Prevention of Seed Cotton Contamination in West Africa

Project CFC/ICAC/38

End of Project Report

Prepared by

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Summary

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Basic Project Information

Funding: The CFC/ICAC 38 project is funded by the European Union (through its All ACP Agricultural Commodities Program [AAACP] and the Common Fund for Commodities).

Budget: Total cost of the project	US$ 7,000,000
- EU funding	US$ 3,500,000
- CFC funding	US$ 2,000,000
- National counterpart	US$ 1,500,000
- World Bank co-funding	US$ 600,000 (EU-funding of a parallel World Bank managed project)

Supervising body: ICAC

Project Execution Agency: IFDC

Duration: Three years (2010 –2012)

Target Groups: Smallholder cotton farmers, ginners and transporters in the three cotton-producing countries of Burkina Faso, Côte d'Ivoire and Mali.

Expected Impact: The project sensitized farmers, transporters and ginners who collectively would produce higher quality cotton for export that would sell at higher prices in international markets. It was hoped that this would result in higher farm-gate prices and help repair the image of African cotton, which is perceived by some to be of poor quality.

Intervention Areas: The cotton areas of Bobo Dioulasso in Burkina Faso, Korogho in Côte d'Ivoire and Sikasso in Mali.

Project Partners

The CFC/ICAC 38 project was managed by IFDC and implemented by a regional coordination unit based in Bamako, Mali with the support of the National Consultative Committee established in each country. Project partners included the following cotton companies: SOFITEX in Burkina Faso, Ivoire Coton in Côte d'Ivoire and the Compagnie Malienne de Développement des Textiles (CMDT) Filiale Sud SA in Mali.

CFC/ICAC 38 worked in collaboration with research institutes, farmer/producer organizations, agricultural councils, national Ministries of Agriculture and national, regional and international organizations.

The project established working relations with other initiatives in the cotton sector like the two EU/AAACP funded activities of the World Bank (focusing on institutionalization aspects) and of the regional economic organization UEMOA (cotton strategy). The World Bank project supports among other involved stakeholder organizations, the African Cotton Association (ACA) and the Association of African Cotton Producers (AProCA) to develop a Quality Charter. The international Trade Center has organized visits of Asian spinners to the project areas.

1. Project overview

1.1 Framing the problem

Cotton plays a significant role in the fight against poverty and the development of national economies in many West African countries, generating foreign exchange and providing employment and income to millions of farm families. Historically, West African cotton has been highly valued for its intrinsic quality; and the fact it is harvested by hand gave it a comparative advantage in the international market.

However, some of its value is lost during the harvesting and post-harvesting processes because of contamination by foreign matter such as plant debris, insect wastes and packing material residues such as nylon and polypropylene fibers. The different ITMF 'contamination reports' since 2001 indicate that the level of contamination in West African cotton is among the middle groups in the world: Burkina Faso, Côte d'Ivoire and Mali rank most of the time between the 10th and 20th positions on the list of "most contaminated" sources of cotton but occasionally also between the 10th and 20th on the list of "least contaminated" sources of cotton.

Contamination is a serious challenge that is hurting the cotton sector's reputation for quality and overall profitability. For instance, a small piece of polypropylene can lead to millions of dollars in damage. Once mixed with seed cotton during harvesting or the ginning process, the polypropylene (PP) fibers become invisible, only to show up in the finished product because they will not absorb any dye. This leads to the rejection of final fabric or garments, which is extremely expensive in terms of claims and lost business. Stickiness caused by insect sugars on the fiber is another problem that makes ginning difficult and can lead to substantial price discounts.

Lower levels of contamination mean lower costs for spinners, and should lead to better prices and higher incomes for cotton farmers. During project preparation it was anticipated that prices paid for contaminated cotton can be between 5 and 20 percent less than those paid for average quality cotton.

Various efforts have been initiated to reduce the contamination of West African cotton.[1] However, these have not led to a substantial reduction in contamination as the approaches were not institutionalized and applied at all stages of the cotton value chain.

The Project for the Prevention of Seed Cotton Contamination in West Africa (CFC/ICAC 38) is based on the findings of a Fast Track Project (CFC/ICAC/32FT) in Southern Mali that

[1] For instance in Mali, CMDT launched a program to improved management of household waste in the cotton producing villages. Cotton companies have required the coloring of PP made fertilizer bags, a main source of PP contamination, to increase traceability in of the PP fiber during handling.

measured not only alarming levels of contamination[2] in seed cotton and fiber[3] but also a potential for substantial reduction of contamination (up to 75 percent) through an appropriate information and training program. CFC/ICAC38 aimed to implement an overall quality approach to reducing contamination along the entire value chain, from production to ginning to delivery. The project supported the quality efforts of its three intervention countries – Burkina Faso, Côte d'Ivoire and Mali – and worked in synergy with other ongoing cotton projects in the sub-region.

A preparatory mission of the project stressed the critical importance of getting access to premium prices for 'clean' cotton and the development of a sharing mechanism of these premiums between farmers and ginneries. The project was designed and formulated based on the fielding of IFDC expert team under contract of CFC.

Important parallel initiatives in the cotton sector were the two EU/AAACP-funded activities of the World Bank (focusing on institutionalization aspects) and of the regional economic organization UEMOA (cotton strategy). The World Bank project supported involved stakeholder organizations, the African Cotton Association (ACA) and the Association of African Cotton Producers (AProCA), to develop a Quality Charter.

1.2 Objectives

The general objective of the CFC/ICAC 38 project was to increase the income of smallholder cotton farmers by improving their crop cultivation and harvesting practices and reducing fiber contamination.

To attain this objective, the focus was on:

1) Sensitizing and training 27,000 producers, extension staff, transporters and workers in the ginneries.
2) Developing a program to promote the adoption of less contaminating harvest and post-harvest techniques with appropriate preventive measures.
3) Developing an efficient marketing strategy to facilitate market penetration and ensure that price premiums were achieved for cleaner cotton on the international market.

