Markets for Cotton By-Products: Global Trends and Implications for SSA Cotton Producers

1

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THE WORLD BANK

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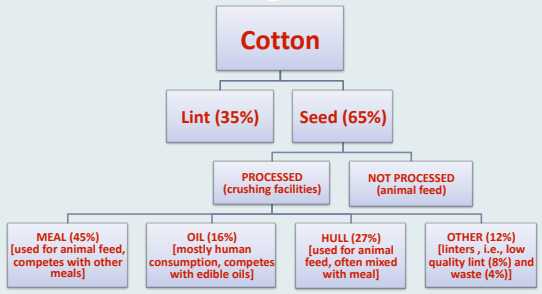
PART I

2

GLOBAL MARKET ISSUES

The structure of cotton by-products

3



Source: National Cottonseed Products Association

Average oil content of key oilseeds

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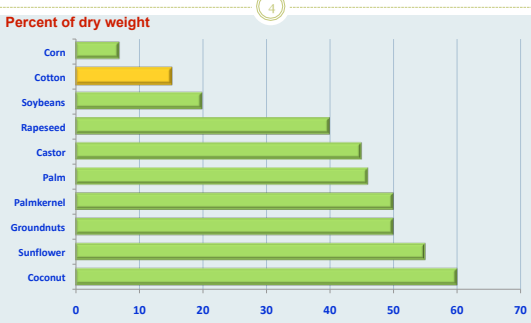

Source: Author's calculations

Average Oil Yield of Key Oilseeds

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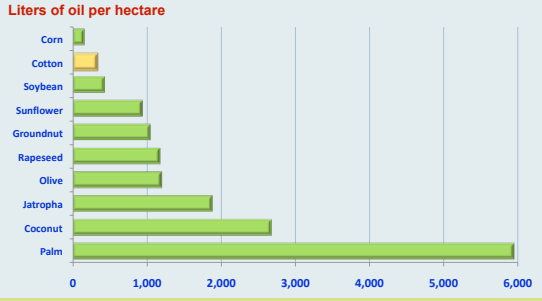

Source: Author's

Key characteristics of cotton by-products market

6

- Cotton oil contributes only 3.3% to the global consumption of the 17 key fats and oils.
- About 3% of cotton oil is internationally traded. For all practical purposes, there is no world market of cotton oil. Similarly, most cotton meal is domestically consumed.
- Most cotton oil is used for human consumption (some goes for soap making and other industrial uses).
- Cotton oil competes with the other (often imported) edible oils, mostly palm oil. Cotton meal competes with animal feeds.
- There are some health considerations (see next slide).

Health considerations

7

- BIOTECH COTTON: There have been concerns in SSA regarding difficulties of accessing EU markets for cotton oil coming from biotech cotton varieties. If such oil reaches EU markets, then it will have to be subjected to the same rules as other commodities such as maize and soybeans. This concern, however, is of theoretical nature given that cotton oil is not traded internationally.
- GOSSYPOL: Seed used directly for animal feed (i.e., dairy cows) may pose health problem if given in excess. In the US, where half of seeds are used for animal feed, the quantities are being monitored very carefully for the presence of gossypol (a toxic phenolic pigment).
- REFINING: Poorly refined cotton oil may be a threat to human health if oil is consumed in large quantities.

Global balance of key edible oils, 2005/07 average

8

	Production (000 tons)	Exports (000 tons)	Traded share (%)	Share of global production (%)
Palm	38,657	30,232	72.2	25.3
Soybean	36,371	10,727	29.5	23.8
Rapeseed	18,676	2,085	11.2	12.2
Sunflower	10,764	4,151	38.6	7.0
Cotton	5,003	154	3.1	3.3
Palmkernel	4,516	2,523	55.9	3.0
Groundnut	4,360	190	4.4	2.9
Coconut	3,141	2,030	64.7	2.1
Corn	2,311	795	34.4	1.5
TOTAL	152,821	57,928	37.9	100.0

