FOOD SECURITY RESEARCH PROJECT

COTTON IN ZAMBIA:

AN ASSESSMENT OF ITS ORGANIZATION, PERFORMANCE, CURRENT POLICY INITIATIVES, AND CHALLENGES FOR THE FUTURE

By

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TABLE OF CONTENTS

1. INTRODUCTION AND BACKGROUND 1

1.1. Introduction and Objectives 1
1.2 Historical Background 2
1.3. Developments Since Liberalization 2

2. OVERVIEW OF SYSTEM ORGANIZATION 6

2.1. Actors 6
2.1.1. Small-holders 6
2.1.2. Ginners 6
2.1.3. Input Dealers 7
2.1.4. Textile Mills 8
2.1.5. Government and NGOs 8
2.2. Key Coordination Mechanisms 10
2.2.1. Ginners and Smallholders 10
2.2.2. For Input Distribution and Credit Recovery 10
2.2.3. For Price Setting 14
2.2.4. For Conflict Resolution 15
2.2.5. Between Ginners and Textile Mills 15
2.2.6. Horizontal Coordination among Ginners 16
2.3. Key Problems in the Sector 16
2.3.1. Farm-level Productivity 16
2.3.2. Costs of Production 16
2.3.3. Ginning Overcapacity 16
2.3.4. World Prices 17
2.3.5. Loan Default 17
2.3.6. Lint Pricing 18
2.3.7. Import of Subsidized Textiles, Garments, and Used Clothing 18
2.3.8. Government Sectoral Policies 18

3. DESCRIPTION OF THE COTTON SUPPLY CHAIN 19

3.1. Seeds 19
3.1.1. Varietal Development & Agricultural Research 19
3.1.2. Seed Multiplication and/or Importation 19
3.2. Testing, Distribution, and Use of Other Inputs 20
3.3. The Farm Level 20
3.3.1. Technical Advice 20
3.3.2. Cotton Production 22
3.4. Post-Harvest 22
3.4.1. Seed Cotton Marketing 22
3.4.2. Processing of Seed Cotton and Marketing of Lint 24
3.4.3. Marketing of Seed and Other Sub-products 25

4. COTTON IN SMALLHOLDER LIVELIHOOD STRATEGIES 26

4.1. Geographical Distribution of Growers 26
4.2. Characteristics of Cotton- and Non-Cotton Growing Households 26
4.3. Profitability of Cotton 28

5. RECENT POLICY INITIATIVES 31

5.1. The Proposed Cotton Act 31
5.1.1. Basic Provisions of the Act 31
5.1.2. Assessment 32
5.1.3. Alternative Approaches 34
5.2 Cotton Outgrower Fund 36
5.2.1. Objectives and Operation of the Scheme 37
5.2.2. Key Issues 38
5.3. District Council Levies 39
5.3.1. Operation of the Levies 39
5.3.2. Key Issues 40

6. STRATEGIC ISSUES FOR THE FUTURE 43

6.1. Concentration at Ginning Level 43
6.2. Productivity and Quality 43
6.3. Loan Default 44
6.4. Government Policy on Food Cropping and Fertilizer Use 45

REFERENCES 46

LIST OF TABLES

TABLE PAGE

1. Seed Cotton Production Estimates in Zambia from Various Sources, 1993-2001 . . . 3
2. Location of Gins in Zambia 7
3. Spinning Mills and Annual Lint Demand in Zambia, 2002 9
4. Average Number of Farmer Per Distributor, by Years as a Distributor in the Same Area 13
5. Prices Offered to Producers for Various Grades of Seed Cotton by Selected Ginners in Zambia, Harvest Year 2002 15
6. Cotton Production By Province 1993 To 1998 Post Harvest Survey Estimates 23
7. Selected Indicators for Cotton Growing and Non-cotton Growing Households in Zambia, 1999/00 Growing Season 27
8. Income Levels and Shares for Cotton and Non-cotton Growing Households in Zambia, 1999/00 Growing Season 28
9. Partial Budget for One Hectare of Smallholder Cotton and Maize in Zambia, 2001-2003 29
10. Seed Cotton Prices, Returns to Land, and Returns to Labor in Four Eastern and Southern African Countries, 1998-2002 30
11. Number of Dunavant Farmers per District, District Council Levies, and Potential Revenue to District Councils 41

Appendix Table 1: Relationships for Vertical, Horizontal, and System-wide Coordination in Zambia's Cotton Sector 48