1.3 Approach

Cotton production areas within countries were selected in consultation with cotton companies, cooperatives and producer associations. Selection of intervention areas was based on defined criteria including a high concentration of cotton farmers, road accessibility and proximity to a

[2] Contamination include plant debris contaminants (trash: leaves and branches of the cotton and other plants), inorganic contaminants: sand, dust, metals) and packing material contaminants (plastics, polypropylene, nylon, feathers, paper, jute, yarn, fabrics).
[3] In seed cotton an average of 21.5 kg/mt of total contamination: 11.8 kg plant debris and 9.7 kg inorganic matter, of which 9.5 grams per mt of packing materials. In fiber, an average of 25.7 kg/mt of total contamination: 24.7 kg plant debris and 1 kg inorganic matter of which 4 grams per mt of packing materials.

ginning plant. Selection of producers was based on criteria like sound management of producer groups or cooperatives, existence of storage capacity, open mindset and interest.

In order to develop a replicable intervention method, the project approach was very much based on standing extension practices in the cotton companies ("cascade training"), and included awareness raising about the financial impact of cotton contamination and training.

With respect to training, content and materials were developed by experts from the region, followed by training of trainers (extension staff of the cotton companies) and subsequently training of direct actors (producers, transporters, workers in the cotton ginneries). The training was not only oriented toward cotton contamination as such, but favored a more general approach emphasizing overall good farming practices and respect of standing extension messages as well.

Farmer-to-farmer visits, known for their effectiveness in experience-sharing, were organized to stimulate exchanges of information.

The introduction of specific techniques to reduce cotton contamination was based on known interventions tested within the region and elsewhere (harvesting kits made of cotton, field harvest racks). The only innovation was a more systematic trial and error process, with local producers of harvesting kits, supported by quality measurement by CERFITEX and evaluated by users. As the financial impact was not known at the beginning, the introduction of harvesting kits made from cotton was facilitated by 100 percent subsidies on purchases and distribution. The cotton harvesting kits were produced by textile companies from the region.

Marketing of 'clean' cotton was left to the initiative of cotton companies themselves. They have established contacts with their traders, are accustomed to price negotiations and are not always open to sharing sensitive information with outsiders. The project limited its contribution to information about the ongoing activities and measured levels of contamination at national and international fora. In particular, the annual ACA meetings provided opportunities to inform main players in African cotton about project objectives and progress. In addition, the project informed potential buyers from Asia by organizing (in collaboration with the International Trade Center, or ITC) a field visit to the project areas.

1.4 Partners and beneficiaries

The main partners during project implementation were the three cotton companies covering the intervention area: the southern branch of the *Compagnie Malienne de Développement de Textiles* (CMDT/*Fililale Sud*) in southeastern Mali, *Société de Fibres Textiles* (Sofitex) in southwestern Burkina Faso, and *Ivoire Coton* in northeastern Ivory Coast.[4] A fourth important partner was the *Centre de Recherches pour les Fibers Textiles* (CERFTITEX) in Ségou, Mali, especially for the measurement of contamination levels. The head of the cotton research

[4] The area covered in the three countries is also known as the Kenedougou, inhabited by Senoufo communities. As such, the project was also considered as an excellent example of cross border collaboration, promoted by WAEMU and ECOWAS.

program of the *Institut d'Economie Rurale* in Mali advised about sampling methods and measurement of contamination.

Main partners for implementation of project activities and local dissemination of information were the grassroots branches (producer groups, associations and cooperatives) of national cotton producer organizations in Mali, Burkina Faso and Ivory Coast (UN-SCPC, UNPCB, AFFICOT-CI respectively). The apex organizations participated fully in the dissemination at the national level. At the international level, the AProCA and ACA were instrumental in carrying the message forward.

The project collaborated with the ACA/AProCA team (supported by the World Bank) developing a common Quality Charter and accompanying Procedures Manual.

Primary beneficiaries were the targeted smallholder cotton farmers, as well as the participating cotton companies that were strengthened through staff training, and profited from improvements in cotton quality. CERFITEX used the subcontracts for contamination measurement to restore dynamism in its organization.

Textile companies in the region produced the harvesting kits (thus adding value to locally produced cotton and creating jobs).

2. Key activities and achievements

2.1 Awareness raising and training of actors

Obtaining cotton with consistent quality parameters requires a set of good practices for each step of the value chain. Sensitization and training programs are essential to enable the stakeholders involved at different stages to satisfy the demands and quality requirements of markets and consumers.

The project increased awareness about cotton contamination, cotton quality, the relationship between cotton quality and price and about the possibilities for improvements. The awareness raising was not limited to the targeted 30,000 producers only, but included (to a lesser degree) producers in non-targeted areas and extension workers not directly involved. Farmer-to-farmer visits were part of these efforts. Gradually, the commitment to tackle the quality issue increased.

In each of the project countries, extension agents received training in: (1) cotton cultivation techniques; (2) pest and disease control; and (3) harvest, storage and handling of seed cotton. After an annual update of the training modules developed in the first year, extension agents who were trained then trained farmers, who in turn shared their knowledge on their farms and with other families. Each year, already trained actors went through a 'recycling' exercise, while (in separate groups) new actors received their first training.

A training program was also designed for ginners because their work is critical to fiber quality and significantly impacts the prices producers receive. Ginning is more than just separating seed from the fiber; it involves cleaning, conditioning and controlling moisture content.

The different training programs included:

- For producers: importance of clean cotton, cleanliness of the village environment, field preparation and maintenance, pest and disease management, harvest practices, use of cotton harvesting kits, temporary storage in the field, construction of field racks, transport to the village, temporary storage at village level, management of village cotton markets.
- For transporters: importance of clean cotton, information about producers' efforts to reduce contamination, preparation and maintenance of trucks used for cotton transport, appropriate use of tarpaulins.
- For staff and workers in the ginneries: importance of clean cotton, cleaning and maintenance of the gins.
- For extension workers: all of the above in addition to training competencies.

Throughout the logistical supply chain, significant losses of quality and value can occur. The project sought to reduce quality losses during handling, storage and transport of seed cotton from the farm to the gin and of cotton lint from the gin to the export sites. In each project area, drivers from the cotton companies and private transport systems were trained in good

transportation practices to ensure that vehicles used were equipped with protective covers and clean, leak-resistant containers.