Source: *Oil World*, Hamburg

Prices of major edible oils (2005/07 average)

9

Source: *Oil World*, Hamburg

US: Prices of Fats & Oils (2006/09 average)

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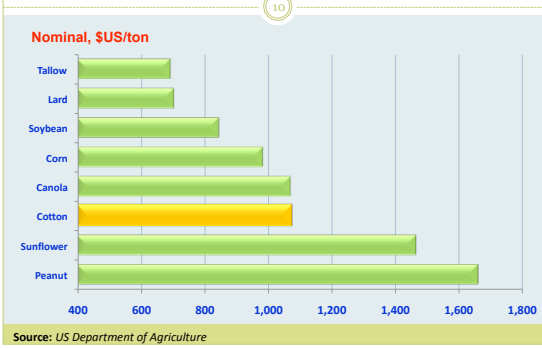

Source: *US Department of Agriculture*

Lint to oil price ratio (2000 = 100)

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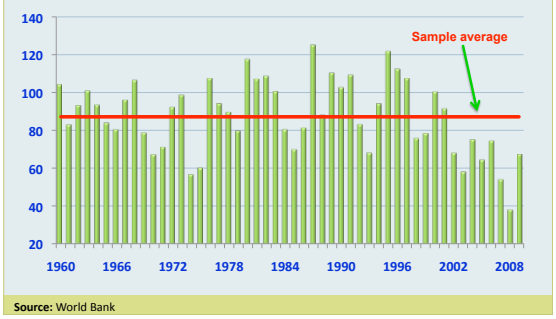

Source: World Bank

Cotton Seed's Value Contribution, US

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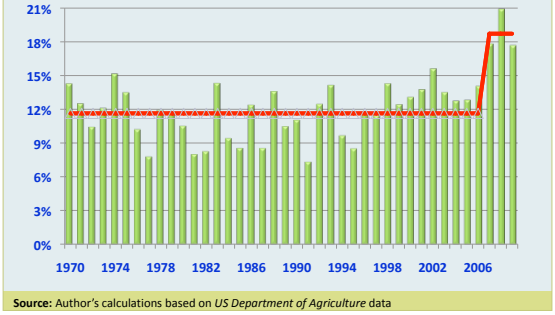

Source: Author's calculations based on *US Department of Agriculture* data

Seed's Contribution to the Total Value of Cotton

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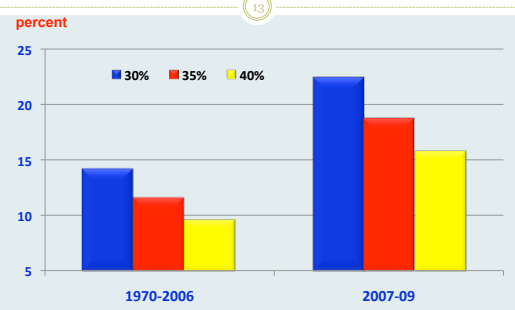
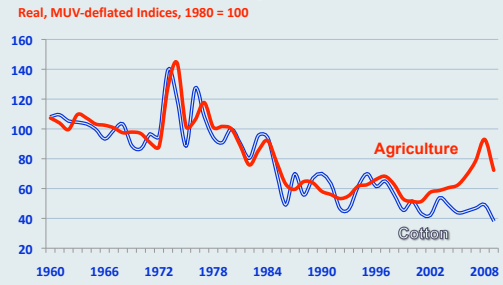


Note: The percentages (30%, 35%, 40%) refer to ginning ratios. **Source**: Author's calculations.

Agricultural Price Index and Cotton Prices

14



Source: World Bank

Why cotton prices did not boom?

