Cotton and Food Security
The case for smallholder and company collaboration

On behalf of the South African Partnership for Sustainable Cotton and Food Security
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Introduction

While the relationship between cotton production and food security might not be evident, it definitely exists. Good agricultural practices in cotton farming, such as responsible crop, soil and water management, contribute to resilient livelihoods for producers and are directly linked to the food security challenge of our time. By working together to enhance the sustainability of cotton production, farmers and businesses can contribute not only to a resilient cotton sector, but also to greater food security, both now and in the future.

Cotton is a natural fibre grown in around 80 countries in the world. Cotton farming systems vary hugely between geographical areas, with mechanised large-scale production in countries such as the USA, Australia or Brazil, and small-scale labour-intensive production in, for example, India and Mozambique. 75% of global production comes from small farms in developing countries, which makes the overwhelming majority of people involved in cotton farming smallholders in developing countries: a dominant group among people who currently are food insecure.

The link between cotton and food security is therefore particularly relevant to the African and South Asian context of cotton production as the challenges regarding the future of cotton and food security affect them directly.

FAO DEFINITION OF FOOD SECURITY (FAO, WORLD FOOD SUMMIT, 1996)
"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". Food security is fully achieved when food is physically available (availability); economically, physically and socially accessible (access); and usable (utilisation); and when these three conditions are stable over time (stability).
Challenges

The way smallholder farmers in developing countries often cultivate cotton, does not only pose a threat to food security now, but it also puts future needs at risk. The world population, and therefore the demand for food and fibre, is expected to grow rapidly in the coming years. Finding solutions to tackle the challenges facing all of us is therefore not an option but a must.

Unsustainable cotton farming puts food security at risk
In developing countries, cotton is cultivated by smallholder farmers on plots of often less than two hectares. Due, among other things, to a lack of access to information, and the required infrastructure, the following issues often arise in cotton cultivation:

- environmental contamination by pesticides;
- water depletion and pollution;
- loss of soil fertility and erosion.

Local agricultural systems cause the rapid depletion of natural resources through deforestation and soil depletion. In this context, cotton farming is not sustainable. It makes future cotton supplies unreliable and is putting agricultural production in general, and therefore food security, at risk.

Especially farmers lack access to food
At present, the world is producing enough safe and healthy food for the whole world, but almost 800 million people lack access to it. They do not have enough income to buy food nor sufficient means to grow their own food. Paradoxically enough, across the developing world, the majority of the poor and most of the hungry live in rural areas, where family farming and smallholder agriculture prevails. Farmers are prone to suffering from food insecurity as they are trapped in a poverty circle. They are usually vulnerable to weather disasters, such as floods or drought, and market price fluctuations. They cannot afford to invest in agricultural activity to improve inputs and infrastructure, and become even more vulnerable.

Availability of food and fibre will be a future problem
Along with accessibility, the availability of food will pose a problem in the near future as well. In 2050 the world will need to produce 70% more food to feed the growing world population.

Besides the demand for food, the demand for fibre including cotton, is rising. More and more people are buying more and more clothes. Despite the rise in synthetic fibres, cotton remains a key raw material in the textile industry, representing around 32% of all fibres used. About 33 million hectares around the world are planted with cotton, accounting for 2.5% of global arable land. With increased demand for food and the competition for land, expansion of the cotton-growing area is not an option.

MORE AND MORE PEOPLE ARE BUYING MORE AND MORE CLOTHES

Risk of unstable cotton supply
As cotton is an annual crop, farmers can easily switch to other crops when circumstances (weather or prices) do not seem favourable for cotton. Furthermore, especially for farmers who have not grown cotton before, the issue of ‘food security first’ significantly influences their decision on whether to plant cotton. This poses not only a problem on the buyers’ side, where cotton is no longer available in the preferred supply chain, but also on the farmers’ side since switching to food crops only does not automatically imply the improvement of food security.
The challenges at hand might seem to suggest that a choice will need to be made between cotton or food security. Or maybe even more so that the future of cotton is at risk. Fortunately this does not need to be the case. Although there are challenges, there also are a number of opportunities that connect food security to a bright future for cotton. Sustainable production is key. Cotton provides cash that contributes to food security

Cotton is a core sector in the economies of many developing countries and provides cash income to millions of producers. If farmed sustainably, cotton can give millions of cotton farmers the opportunity to earn a decent living. As cotton is a cash crop, it generates complementary and directly usable income that can be spent not only on food, but also on health care and school fees for children. Cotton therefore is not a threat to food security, but rather can contribute to it, providing the circumstances are right.