About 30,000 producers, 170 extension agents, 1,250 workers in the gins and 250 transporters were trained on the quality and contamination issues (see table below).

Table 1: Number of Unique People Trained

Country	Extension agents	Producers	Transporters	Ginnery workers	Data Collectors
Year 1 : 2010/2011					
Burkina Faso	37	3,000	40	150	4
Cote d'Ivoire	26	3,000	40	61	0
Mali	25	3,000	40	150	4
Total 1	**88**	**9,000**	**120**	**361**	**8**
Year 2 : 2011/2012					
Burkina Faso	8	8,500	40	669	7
Cote d'Ivoire	7	1,000	40	89	31
Mali	47	8,500	40	150	7
Total 2	**62**	**18,000**	**120**	**908**	**45**
Year 3 : 2012/13*					
Burkina Faso	-	-	0	-	-
Cote d'Ivoire	18	3,000	0	-	-
Mali	-	-	0	-	-
Total 3	**18**	**3000**	**0**	**0**	**0**
GRAND TOTAL	**168**	**30,000**	**240**	**1,269**	**53**

* The training program in 2012/13 was mainly oriented toward improving skills of formerly trained staff and producers. Only in Cote d'Ivoire was there an expansion to new areas.

Exchange visits within and between countries were organized for about 200 producers and 100 extension workers of the three countries to discuss their experiences with the fight against cotton contamination.

Thanks to the project interventions, producers and other actors involved in the cotton chain are now more aware of the contamination problems and the possibilities to reduce the contamination. At field and village levels, cotton is better treated and protected against contamination. Only suitable trucks are accepted for transport. With support of the EU-sponsored World Bank program, African cotton companies and producers have committed themselves to work on the quality issue through the signing of the *Quality Charter* by their representing bodies ACA and AProCA.

2.2 Adoption of preventive measures

2.2.1 Promoting contamination reduction harvesting kits

Informing smallholder cotton farmers about contamination is one thing; getting them to implement the recommended practices is another, as lack of money and equipment are always constraints. The project supported the production and (temporarily) free distribution of harvesting kits made of cotton material to prevent cotton contamination during harvest, storage and transportation. Each kit contains 10 picking bags, three buying tarps, and at least one protective storage tarpaulin. Once the technology has shown sufficient impact and farmers receive better prices, commercial production and distribution of kits will be encouraged.

Table 2: Distribution of harvesting kits

Country	Harvesting sacks	Large protection tarpaulins	Small tarps
Year 1: 2010/2011			
Burkina Faso	21,000	3,000	6,000
Cote d'Ivoire	21,000	3,000	6,000
Mali	21,000	3,000	6,000
Total year 1	**63,000**	**9,000**	**18,000**
Year2: 2011/2012			
Burkina Faso	94,000	16,000	28,500
Cote d'Ivoire	19,000	2,200	6,000
Mali	94,000	12,630	28,500
Total year 2	**207,000**	**30,830**	**63,000**
Year 3 : 2012/13			
Burkina Faso	57,500	0	0
Cote d'Ivoire	50,000	500	9,000
Mali	57,500	0	0
Total year 3	**165,000**	**500**	**9,000**
Total Burkina Faso	172,500	19,000	34,500
Total Côte d'Ivoire	90,000	5,700	21,000
Total Mali	172,500	15,630	34,500
GRAND TOTAL	**435,000**	**40,330**	**90,000**

The kits were produced by textile companies in West Africa.[5] After initial problems related to a lack of durability, project staff members visited Senegal to collect information about technical characteristics of harvest kits used by Sodefitex. Based on these characteristics the project launched an international tender for 165,000 harvest sacks that was won by COMATEX in Segou (Mali). The kits that were distributed before the harvest of the 2012/13 season responded to the needs. Costs per kit depend on its composition. A typical kit of 10 sacks, three small tarps and one large tarpaulin that will last for at least three years costs about US$70 (or about 140 to 175 kg of seed cotton at farm-gate price).[6] Large-scale production of the kits could further diminish the cost per unit. While some individual farmers may be interested in buying kits, the costs are too high for the average smallholder. Farmer organizations and cotton companies are in the process of discussing a 50/50 cost share for such kits once their introduction proves to be worthwhile. It is clear that additional income by farmers and cotton companies through premiums for quality must (more than) compensate for such an investment at the smallholder farmer level before large-scale introduction will take off.

2.2.2 Promotion of field harvesting racks

One of the contamination prevention measures already in the extension package of the cotton companies before the start of the project was the construction and use of harvesting racks in or near the cotton fields. Such racks are used for temporary storage of the cotton before transport to the farm buildings. The racks eliminate direct contact with the soil and facilitate drying.

The adoption of the harvest racks has remained modest. In total only about 6,500 racks were constructed.

Sofitex in Burkina Faso recruited a young socio-economist to better analyze the underlying issues relating to the racks. While the racks' utility was confirmed by the users and extension staff, a number of constraints were identified by producers: lack of knowledge (about the purpose and benefits of the racks), access to wooden construction materials in areas with restrictions on wood-cutting, costs, termite attacks that limit durability, need for annual reconstruction as cotton fields move with crop rotation, and even stealing of wooden poles of unattended racks by woodcutters. Tests of alternative materials and construction of more durable/portable structures were recommended.

2.2.3 Identification of strategies to reduce Polypropylene in the villages

The main source of the polypropylene in harvested cotton is the use of PP fertilizer bags (as cotton collection bags) during harvest. While the introduction of harvesting kits made from cotton can replace the use of PP bags during cotton handling, PP materials continue to enter into the production areas, not only with the incoming fertilizers but also with animal feed and

[5] Involved firms were *COMATEX* in Ségou (Mali) and *Tapisserie Moderne* in Bobo Dioulasso (Burkina Faso)
[6] In 2012, unit costs were as follows: harvesting sack $3.50, small tarps (1.6mx 1.6 m) $6.00 and large tarpaulins (2.5m x 3 m) $15.00.

more and more as packing materials of foodstuffs and remain a source of contamination. The project recruited three interns to collect information and opinions about possibilities to reduce the influx of PP by substitution of the PP fertilizer bags (with the cotton collection bags) and to increase their re-use by recycling (an organized intake of used PP bags at the moment of new distribution, eventually against payment).