LIST OF FIGURES

Figure 1. Seed Cotton Production in Zambia Prior to Liberalization (1987-1995) 2

1. INTRODUCTION AND BACKGROUND

1.1. Introduction and Objectives

Cotton is one unquestioned success of Zambia's turn towards a market economy. After liberalization in late 1994, production rose from 20,000 mt to over 100,000 mt in the 1998 harvest year. After collapsing to less than 50,000 mt in 2000, it has risen steadily and may have approached 150,000 mt in 2003. Over 1998-2000, exports of cotton and textiles were first among all agricultural exports in value (Export Board of Zambia 2001). The two closest competitors to cotton during this time – fresh flowers and sugar – are primarily produced on large operations, while cotton is almost entirely a smallholder crop. Its potential role in poverty alleviation and food security is thus very large. The success of this sector has been achieved despite historically low cotton prices in the world market over the past four years,[1] serious problems of credit default during the late 1990s, and the departure in 1999 of the sector's biggest company, Lonrho.

This paper grows out of earlier work on cotton by the Food Security Research Project (Govereh et al. 2000; Tschirley and Zulu 2003). It is directed towards policy makers and private stakeholders in Zambia's cotton sector, and has four main purposes:

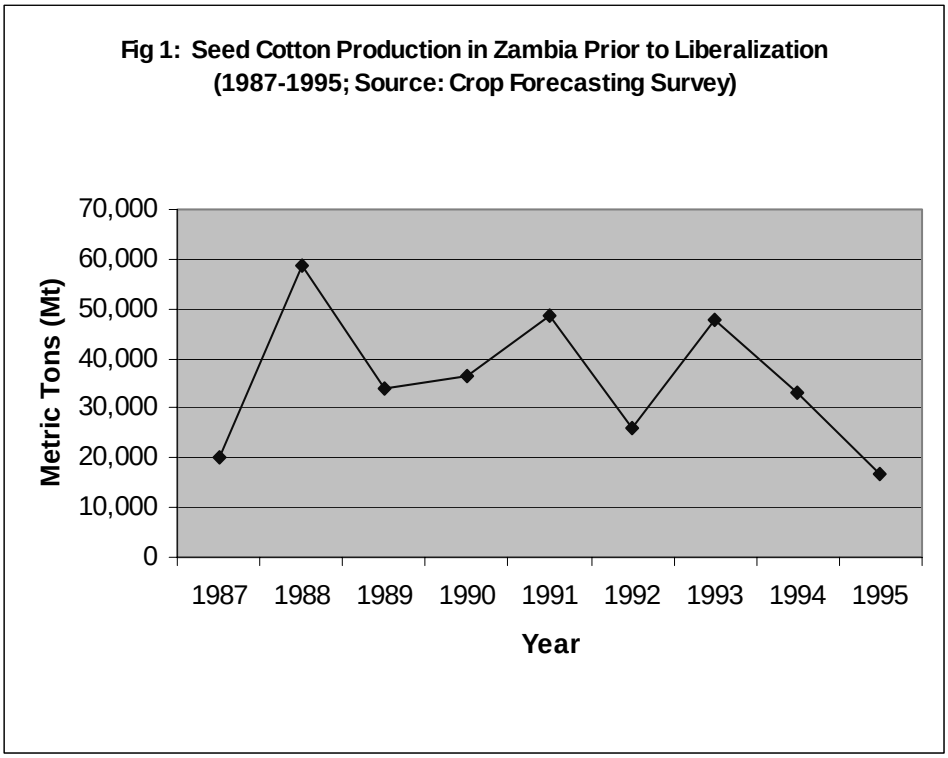
- To provide a detailed descriptive overview of the organization of the sector and of the behavior of key public and private participants in the sector,
- To assess cotton's role in smallholder livelihood strategies, and its competitiveness at the farm level with a key alternative crop – maize.
- To critically evaluate recent policy initiatives in the sector and suggest key modifications that might be needed, and
- To identify the primary challenges that the sector faces to ensure its future competitiveness in regional and international markets.

The rest of this chapter provides historical background on the sector, prior to and since the reforms in 1994. Chapter 2 provides an overview of system organization, while Chapter 3 provides a relatively detailed description of the cotton supply chain. Chapter 4 uses household level survey data to examine cotton's role in smallholder livelihood strategies and to assess cotton's profitability relative to maize, and relative to cotton in other countries. Chapter 5 critically examines three recent policy initiatives affecting or potentially affecting the sector – the proposed Cotton Board, the Cotton Outgrower Credit Scheme, and changes in the system of District levies. We close in Chapter 6 by identifying key strategic issues that public and private participants in the sector must deal with if the sector is to remain competitive.

[1] World lint prices strengthened considerably in October 2003, but declined slightly from that time and do not appear poised to go any higher this season (ICAC 2004).