15

- BIOTECHNOLOGY: The rapid and massive expansion of cotton production that took place in China and India, as a direct consequence of these countries' adoption of biotech cotton. During the 5-year period 2002-07, China increased its cotton output by 64 percent (from 4.9 to 8.1 million tons) while India increased its output by 132 percent (from 2.3 to 5.4 million tons). Today, China and India account for more than half of global cotton production, mostly from biotech varieties.
- SUBSTITUTABILITY: The boom in food prices was partly aided by growth in demand for biofuel production. The direct impact of biofuel demand is felt only by maize, sugarcane, and some edible oils, but the indirect impact is felt by almost all food crops, because of the strong substitutability both on the input side (mainly shifting of land from one crop to another) and on the output side (especially in edible oils, some of which are highly substitutable). In cotton, however, the indirect impact is very limited: cotton is not a substitute for any other commodity on the output side, and its input substitutability is limited.
- SUBSIDIES: Cotton receives more subsidies than other commodities, encouraging more production than would have taken place without the support.

PART II

16

CASE STUDIES

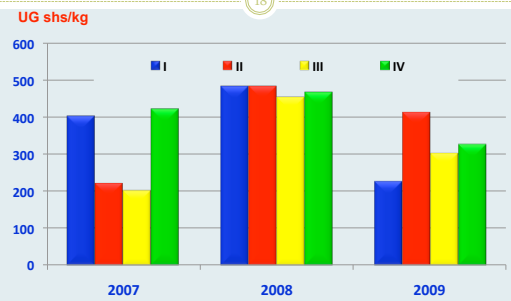
Case Study I: UGANDA

17

- Uganda has 50 ginneries (most large and underutilized) located in the 5 cotton growing regions (i.e., everywhere in the country).
- It has 5 privately-owned cotton oil processing facilities, 4 independent entities, one associated with a ginnery.
- All facilities are located near Kampala, where most of oil and meal are consumed, so seeds must be transported to Kampala for processing.
- There are well-functioning markets for both seeds and oil. The price of cotton oil depends on prices of imported edible oils as well.
- Problems identified during interviews are typical for any sector: poor infrastructure, electricity disruptions, high interest rates, and overcapacity.
- Labor (either skilled or unskilled) was not cited as a problem.
- No prospects for biodiesel production from cotton oil.

Uganda: Seed Prices Paid by Processors

18



Note: I, II, III, and IV refer to the 4 companies interviewed. **Source**: Interviews.

Uganda: Cotton Oil Prices Received by Processors

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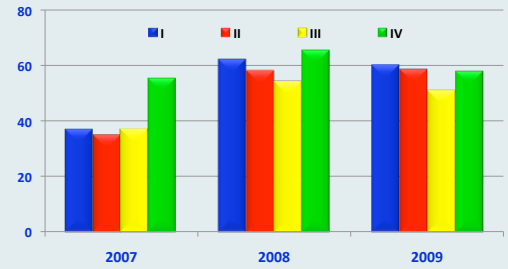

Note: I, II, III, and IV refer to the 4 companies interviewed. **Source**: Interviews.

Uganda: Cotton Oil Price Variability for 2008

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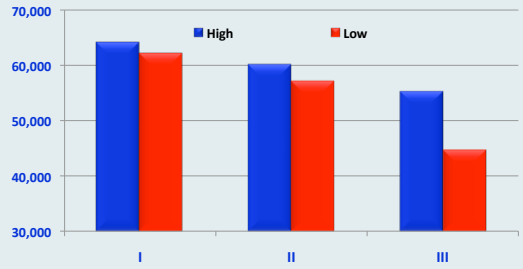


Note: The numbers refer to 3 of the 4 companies interviewed. **Source**: Interviews.