Cotton combines well with food crops

Smallholder cotton farmers are usually farmers who also grow cotton, alongside other crops. Producing various crops gives farmers the advantage of not being dependent on cotton alone and helps them be more resilient to cotton price volatility and the risk of crop failure that could lead to insufficient income to buy food. Many farmers typically derive only half of their income from cotton. Growing food crops alongside cotton not only is a risk mitigation measure that farmers can take, but it can also be a sustainable farming practice that will bring them benefits.

HOW IMPROVING SUSTAINABLE COTTON PRODUCTION CONTRIBUTES TO FOOD SECURITY ON FOUR LEVELS DEFINED BY FAO

Availability Sustainable cotton production involves intercropping and the rotation of cotton and food crops, which makes food crops available for the farmer’s household and the local market.

Accessibility Improving sustainable cotton production increases farmers’ income, which makes food products accessible to the farmer’s household.

Stability Crop rotation makes a lower price for cotton less harmful, since other crops can still provide food, or income. Having more crops gives more stability, especially for periods where usually no cotton income is generated.

Usability Intercropping with legumes is an essential element of sustainable cotton cultivation. These legumes have a high nutritional value.
Good agricultural practices in cotton

- Increased yield
- Higher gross income
- Improved environmental conditions
- Lower input costs
- Improved use of pesticides and fertilisers
- Higher net income

**Sustainable cotton production benefits farmers**

If Good Agricultural Practices (GAP, see p. 9) are applied, cotton production can indeed contribute to food security. Sustainable farming methods reduce input costs and increase yields, which results in a higher net income. With the increased profits from cotton growing, farmers can pay for food, health care and education. They can implement further agricultural innovations and buy good agricultural supplies, such as seeds, which in turn contributes to the further improvement of yields. The surplus food yield can be sold on the local market, which increases the local availability of food.

In addition Good Agricultural Practices also contribute to improving environmental conditions including soil fertility. And improved soil fertility in turn has a positive impact on cotton and food yields, because farmers who receive support and adopt GAP for their cotton production, typically also apply these farming practices to their food crops.

**Smallholders can feed and dress the world**

Smallholders already produce 75% of all food we consume today, but in the future they will be key to feeding the world. An increasing body of literature shows that to meet the rising demand for food and fibre, the world will need smallholders to continue farming. In a context of limited and depleted resources, they will need to do so in a sustainable manner, adopting farming practices that preserve their capacity to keep producing and make them more resilient. Smallholder farmers need support to make this shift. The private sector that sources from them can provide that support, and will benefit at the same time.

**Examples of Good Agricultural Practices**

**Crop rotation and intercropping**

Crop rotation means that different crops are grown on a single plot in succession. This improves the soil structure and reduces plant diseases and weeds. When intercropping, different types of crops alternate with each other, allowing better absorption of nutrients which boosts soil fertility.

Intercropping, which entails growing different crops on the same plot at the same time, ensures a better division of nutrients (different root sizes), increased soil fertility and less weeds because of early cover of the soil.

Legumes cannot fail in crop rotation and intercropping. The root systems of these plants contain nitrogen-fixing bacteria and nitrogen is essential for fertile soil. Legumes also have a high nutritional value because of their high concentration of protein and oil.

**Mulching**

Instead of burning the crop residue, it is left on the fields. In a monoculture the crop residue must be burned or be removed to control pests. In crop rotation this is not necessary. Hence the crop residue left on the fields provides cover, reducing weeds and rainwater run-off. It also protects the soil from heat, thus improving moisture levels and soil life activity. Once decomposed it increases organic matter and soil fertility in the soil. Apart from the crop residue, other organic matter is also used, for example leaves from leguminous trees.