Results show that fertilizer producers are well aware of the problem and made some first steps (colored bags to make detection of PP easer, use of polyethylene bags for some fertilizers, use of PE- laminated PP bags) but stressed the cost aspect of the use of other materials. In addition, the costs of a complete recycling of PP would be too high. Recycled PP, because of its pollution, may only be used for low-quality products. More than 95 percent of the producers interviewed are well aware of the negative impact on cotton quality, but are reluctant to return the PP bags once in their hands, even against payment. The bags and their fibers find multiple uses in the village economies, especially for handling of cereals (harvest, transport, storage) and production of ropes and mats.

For the moment, the only immediate solution seems to be a continuation of awareness- raising and training on how to eliminate PP from the cotton chain. Tests of other materials for the distribution of fertilizer, animal feed and food could concentrate on selected areas and be accompanied by close monitoring of cotton contamination.

2.3 Cotton production in the project areas

Primarily because of the increasing number of involved farmers during the three years of the project, cotton production in the intervention zone increased from 25,000 to 127,000 metric tons (mt) of seed cotton (and from 10,000 to about 53,000 mt of lint).

Table 3 : Cotton production in the project areas

Season	Country	Number of Producers	Production seed cotton (mt)	Production seed cotton per producer (mt)	Production Lint (mt)	Ginning %
2010/11	Burkina Faso	3,000	4,071	1.36	1,710	0.42
	Côte d'Ivoire	3,000	11,140	3.71	4,330	0.39
	Mali	3,000	9,742	3.24	4,181	0.43
Subtotal		**9,000**	**24,953**	**2.77**	**10,221**	**0.41**
2011/12	Burkina Faso	11,500	54,850	4.77	23,419	0.43
	Côte d'Ivoire	4,000	17,768	4.44	7,689	0.43
	Mali	11,500	45,652	3.97	18,173	0.40
Subtotal		**27,000**	**118,270**	**4.38**	**49,281**	**0.42**
2012/13	Burkina Faso	11,500	41,600	3.64	17,400	0.42
	Côte d'Ivoire	7,000	34,000	4.86	14,280	0.42
	Mali	11,500	51,970	4.52	21,821	0.42
Subtotal		**30,000**	**127,570**	**4.25**	**53,501**	**0.42**
TOTAL			**270,793**		**113,003**	

2.4 Improved fiber quality

The participating cotton companies reported, based on their own internal 'industrial grading,' an increase in the rate of 'top grade' cotton in the project areas as a result of the intensified training and monitoring efforts. Information from the involved cotton companies shows an increase in top grade from 4 percent to 9 percent. As top grade cotton is paid at higher prices, this means a direct profit for the cotton companies.

Based on the figures presented in Tables 3 and 4 we may estimate that Mali produced about 2,800 additional mt of top grade cotton in the project areas during the project period. If this cotton has been sold for an additional $60/mt, this would mean that CMDT had additional revenue of about $168,000 from the project areas ($18,000 in 2010/11, $98,000 in 2011/12 and $52,000 in 2012/13).

Extended to an annual production of 200,000 mt of lint this would mean that CMDT could generate additional annual revenue of not less than about $12 million from an increased rate of top grade cotton.

Table 4 : Percentage of top grade cotton within and outside the project areas

Country	% top grade					
	Season 2012/2013		Season 2011/2012		Season 2010/2011	
	Zone		Zone		Zone	
	Within project area	Outside project area	Within project area	Outside project area	Within project area	Outside project area
Burkina Faso	90	80	91	83	77	73
Côte d'Ivoire	n.a.	n.a.	61	55	71	66
Mali	78	76	92	83	88	81

Sources: CMDT, Sofitex and Ivoire Coton

2.5 Measurement of contamination levels

No generally accepted method exists for judging contamination levels. To prove that contamination levels decreased through project interventions two different methods were explored; one quantitative and one qualitative. Both methods have their strong points, but unfortunately also their weak points.

The quantitative method is a systematic sampling of seed cotton that arrives at the gins and of fiber after the ginning process. Comparison between cotton from the project areas to cotton from non- project areas may indicate improvements induced by the project. However the question about the best and most cost-effective sampling and analysis methods is not really answered. In collaboration with the cotton research and the involved cotton companies, the project opted for sampling seed cotton from incoming truckloads (every tenth truck coming

from the project areas and every tenth truck coming from non-project areas) and sampling the fiber after ginning of the same truckloads[7]. Analysis of the samples has been done by CERFITEX[8] under controlled laboratory conditions. The main question about this method is about the number and volume of samples that have to be taken to arrive at conclusions with acceptable confidence intervals.[9]

Another, more qualitative method to have an impression of contamination levels is a systematic return of information from traders and spinners about the lint they purchased. Here we enter into a whole other set of constraints: traceability, willingness to ask and to respond, knowledge of what exactly happens to the cotton after delivery to traders, role of intermediates, lack of transparency, etc. The project motivated different actors to be in contact with each other and to make the trade and information stream more transparent. A general observation of the cotton companies is that they hardly receive any negative feedback about quality or polypropylene contamination. And when they receive a complaint, most of the time it comes up that there were mistakes in tracing the origin.[10]

2.6 Reduction of contamination

Based on analysis by CERFITEX laboratories in Segou (Mali), provisional results of the first two production and harvesting seasons (about 60,000 mt of lint) did not show substantial reduction of contamination in lint. The average of overall contamination level in fiber was about 5 kg/mt in the project areas while average fiber contamination with PP still remained at 2 grams per mt in the project areas. Results show also considerable variations between country averages and between villages.

For the Sikasso area in Mali the project has the most complete set of data about contamination levels (See Table 5).