1.2 Historical Background

From 1977 to 1994 the state-owned cotton company LINTCO (Lint Company of Zambia), on behalf of government, purchased seed cotton from farmers at a fixed price, provided certified seed, pesticides, sprayers, and bags and provided extension advice to farmers. LINTCO had a near monopsony in buying seed cotton and a monopoly in distributing cotton inputs on credit. The performance of the cotton sector during LINTCO's tenure can be inferred from the only available data from part of that period, from the annual crop forecast surveys conducted by the government's Central Statistical Unit (Figure 1). The data suggest that, from 1987 to the year immediately following liberalization (1995), the overall production trend was fluctuating but in decline overall. According to Zambia Privatization Agency (ZPA), the body that was responsible for the eventual sale of LINTCO, the company was also in serious financial crisis before its sale, having accumulated substantial unpaid debts.



In 1994, as part of a concerted and broad-based effort by the new government of Frederick Chiluba to restructure Zambia's economy, LINTCO was sold to Lonrho Cotton and Clark. As such by 1996, there were several private ginners buying seed from farmers (Govereh et al 2000).

1.3. Developments Since Liberalization

Production data in Zambia are available from several sources, including the Central Statistical Office's (CSO) Crop Forecast Survey (CFS), CSO's Post-Harvest Survey (PHS),

and derived estimates from ginnery outturn. These estimates do not all agree with each other, but, with the exception of CFS data for 1999, paint a relatively consistent picture at least of production trends since liberalization (Table 1). After reaching what appears to be an all-time low either the last year of LINTCO (1994, according to PHS data) or the first year of liberalization (1995, according to CFS estimates), both PHS and derived ginnery estimates indicate that production increased dramatically through the 1998 harvest year. While CFS shows a continued large increase in 1999, these data are inconsistent with PHS and derived ginnery estimates, and also with the acknowledged crisis that the sector suffered that year. Thus, it seems clear that production in Zambia peaked in 1998 and fell substantially over the next two years, to a low of less than 50,000 mt in 2000. Since that time, however, production has increased substantially every year, exceeding 1998's record in 2002, and reaching as high as 150,000 mt in the 2003 harvest.

Table 1. Seed Cotton Production Estimates in Zambia from Various Sources, 1993-2001

Harvest Year[1]	PHS Estimates			CFS Estimates	Derived Ginnery Estimates[2]		
	# of households	Area (ha)	Production (MT)		# of households		Production
					Min	Max	
1993	32,944	32,343	23,103	47,851			
1994	30,764	28,669	18,384	33,093			
1995	32,824	28,450	27,991	16,578			
1996	50,981	64,084	63,859	40,824	90,667	136,000	61,200
1997	85,514	74,279	58,051	70,000	110,972	166,458	79,900
1998	85,735	79,272	72,561	110,000	136,601	204,902	104,500
1999	70,159	63,000	50,858	140,024	104,568	156,852	84,700
2000	44,196	36,681	27,500	49,498	54,620	81,930	46,700
2001	87,422	87,026	65,979	57,083	80,000	120,000	72,000
2002				47,326	130,000	150,000	116,000
2003							130-150,000 (est.)

[1] Planting in Zambia occurs in late November of early December each year, with harvest in May or June. Thus, the harvest year 2001 refers to cotton planted in late 2000. [2] Seed cotton production estimates derived from lint production figures of Lonrho, Clark, and Amaka, and based on ginning outturn ration (GOR) of 0.38. This estimate does not include amounts ginned by other ginners, which may increase production totals by 5-10% above those shown here. Estimate of minimum (maximum) number of households assumes average of 1 ha (1.5 ha) cotton per farmer, with yields increasing from 450 kg/ha in 1996 to 600 kg/ha in 2001.

The strong expansion from 1994 to 1998 was made possible by much improved input distribution to smallholders. To expand the production base and benefit from the significant scale economies that exist in cotton ginning, Lonrho and Clark initiated out-grower programs to provide participating farmers with extension services and inputs on loan. The cost of the inputs were then deducted from the revenue paid to farmers when they sold their seed cotton to the ginners or their designated assemblers. Repayment rates were high (roughly 86% of the value of loans disbursed by the industry, according to the Cotton Ginners Association estimates) and cotton production increased dramatically, as seen in the PHS production estimates. During 1995 and 1996, competition in cotton buying and ginning was minimal as

the two firms operated in different areas of the country. This lack of competition among firms meant that credit repayment was not a problem, and made it possible for firms to aggressively promote the crops. Very high international prices also facilitated this expansion. These international prices were high and rising at the time of liberalization, peaked in 1995, and remained at remunerative (though much lower) levels into the 1998/99 growing season.