**Low tillage**

Traditional tillage is done by plough or hoe, which both result in a complete turnover of the soil on the entire plot. This leads to destruction of the soil’s structure and a significant loss of organic matter in the soil and its ability to store water. It also leads to a loss of nutrients in a variety of ways, most importantly by wind erosion. It also creates a perfect seed bed, not only for the crop, but also for weeds on the whole plot. Low tillage, for example ripping, only loosen the soil where the crop is to be planted greatly limiting all the negative effects of ploughing, while still creating a seed bed for the crop. It is also much cheaper than ploughing (only one-fifth of the amount of diesel is needed) and can be carried out before the start of the rainy season (the fields are ploughed after the first actual rainfall, thus putting considerable pressure on the amount of tractors available in a short time).
Smallholder farmers and business collaboration is needed

Even though solutions to improving cotton cultivation exist, using these opportunities is easier said than done. Without the right knowledge, infrastructure and technical means, improvements are hardly within farmers’ reach. Achieving real, sustainable change needs support and commitment from outside the farm.

What businesses can do
Businesses that buy, process and deliver agricultural products – whether food and/or cotton – have an important role to play in making smallholder farmers more resilient and food secure. For example, businesses can contribute to food security by:

- establishing service centres and providing inputs;
- purchasing the crops produced;
- developing quality standards;
- maintaining long-term relationships with smallholder farmers they supply to;
- reducing post-harvest losses;
- providing proper storage for seeds (such as cotton and legumes) for the next season;
- providing proper storage for food for the lean months.

All these examples are as important for the production of cotton as the food crops that grow alongside cotton. Good cooperation between farmers and businesses can support a sustainable supply chain in the interest of both parties.

Benefits of cooperation for farmers

Farmers who are supported in implementing sustainable farming methods will have more food available for themselves and their families through crop diversification and more money for food, due to higher net income from cotton and from selling their surplus food crops. This will increase the availability of food in the local market.

Moreover, with better access to the market, farmers will also be in a better position to invest, anticipate, innovate, and prepare for the demand that they will have to meet.

Benefits of cooperation for businesses

WITHOUT THE RIGHT KNOWLEDGE, INFRASTRUCTURE AND TECHNICAL MEANS, IMPROVEMENTS ARE HARDLY WITHIN FARMERS’ REACH

A growing number of consumers want safe and quality food not only in Western markets, but also in the global South. Food safety and quality starts at the farm level. Companies targeting higher value markets will increasingly need to know where and how their agricultural products were grown. Collaboration with smallholder farmers supports this visibility in the supply chain of the business.

By supporting smallholder farmers in sustainable farming, companies can help increase the security of supply not only on account of higher yields and productivity, but also due to greater loyalty from the farmer towards the corporate partner.

Food-secure and profitable smallholder farmers are more likely to keep farming products of higher quality and to continue to provide the supplies that companies need to source, be it food or cotton.

Public-private partnerships build bridges between farmers and firms

Making the connection between the players in the supply chain is a considerable challenge. Miscommunication and not understanding each other’s needs may get in the way of the improvements that both parties are looking for. Public-private partnerships (PPPs) can play an important role in building those bridges.

An example of such a partnership is the South African Partnership for Sustainable Cotton and Food Security, a project in Mozambique and Zambia, financed by the Netherlands Ministry of Foreign Affairs and implemented with support from RVO, the Netherlands Enterprise Agency.
FOOD SECURITY FOR 26,000 COTTON FARMERS IN ZAMBIA AND MOZAMBIQUE

In Zambia and Mozambique, public and private organisations work together on improving food security for 26,000 smallholder farmers and their families. We support farmers in adopting good agricultural practices, by strengthening the capacity of producer organisations and by creating national and international market linkages.
Solidaridad also trains farmers in good harvesting practices to reduce the contamination of their cotton and increase the chances of obtaining a better price for their crop. In Zambia the farmers are linked to a producer cooperative, whereas in Mozambique the cotton is sold directly to the international trading company Olam partnering in the project. By providing a link between farmers and buyers, the project contributes to reinforcing and stabilising the link with the national and international markets.