While a reduction in PP contamination levels is difficult to measure and to prove, the reduction in overall contamination (of about 4 kg/mt in Mali) is clear and gives an immediate profit for the cotton companies of about $2/mt. These figures, when applied to the total production in the project areas, show that CMDT may have avoided unnecessary expenditures of about $200,000 for the purchase of dust, sand, stones, etc.[11] Additional reduction of transport costs for these contaminants are not yet included, nor are cost reductions during the ginning process.

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[7] The sampling and analysis protocol was developed in collaboration with the *Institut d'Economie Rurale* (IER) cotton research program. The sampling itself was done by specially trained ginnery workers. Analysis of samples was executed by specially trained teams of students of CERFITEX supervised by CERFITEX researchers who also were in charge of reporting.

[8] CERFITEX: Centre de Recherche et de Formation pour l'Industrie Textile.

[9] Still another quantitative method would be the systematic opening and analysis of cotton bales once they come out of the gin, but also for such a laborious method the question about needed frequency remains. Cotton companies are not in favor of such a drastic and costly system.

[10] One spinning company in Mali that works generally with the poorest quality (not exportable) cotton from CMDT, considers PP contamination as a non-issue. They receive feedback from textile industries in Morocco about their yarn quality, but complaints about PP are extremely rare.

[11] Unfortunately, this would mean that farmers have 'lost' that same amount as a result of their efforts….

Table 5 : Level of contamination in Sikasso area of Mali

Description	Pre-project 2006/2007		Year 1: 2010/11		Year 2: 2011/12		Year 3: 2012/13	
	CMDT Mali	CMDT Sikasso study area	Project Area	Outside Project area	Project Area	Outside project Area	Project Area	Outside project Area
Average level of total contaminants in seed cotton (kg/mt)	22	12	7	9	6	10	n.a.	n.a.
Average level of trash in seed cotton (kg/mt)	12	7	2	4	3	5	n.a.	n.a.
Average level of inorganic matter in seed cotton (kg/mt)	10	5	4	6	4	5	n.a.	n.a.
Average level of packing material contaminants in seed cotton (g/mt)	10	5	44	44	1	1	n.a.	n.a.
Average level of polypropylene in seed cotton (g/mt)	n.a	n.a	2	0	1	1	n.a.	n.a.
Average level of total contaminants in lint (kg/mt)	26	22	6	6	4	7	n.a.	n.a.
Average level of trash in fiber (kg/mt)	25	21	5	5	3	5	n.a.	n.a.
Average level of inorganic matter in fiber (kg/mt)	1	1	0	1	1	2	n.a.	n.a.
Average level of packing material contaminants in lint (g/mt)	4	0	0	54	1	6	n.a.	n.a.
Average level of polypropylene in lint (g/mt)	n.a.	n.a.	4	11	0	1	n.a.	n.a.

Sources : Yattara et al, 2008; CERFITEX, 2011 ; CERFITEX, 2012 ; CERFITEX, 2013

2.7 Ginning of cotton from the project areas

In total 270,793 mt of 'clean' seed cotton were produced by producers participating in the project. The project promoted ginners' adherence to the overall quality approach to ensure efficient handling and processing of cotton from the moment it was unloaded into the factory until delivery and included aspects of stocking of seed cotton and cotton bales, necessary preparation before ginning, technical issues of ginning including optimal humidity, temperature etc., humidification of the fiber before pressing and packaging of the fiber.

2.8 Marketing of 'clean' cotton

The marketing of cleaner cotton is first of all the responsibility of the cotton companies, while their professional organization (ACA) has an important role to play to improve the overall image of African cotton. Improving the competitiveness of West African cotton starts with the understanding of market and buyer requirements to address identified bottlenecks along the entire value chain. The project promoted the idea of efficient marketing of cleaner cotton to create interest by potential buyers in purchasing cleaner cotton at a premium price.

Due to relative small quantities of 'clean' or 'less contaminated' lint (only 10,000 mt) in the very first year of the project, cotton companies were not yet able to negotiate premium prices.

It was anticipated that the expected 50,000 mt produced in the second year could improve opportunities for premiums but most of the cotton produced in the project areas was needed to fulfill earlier commitments. *Ivoire Coton* had premium arrangements in the past, but no recent contracts have been reported**.** CMDT in Mali and Sofitex in Burkina Faso have tried to negotiate premium prices for some small quantities. Only CMDT managed to negotiate a premium of about $0.05/kg of fiber for 200 mt and ended up with additional revenue of about $10,000 in total.

The quantities of 'clean' cotton have become substantial enough for specific negotiations in the third project season (CMDT 21,800 mt, Sofitex 17,400 mt, IC 14,300 mt) but contacts with traders show more and more that negotiations are not about premiums for 'clean' cotton but about avoiding reductions for standard cotton.

An important issue in the discussion is the doubt about real levels of PP contamination. While a PP contamination of 1g/mt seems to be acceptable, this is not an official norm. Not a single actor is eager to indicate "*Zero PP Contamination*," *"Clean cotton"* or *"Non-contaminated Cotton"* on the cotton bales because of the risks that there is still some PP mixed with the cotton and introduces the risk of heavy penalties in case of the discovery of a single contaminant.[12]

[12] Still another issue is the potential degradation of the image of the other cotton. Sofitex in Burkina Faso was reluctant to give a '*non-contaminated cotton*' indication on the bales from the project areas, fearing that their other cotton would be considered contaminated…

Measurement methods are not standardized, so certification of contamination levels of the end product (cotton lint) is impossible.

This brings the discussion back to the image of the cotton produced in (West) Africa. That image still needs improvement. Some say *"The image of our cotton is more contaminated that the cotton itself."* In December 2011, continental organizations ACA and AProCA developed and signed a '*Quality Charter*,' a commitment to fight together against the contamination, to increase quality and to improve the image of African cotton on the international markets. Training materials produced within the framework of the project were integrated in the documents that accompany the Quality Charter.

Intermediate results of the project have been presented at different international forums to contribute to the rebuilding of African cotton's image.

2.9 Share of additional costs and revenues

The main objective of the project efforts was an increase in farm-level revenue due to better selling prices of the 'clean' cotton. The current situation did not generate that objective.