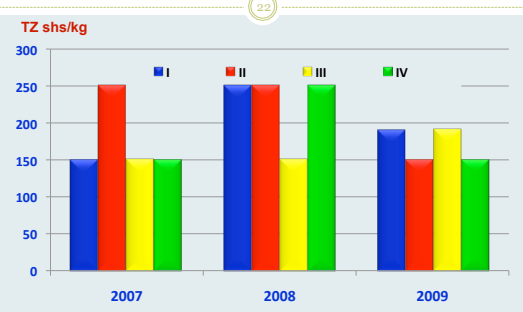
Case Study II: TANZANIA

21

- Tanzania has 73 ginneries, almost all located in Mwanza, Tanzania's key cotton producing area.
- It has 20 privately-owned cotton oil processing facilities, all but one associated with ginneries.
- All facilities are located in Mwanza, so cotton oil is transported to various consuming regions, including Dar.
- As in Uganda, there are well-functioning markets for both seeds and oil. The price of cotton oil depends on prices of imported edible oils.
- Similar to Uganda, problems identified during interviews are typical for any sector: poor infrastructure, electricity disruptions, high interest rates, and overcapacity
- Labor (either skilled or unskilled) was not cited as a problem.
- Biodiesel production only through some limited quantities exported to Germany (experimental purposes).

Tanzania: Seed Prices Paid by Cotton Seed Processors

22



Note: I, II, III, and IV refer to 4 of the companies interviewed. **Source**: Interviews.

Tanzania: Oil Prices Received by Cotton Oil Processors

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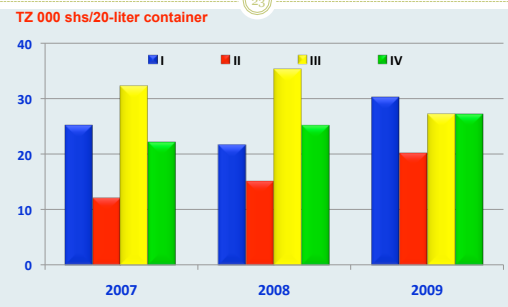

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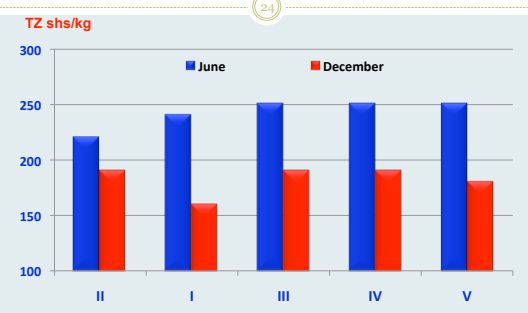
Tanzania: 2008 Seasonal Price Variation of Seed

24



Note: The numbers refer to companies that reported complete data. **Source**: Interviews.

Tanzania: 2008 Seasonal Price Variation of Oil

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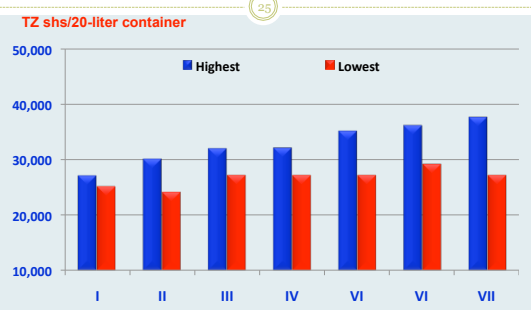


Note: The numbers refer to companies that reported complete data. **Source**: Interviews.

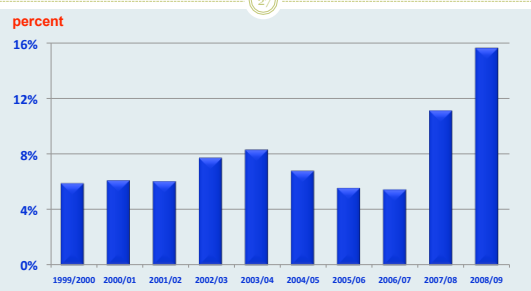
Case Study III: BENIN

26

- Benin's cotton by-product sectors is highly concentrated: 3 seed processing facilities (SHB, FLUDOR, and IBCG, accounting for 48%, 36%, and 16% of refining capacity), all privately owned. The latter has not produce any oil since 2006.
- As in BF (large), the arrangement is in the form of forward contracts between SONAPRA and the 3 companies.
- Because some seed would be exported in periods of large cotton crop, the government of Benin prohibited exports of seeds beginning in 2001/02. There have been measures to limit the imports of other edible oils.
- All cotton meal is exported (in BF some is used domestically, some is exported).