Only two meals a day
Most people in rural Africa grow their food themselves and usually use natural resources for their livelihood. Unfortunately, this means the most vulnerable groups do not have adequate healthy and safe food all year round. As the previous year’s stocks have shrunk and there is no income to buy enough food, they eat only two meals a day during the growing season.

Good agricultural practices and improved market access
In the Manica province in Mozambique and in the Central Region in Zambia, where the project is implemented, most people have small plots of land where they can grow cotton for export and food crops for their own use and the local market. Civil society organisation Solidaridad trains farmers in sustainable farming techniques, such as crop rotation and intercropping, which keeps the soil more fertile and therefore is more lucrative.

THE PARTICIPATING FARMERS NOW GROW FOOD FOR THEIR OWN USE, AND EARN CASH ON THE SALE OF COTTON

Involvement of corporate partner
The corporate partners of the project provide the following services to the smallholder farmers involved:
1. Delivery of inputs to the farmer. Not only for cotton, but also for the other food and cash crops, at better prices and with credit, which would otherwise not be available to the smallholder farmer.
2. Extension of the credit facility to the farmer, directly or indirectly paid for by the farmer, thereby increasing production and the farmer’s income.
3. A secure market for the farmer for the other crops they grow, such as maize, soy and groundnut.

But it is not only farmers who have good reason to be involved in this project. There are benefits for corporate partners as well. First of all, there is the increased security of the supply of seed cotton. Not only account of higher yields and productivity, but also due to the farmer’s loyalty towards the corporate partner. A follow-up benefit is that the corporate partner has a greater understanding of the farmer’s limitations and the corporate partner’s possibilities in its relationship with the farmer. Both are long-term benefits that equally contribute to making the project interventions sustainable.

Improved food security
The project has improved the food security of vulnerable groups in rural Zambia and Mozambique significantly. Besides the food the participating farmers now grow for their own use, they earn on the sale of cotton. This enables them to buy additional food for a balanced, varied and healthy diet.

Get in touch!
Want to know more about food security through sustainable cotton production, or about the results of our project in Zambia and Mozambique? Please contact Isabelle Roger via isabelle.roger@solidaridadnetwork.org.
Food security in Zambia and Mozambique

Zambia
- Poverty and food insecurity are widespread in both rural and urban areas, and the country remains extremely vulnerable to recurring natural disasters, including floods, drought and animal disease. Food production levels vary widely from year to year.
- Food security is fragile because subsistence farmers depend on rainfall and traditional hoe cultivation, and even in years of national food surplus, many subsistence farmers or households often struggle.
- The Zambia Global Hunger Index was "alarming" in 2015.

Mozambique
- Mozambique ranked 103 out of 109 countries in 2015 on the Global Food Security Index.
- Mozambique is one of the poorest countries in the world, ranked 172nd out of 182 countries on the 2008/2009 UN Human Development Index. The country is prone to a wide range of natural hazards, which regularly cause major damage and disrupt economic growth.
- According to the Government of Mozambique, 54% of the population lives below the national poverty line; 63% of rural children live in absolute poverty; and 34% of households are food insecure and face perpetual hunger.
- One-third of the population is chronically food insecure, and half a million children aged 6-23 months are undernourished. Chronic malnutrition in children under five remains alarmingly high at 43% (WFP 2015).
- The Mozambique Global Hunger Index was "serious" in 2015.

ABOUT SOLIDARIDAD
Solidaridad envisions a world in which all we produce, and all we consume, can sustain us while respecting the planet, each other and the next generations.

Our mission is to bring together supply chain players and engage them with innovative solutions to improve production, ensuring the transition to a sustainable and inclusive economy that maximises the benefit for all.

www.solidaridadnetwork.org
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