As stated previously, the cotton companies involved were not yet able to negotiate better prices for considerable amounts of 'clean' lint from the project areas. And it remains a question whether this will be possible at all, as traders stress the point that 'clean' cotton should be the overall minimum standard and not an exception.

But even without specific premiums some results show that additional revenue and cost reductions are within reach of producers and cotton companies; most promising points are a decrease in the rate of 'second choice' seed cotton, a reduction in overall contamination and improved fiber quality (an increase in 'top grade').

The fight against cotton contamination and for quality improvements also brings additional costs for training, staff time and equipment (harvesting kits).

> Under the assumptions that the average reduction in contamination was 5kg/mt, that farm-gate price was 200 CFA/kg, that average increase in top grade cotton was 5 percent and additional selling price for this top grade was $60/mt, we can estimate that, during the project period, the cotton produced in the project areas (270,800 mt of seed cotton and 113,000 mt of lint) brought an additional profit of about $881,000 to the involved cotton companies (an economy of about $542,000 on the purchase of less-contaminated cotton and an additional revenue of about $339,000 for better graded cotton). In the same period their cost share in the project reached about $1.3 million.

For the moment, taking into consideration that extension staff has to be paid anyway, the total balance of revenue increases and cost reductions reaches more or less the same level as the additional costs for the intensified sensitization and training. However, costs for harvesting kits are not yet covered.

But even when there would be additional revenue, the discussion about how to share these additional amounts has not been completed (notwithstanding the agreement in the Quality Charter to opt for a 50/50 cost and revenue share) and may continue until general introduction of the program to all producers. One of the issues still on the table is how to make sure that there will not be an influx of cotton from the non-project areas to the project areas once the cotton company starts to pay premium prices to involved farmers.

2.10 Taking care of environmental aspects

Conventional cotton production includes the use of fertilizers and crop protection products. The project did not develop any specific new activity in view of environmental constraints, but contributed to the strengthening of ongoing extension activities on soil fertility management and smart use of crop protection products.

All involved producers benefitted from training on:

- Integrated soil fertility management
- Appropriate application of crop protection measures
- Appropriate storage and handling of crop protection products

In addition, the project stimulated reflection on the sources and best management of contaminating materials like PP in the farms and villages.

2.11 Monitoring and evaluation

Day to day monitoring of project activities was taken care of by the extension workers of the cotton companies as part of their normal job. The monitoring and evaluation (M&E) staff of the cotton companies and the project collected the information on a regular basis to monitor overall progress.

The table in Annex 4 shows an overview of the project performance on the set of indicators. The ‘mid-term’ evaluation mission of early 2013 considered the overall performance as satisfactory.

The project made a base line study on producers and cotton production among a random sample of early participants in the first year. The same variables were measured each following year among the same farmers and among randomly selected ‘new‘participants in the project intervention area. A full analysis could not be completed due to the project suspension.

In addition, the M&E team undertook specific studies on questions of interest for the project implementation. Examples are above mentioned studies on the constraints in the introduction of field racks and about potentials for reduction of the influx of PP into the villages.

2.12 Communications

In collaboration with the project, the involved cotton companies developed a number of communications efforts about the project objectives and activities – banners, radio programs, audio cassettes, brochures and a film. Billboards were posted near participating villages and gins to attract attention of travelers and visitors.

The project team produced numerous PowerPoint presentations for special meetings and events. Brochures about the project were produced and distributed at national and international fora. The plan to show the film about the project on national and regional TV stations had to be abandoned after suspension of the project, but fortunately the film production team received a commitment to show the film on the People TV network with about 20 TV stations in Africa.

Thanks to a collaboration with the USAID West African Cotton Improvement Program (USAID WACIP), the film was also shown and discussed during the annual meeting of ACA in Lomé (March 2013).

The project team produced an article about the project for the December 2012 edition of the ICAC Recorder.

3. Conclusions

The project responded to national and regional policies to improve the image of West African cotton and by developing an operational approach for their implementation by 'giving hands and feet' to programs to improve cotton quality and control contamination. The followed approach and developed training content was documented and can be made available to any country, cotton company or farmer organization interested in developing its own program on cotton quality improvement.

The project achieved its quantitative objectives in terms of training and equipment of producers. After three years, 30,000 producers (compared with a projection of 27,000 so 111 percent of target) are involved. Staff of involved cotton companies (extension workers and ginnery workers) as well as transporters working in the project areas, were trained.

The involved producers in the project areas achieved a cumulative seed cotton production of 270,793 mt of seed cotton compared with a projection of 100,000 mt at the end of the project (270 percent of target). Total cotton lint production was 113,003 mt.

As a result of awareness raising, training and distribution of harvesting kits, project efforts led to measurable results in cotton quality:

- First of all, the intensified training and monitoring led to a general decrease of about 4-5 kg/mt in overall contamination in seed cotton in the project areas.
- Secondly, involved cotton companies reported a 5-7 percent increase in their top grade cotton, leading to a better negotiation position and potentially higher revenues.
- Thirdly, there is a trend in the reduction of the use of polypropylene but the results of the third year are needed in order to have a clear confirmation of this trend.

The simultaneous World Bank-supported activities of ACA and AProCA gave more visibility and momentum to the fight against contamination at the regional level (through the development and signing of the Quality Charter in December 2011). The project made a positive contribution to the development of this charter and particularly to the accompanying Procedures Manual. The signing of the charter was an important commitment, but a real information and extension campaign still should be started.

The efforts of project staff and especially participating cotton companies did not lead to premium prices for 'clean' cotton. Contacts with traders indicated that such premiums will not easily be paid; the discussion is not about additional premiums but more about avoiding price reductions because of (supposed) contamination and the poor image of Africa cotton.

The support of the International Trade Center contributed to the establishment of direct contacts with potential clients from Asia. The direct contacts and expressed interests have not led to direct contracts because neither the sellers nor the buyers are prepared to embrace the typical role of the traders who cover transportation, insurance, port fees for unloading and

risks. Cotton companies want to sell free on board (FOB); Asian buyers would buy on cost, insurance and freight (CIF) or cost and freight (C&F) conditions.

Textile companies show great interest in responding to an expected increased demand from the cotton companies.