Benin: Seed's Contribution to the Value of Cotton

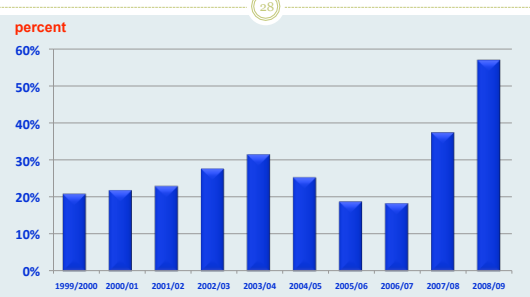
27



Note: Ratio of cotton seed price over grower's price + ginning costs. **Source**: Author's calculations.

Benin: Seed Value to Ginning Costs Ratio

28



Note: Ratio of cotton seed price over the ginning costs. **Source**: Author's calculations.

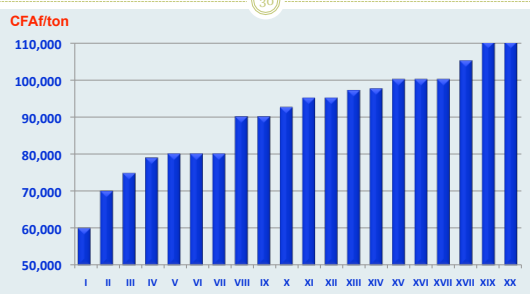
Case Study IV: BURKINA FASO

29

- Burkina Faso (and WCA) has relatively short history of seed processing. It began in the mid-1980s (some exports of seeds to Europe were taking place prior that).
- It has two types of oil processing companies: (I) two dominant ones (CN-CITEC and SOFIB, a third one, JOSSIRA, is not functioning), both located in the vicinity of the capital, the country's key consuming region; (II) numerous small facilities scattered throughout the country with high concentration Bobo Dioulasso, the largest cotton producing area.
- SOFITEX (the main cotton company) makes forward arrangements with CN-CITEC and JOSSIRA. Because the small entities bid up the price, there have been defaults (the small companies are more efficient).
- Problems cited by the two companies were similar with ESA. In addition, however, there have been strong calls for protection from imported edible oils through high tariffs (there were similar calls in ESA but not as strong). Health considerations from the small companies have been cited.

Burkina Faso: Meal Prices for 20 Companies, 2009

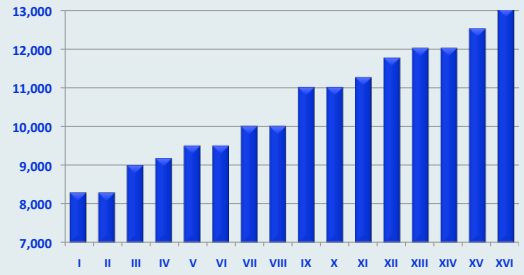
30



Note: The numbers represent companies for which data were obtained. **Source**: Interviews.

Burkina Faso: Oil Prices for 16 Companies, 2009

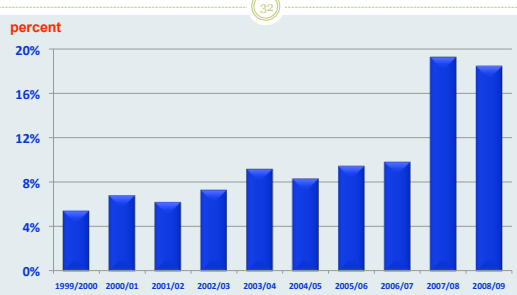
31



Note: The numbers represent companies for which data were obtained. **Source**: Interviews.

