and Development (SWAC/OECD) demonstrated that there was a correlation between cotton production and increased cereal production, infrastructure, producer organizations and access to agricultural and social services, particularly in French West Africa.¹⁰⁴ Similar evidence from Mozambique showed that households growing high-input cotton experienced higher maize yields (even under low-input cultivation) than households growing low-input cotton or no cotton at all.¹⁰⁵

Bt Cotton

Recent evidence suggests that cultivation of insect-resistant Bt cotton could have a positive economic impact for smallholders in developing countries, although African producers have not yet embraced this technology.^{106,107,108} Ex ante studies of the introduction of Bt cotton in Mali and Mozambique suggest that it would be profitable in Mali as long as producer premiums (fees paid to the seed producer) remain below US\$60 per hectare; producers in Mozambique would not be able to recover the investment at current yields and output prices.^{109,110}

A two-year study in the Makhathini Flats in South Africa, where 60 percent of farmers are women, demonstrated that adoption of Bt cotton in 2001 led to higher household income.^{111,112} Cotton yields increased 18 percent and 60 percent over two successive seasons after adoption.¹¹³ Notably, neither cotton production nor the number of cotton farmers increased in the years following the study.¹¹⁴ Addressing the full impact of Bt cotton adoption on technical inputs in the Makhathini Flats, Hofs, Fok, & Vaissayre (2006) conclude that despite positive returns, pest management practices still required a significant outlay and farmers' net revenues remained low.¹¹⁵

Organic Cotton

Organic cotton provides another alternative to high-input conventional farming, especially for women. It may reduce health problems, increase food security, and maintain soil fertility while supporting higher incomes.¹¹⁶ Organic farmers generally earn 20 percent higher prices than for conventional cotton.¹¹⁷ Case studies of organic cotton projects show positive impacts on income and empowerment but suggest that these results can only be sustained in the long-term through market development.¹¹⁸ Organic cotton remains a niche market with both supply and demand constraints on its expansion. In addition to the cost of certification, low levels of education and literacy, especially among women, are serious barriers to certification because the process requires documentation and record keeping.^{119,120}

Uganda and Tanzania produce approximately 93 percent of Africa's organic cotton.¹²¹ Reports on organic cotton grown in West Africa showed that access to organic techniques increased women's participation in cotton production and ownership of cotton fields. Organic-specific credits and fewer required purchased inputs increased cotton's accessibility for women.¹²² A possible explanation for women's over-representation in organic cotton farming, however, is that men do not perceive

organic farming as a serious economic alternative to conventional methods.¹²³

As a result of an organic cotton project in Benin, shifts to organic techniques increased organic cotton output from 5 tons in 1997 to 379 tons in 2005. The number of organic farmers increased from 17 to 671 during the period, a third of whom were women.¹²⁴ Similarly, Cargill partnered with a local NGO in Zimbabwe on an organic cotton project in 1995 where 90 percent of the initial farmers were women. The project improved women's access to organic cotton by negotiating a "wives' exemption" with the organic certifier so that women could get organic certification for their plots even if their husband was farming conventionally. This initiative was still ongoing as of 2004.¹²⁵

Conclusion

There is limited empirical information about women's involvement in trade or cash crop production, including cotton.¹²⁶ The evidence that is available shows that women are typically not the primary cultivators of cotton, and that cotton production is a household cultivation strategy, especially in WCA.

Cotton cultivation often provides access to fertilizers, pesticides and extension services that are otherwise unavailable to households. In many cases cotton also appears to have positive impacts on food crop yields.^{127,128} Women have benefitted from household cotton income when they have input in intra-household resource allocation decisions or when they are able to grow cotton on personal plots and have control over the income it generates. Women also benefit from cotton when it offers them the opportunity to engage in paid labor. The data suggests, however, that cotton cultivation can negatively impact women when it increases their unpaid agricultural labor burden or exposes them to harmful chemicals.

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Endnotes

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