Notwithstanding the efforts of many involved, the project did not prove that, in the short run, farmers will enjoy direct additional income based on additional efforts to protect quality. For producers, the most direct way to raise incomes remains yield improvements. However the efforts to reduce contamination contribute to improvement of the image and reputation of West Africa cotton and will contribute to avoiding contamination-related price reductions. In the long run this will contribute to the maintenance of income levels for producers.

Intensified training and investments in harvesting kits made from cotton increase the revenue of cotton companies, but a further streamlining of efforts will be needed to make this a profitable undertaking in the short run.

Production of high-quality harvesting kits made from cotton in the region is technical and economically feasible.

4. Lessons learned

The assumption during project preparation that 'clean cotton' would generate premiums for limited quantities of cotton was not really well formulated. It might be true for guaranteed clean cotton, but when no guarantee can be provided the premiums will not materialize. In general terms it might be correct that clean cotton leads to better prices but in fact a more correct formulation of the assumption would have been that contaminated cotton leads to lower prices.

The name Seed Cotton Contamination Prevention Project meant that, at the beginning of the project, primary attention was put on the production side. It was considered necessary to produce an interesting quantity of 'clean' cotton before the cotton companies could undertake efforts to negotiate premiums. It was only later that the main actors found out that marketing and image building might be more important than the production.

The project showed again that cotton companies need time to learn and create awareness and capacities on a certain issue.[13] Only during the last year could 'clean' cotton be introduced in price negotiations. A timeframe of three years for such real-scale 'learning by doing' projects is too short to measure the real impact.

A mistake was that the project did not target the top-level management of the cotton companies (particularly the marketing sections), which limited their active involvement. In the future, a more active steering of the activities by the 'marketers' would be preferred.

Some of the regional textile companies are highly interested in the production of harvesting kits made from cotton and are willing to make additional investments to produce better quality for a lower price.

The absence of a standardized method for contamination measurement complicated the potential use of the laboratory findings for lint certification. This point has to be considered when working on the definition of criteria for an ACA cotton label.

ACA and its members have put the contamination issue high on the agenda for the coming years, but need additional capacity to implement a full-scale action program.

[13] Sometimes people compare the West African cotton companies with a bulldozer – difficult to start up, and difficult to get it in the right direction, but going forward with great strength once on course, and difficult to stop.

5. Challenges for the future

The project contributed to awareness-raising and training regarding the importance of good agricultural practices and quality control. Results show that a further dissemination of such a program is important for immediate cost reductions and potential additional revenue for the cotton companies by reduction of the most visible contaminations and increased intrinsic fiber quality.

While weight reductions in contaminants at the farm level and improved quality lead to cost reduction and additional revenue for the cotton companies, it will be important that farmers are compensated for their efforts. When they reduce the level of contamination without any compensation they also reduce their income. Before deciding on a real cost–share, cotton companies will need better insight into costs and profits. One of the proposals is to introduce contamination levels in the annual calculations and discussions about guaranteed cotton prices.

Direct contacts of cotton companies with spinners, and more transparency in the role of traders and in cost calculations are needed to get a better understanding of the real potential for a policy of further reducing contamination in view of premium prices.

As it will be difficult to guarantee zero PP contamination, it is extremely important to further increase the marketing capacities of the cotton companies and further improve the image of (West) African cotton.

The issue of traceability has to be tackled as part of regaining confidence among buyers. General introduction of a barcode system to mark the bales must be a first step.

Development or upgrading and description of a standardized measuring method for contamination should receive a high priority. If not, the selection of criteria for an ACA cotton label cannot go forward as the envisaged criteria include contamination levels (in addition to grade, staple length, weight, micronaire, packaging, waste and impurities).

A large-scale introduction of a fight against PP contamination in cotton needs a production capacity in the region for harvesting kits made from cotton, and eventually other packaging materials made from cotton that can replace PP and other plastics.

6. Recommendations

The ACA/AProCA Quality *Charter* asks for action. The accompanying Procedures Manual, eventually reinforced by hands-on experiences from this current project, gives an excellent base for such actions. Partners and involved actors recommend a quick extension of the project activities to all cotton companies in the three countries, while companies in other countries have shown interest for similar actions. This momentum should be used.

Cotton companies need to develop more sophisticated marketing techniques, while ACA and AProCA must play an important role to improve the overall image of African cotton.

As certification of lint remains cumbersome as long as contamination measuring methods are not standardized, complicated and costly, it might be more interesting to opt for certification of the whole quality management process in the cotton companies. Senegal's Sodefitex has already opted for this approach, to general satisfaction. The WEAMU Quality program may provide necessary support to the interested cotton companies.

While individual cotton companies may improve their internal quality control mechanisms, national governments and regional bodies like ECOWAS and WAEMU should simultaneously review existing legislation and check on possibilities to strengthen the quality issues.

To create and maintain a regional capacity for production of good quality harvesting kits made from cotton, it will be important that the cotton companies in West Africa work together and identify a limited number of textile companies interested in negotiating substantial long-term contracts. Such contracts will allow them to establish and improve the needed capacity to serve this specific market.

ITC could and AAACP should be asked to provide important technical and financial support to the above-mentioned efforts.

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8. Annexes

Annex 1: Acronyms and Abbreviations

ACA	*Association Cotonnière Africaine*
AProCA	*Association des Producteurs de Coton Africains*
CCI	*Centre du Commerce International*
CCN	*Comité Consultatif National*
CERFITEX	*Centre de Recherche et de Formation pour l'Industrie Textile*
CFC	*Fonds Communs des Produits de Base*
CMDT	*Compagnie Malienne de Développement des Textiles*
COMATEX	*Compagnie Malienne de Textiles*
CSIRO	Commonwealth Scientific and Industrial Research Organization
ICAC	*Conseil Consultatif International du Coton*
C&F	Cost & Freight
CIF	Cost Insurance & Freight
FOB	Free on Board
IER	*Institut d'Economie Rurale*
IFDC	International Fertilizer Development Center
ITC	International Trade Center
ITMF	International Textile Manufacturers Federation
M&E	Monitoring and Evaluation
PO	Producer Organization
PPCC	*Projet de Prévention de la Contamination du Coton Graine*
PE	Polyethylene
PP	Polypropylene
PTF	*Partenaires Techniques et Financiers*
SA	*Société Anonyme*
SC	*Société Cotonnière*
SCPC	*Société Coopérative des Producteurs de Coton*
SOFITEX	*Société des Fibres Textiles*
UE	*Union Européenne*
UEMOA	*Union Economique et Monétaire Ouest-Africaine*