Burkina Faso: Seed's Contribution to Cotton's Value

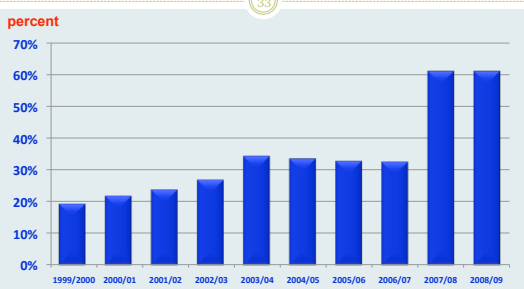
32



Note: Ratio of cotton seed price over grower's price + ginning costs. **Source**: Author's calculations.

Burkina Faso: Seed Value to Ginning Costs

33



Note: Ratio of the price of cotton seed over the ginning costs. **Source**: Author's calculations.

Cotton oil and biofuels in SSA

34

- One of the reasons behind the interest in cotton oil is the demand for biodiesel. It had been argued often that a "new market" could be created.
- Among the many interviews conducted in four countries, biodiesel was considered in Tanzania and Burkina Faso only on an experimental basis. The view was that there are no prospects for a cotton oil-based biodiesel market.
- This conclusions concurs with findings by a recent biofuel SSA study which concluded that even sugar cane-based ethanol (the most profitable among all biofuel feedstocks) may not be profitable in SSA (Mitchell 2009).

Summary and tentative conclusions

35

- GLOBAL MARKETS: Prices of cotton oil and the edible oil index move together. In effect, there is an edible oil market not a cotton oil market. Therefore, analysis should examine the overall edible oil market.
- PRICES: Prices of edible oils increased considerably during the recent commodity boom; cotton prices did not. Hence, the relative contribution of oil and meal to the total value of cotton increased.
- MARLET STRUCTURE: The cotton by-product sectors largely reflect the structures of the cotton sectors. ESA is competitive in the sense that there are both seed and cotton oil markets. WCA is highly concentrated.
- BIOFUELS: Findings from the in country surveys and the literature indicate that the prospects of using cotton oil (and other feedstock) for biofuel production are not economically viable.
- HEALTH: There may be health issues with poorly refined cotton oil and seeds given directly to animals.

Policy recommendations

36

- TRADE POLICIES (I): Because cotton oil is competing with other edible oils, there have been numerous calls for imposing import restrictions to competing oils. Policy makes should resist such calls (in addition to cotton producers consumers matter!)
- TRADE POLICIES (II): Often imported oils are treated differently (crude oils are import duty-free while refined oils are subjected to high tariffs), thus creating corruption (all oil is "imported in crude form").
- REFORMS: Whenever reform efforts are undertaken, they should also consider both cotton and cotton by-products.
- RESEARCH: Research efforts should concentrate on developing cotton varieties with high oil content. Currently, the world average is 15%. Anecdotal evidence indicates that researchers in Brazil may be able to increase such content to 25% without jeopardizing other characteristics.

Acknowledgements

37

This presentation summarizes key findings of the paper entitled "Markets for Cotton By-Products: Global Trends and Implications for African Cotton Producers" to be published soon by the World Bank. The results of the county studies are based on findings from field visits by Kathryn Vasilaky and Laoura Maratou (Uganda, May 2009), Kathryn Vasilaky (Tanzania, June 2009), and Noureni Zanfongnon (Benin, June 2009 and Burkina Faso, July 2009).

The paper is a follow up study to an earlier World Bank multi-country cotton study entitled *Organization and Performance of Cotton Sectors in Africa: Learning from Experience*, edited by David Tschirley, Colin Poulton, and Patrick Labaste. The report can be downloaded from http://www.coton-acp.org/docs/study/Organization_and_Performance_of_Cotton_Sectors_in_SSA_9780821377703.pdf Most of the country studies have been posted at http://www.worldbank.org/afr/wps/

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