Annex 2: Number of intervention zones, sites, producer groups or cooperatives, producers and extension workers in 2012/13

Country	Cotton Company	Zones	Sites	Producer groups	Producers per site	Extension workers
Burkina Faso	SOFITEX	Banfora	Banfora	216	2,600	6
			Léraba	310	4,000	13
			Sidéradougou	395	2,900	14
		Kénédougou Sud	Kénédougou Sud	126	2,000	11
			Sub-total	**1,047**	**11,500**	**45**
Côte d'Ivoire	Ivoire Coton	M'Bengué	M' Bengué	95	2,760	19
			Niéllé	81	1,890	13
			Koni	126	2,350	19
			Sub-total	**302**	**7,000**	**51**
Mali	CMDT Filiale Sud	Sikasso	Kléla	45	1,557	9
			Sikasso	141	2,753	15
			Kadiolo	114	3,354	20
			Niéna	127	2,396	16
			Kignan	38	1,440	12
			Sub-total	**465**	**11,500**	**72**
Total				**1,814**	**30,000**	**168**

Annex 3: Percentage of top-grade cotton within and outside project area

Year 1 : 2010/11				
	Production in project area		**% top grade**	
Country	Seed cotton (mt)	Lint (mt)	Outside project area	Project area
Burkina Faso	4,071	1,710	73	77
Cote d'Ivoire	11,140	4,330	66	71
Mali	9,742	4,181	81	88
Total	**24,953**	**10,221**		
Year 2 : 2011/12				
	Production in project area		**% top grade**	
Country	Seed cotton (mt)	Lint (mt)	Outside project area	Project area
Burkina Faso	54,850	23,419	83	91
Cote d'Ivoire	17,768	7,689	55	61
Mali	45,652	18,173	83	92
Total	**118,270**	**49,281**		
Year 3 : 2012/13				
	Production in project area		**% top grade**	
Country	Seed cotton (mt)	Lint (mt)	Outside project area	Project area
Burkina Faso	41,600	17,400		
Cote d'Ivoire	34,000	14,280		
Mali	51,970	21,820	76	80
Total	**125,570**	**53,500**		

Annex 4: Performance monitoring

Objectives to be reached	Objectives				Achievements				
	Year 1	Year 2	Year 3	Year 1-3	Year 1	Year 2	Year 3	Year 1-3	%
Number of producers to mentor	9,000	18,000	27,000	27,000	9,000	27,000	30,000	30,000	111
Quantity of NC seed cotton to produce (tons)	30,000	65,000		95,000	24,953	118,270		143,223	151
Quantity of NC cotton lint to produce (tons)	13,000	27,000		40,000	10,221	49,281		59,502	149
Number producer Groups who received kits	338	1,324	1,814	1,814	539	1,701	1,814	1,814	100
Number of harvest bags	63,000	207,000	165,000	435,000	63,000	207,000	165,000	435,000	100
Number purchase tarps	18,000	63,000	9,000	90,000	18,000	63,000	9,000	90,000	100
Number of storage tarps	9,000	34,200	3,000	46,200	9,000	30,830	500	40,330	87
Number of producers equipped with kits	9,000	18,000	27,000	27,000	9,000	27,000	30,000	30,000	111
Number of producers having built rack storages	2,700	-	-	2,700	938	5,623		6,561	
Number of producer Groups having renovated silos	338		-	338	185			185	
Number of involved producers groups	338	1,324	1,814	1,814	539	1,701	1,814	1,814	100
Number cotton company agents involved in awareness creation	73	152	173	173	88	148	168	168	97
Number of trained trainers	73	55	25	153	88	60	20	168	110
Number de recycled trainers		97	148	148		88	148	148	100
Number of trained cooperatives	338	1,324	1,814	1,814	539	1,701	1,814	1,814	100
Number trained producers	9,000	18,000	27,000	27,000	9,000	18,000	3,000	30,000	111
Number of recycled producers		9,000	18,000	18,000		9,000	27,000	27,000	150
Number of national inter farmer field visits		4	9	13		6		6	46
Number regional inter farmer field visits		2	-	2		1		1	50
Number ginning industry employees having received trainings	450	350	1,269	1,269	361	1,269		1,269	100
Number of trained transporters	120	80	40	240	120	80	40	240	100
Number of recycled transporters		120	200	200		120	200	200	100
Number of training modules	4	4	4	4	4	4	4	4	100
Number of contracts signed with textile industries	1			1		-			0
Number of textile industries having done business visits		2		2		2		2	100
Implementation of a market survey	1			1					0

Annex 5: List of trainings

1. Training farmers on insecticide treatments ;
2. Training farmers on harvesting, pre storage and storage ;
3. Training of farmers on the construction of pre storage racks ;
4. Training of private carriers and those of the cotton companies on the best practices in the conveyance ;
5. Training of ginning factories staff of the project area on the arrangements and measures to adopt for cotton ginning of the project area;
6. Inter-farmer visits within cotton companies and between cotton companies involved in the project.

Annex 6: List of publications

1. A book for Cotton farmers "***Mon livre secret de la qualité*** » in Burkina Faso
2. A booklet « ***Koori juman tieni finw*** » in Mali
3. Audio cassettes prepared by local radios in Burkina Faso, Côte d'Ivoire and Mali

Annex 7: List of reports

1. Quarterly reports from the Cotton Companies that are involved in the project
2. Annual reports from the Cotton Companies that are involved in the project
3. Trip reports on visit to Cotton Companies that are involved in the project
4. Reports on the various visits of CERFITEX to analyse and find out the contaminants of the seed cotton and the fiber
5. Minutes of the National Advisory Committee meetings

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