Since 1997 the expansion of the cotton production base attracted many new entrants onto the scene, both in ginning and in assembly. At least four new ginning companies emerged and began to compete aggressively in the purchase of cotton[2] As a way of increasing the number of farmers, some ginning firms contracted agents to recruit farmers on their behalf in addition to the farmers directly recruited by them. These firms received inputs from the ginning companies and distributed them to smallholders on the ginners' behalf. During harvest time these firms purchased seed cotton from farmers and sold it to the ginners who had contracted them. There also emerged a group of independent cotton traders who obtained their own inputs, distributed them to farmers, purchased seed cotton and sold to any ginner wishing to purchase it.

Government at the time was committed to a liberalized economic policy and made no attempt to limit this competition, and firms started competing against each other in many districts. As the number of ginners and assemblers expanded, several key problems came to the fore. First, ginning capacity expanded to over 150,000 metric tonnes per annum, while production rose to about 104,500 mt in 1998 and then declined over the next two years (according to derived ginnery estimates). This overcapacity created a competitive "scramble for cotton" among ginners to increase their throughput and minimize unit ginning costs. The emergence of agents and independent traders contributed substantially to this scramble for cotton. Relatedly, firms operating outgrower schemes experienced increased loan default rates as competing firms, some of which did not operate outgrower schemes and hence could afford to offer higher prices, purchase cotton from farmers participating in other firms' outgrower programs. These problems were exacerbated by the decline in world market prices since the peak in 1995, which was passed on to farmers.

Farmers had grown accustomed over several years to increasing prices, and with limited information on world market conditions, they found it difficult to understand the reasons for the declines in prices they were now receiving. In US$ terms, producer prices fell from $0.56/kg in 1995 to $0.18 in 1999. They actually fell in <u>nominal</u> kwacha terms in 1997 and again in 1998. This, together with a lack of transparency in how each buyer determines its prices and how they deduct input costs, lead many farmers and their representatives to conclude that they were being exploited. This environment of lack of information and mistrust had in all likelihood contributed to the increasing rate at which farmers were defaulting on their loans and side selling to other firms. The loan repayment rate dropped from almost 86% in 1996 to about 65% in 1999 and 2000 (Ginner interviews 2002).

[2] Amaka Holdings opened a ginnery in Kabwe District in 1997; Mulungushi Textiles also opened a ginnery in Kabwe District in 1999 and Northern Growers acquired a ginnery built in Sinazeze District in 1986. Continental Textiles established a ginnery in Kalomo District in 1997.

At the same time, increased default rates created incentives for outgrower firms to capitalize their bad loans into the cost of inputs for those farmers who did repay.[3] This compelled the outgrower firms to offer a lower net price for cotton after deducting the cost of inputs on credit, forcing some of the costs of loan default onto those farmers who remained loyal and repaid their loans. But imposing the costs of loan defaults on loyal farmers fuels a potential vicious cycle of further loan defaults or exit from participation in outgrower programs.

A crisis point was reached in 1999. Lonrho, the largest outgrower buyer, put itself up for sale as an ongoing concern and was sold to Dunavant, a privately held U.S. cotton company. Lonrho's decision to sell its cotton operations in Zambia was believed to be based primarily on complex corporate headquarters investment strategies throughout Africa, but Lonrho also cited $2 million per year in Zambia in unpaid loans as a major barrier to be overcome by new investors. Other ginning/outgrower firms also cut back on the number of farmers they were supporting with production loans from the 1999/2000 season. Since over 90% of the seed cotton ginned up to 1997 was produced by farmers participating in outgrower schemes, the problem of outgrower loan default clearly threatened the entire sector (Govereh et al 2000). Production in 2000 fell to less than half the level of 1998.

Since this nadir, the sector has undergone major structural change, and has recovered dramatically. The agents and independent buyers that contributed so much to the credit repayment problems in the late 1990s largely disappeared. At least one of the new ginners, Amaka, went out of business in late 2002. The decline of the cotton trading sector and the closing of Amaka were associated with two parallel strategies adopted by Dunavant. First, it launched in 1999, and over the next several years it refined, its "Distributor System", which dramatically improved credit repayment rates among farmers. Second, Dunavant used this system to aggressively expand its production network. Partly as a result, national production tripled between 2000 and 2003, and credit repayment improved from about 65% to over 90%. Finally, government's hands-off approach to the sector began to change. Potentially positive initiatives include support to private outgrower credit schemes, and a public/private proposal for a Cotton Board to deal with regulatory issues. More worrisome is the emergence in 2003 of levies charged by some districts on cotton leaving its borders.

Succeeding chapters will deal with each of these issues. Chapter 2 will provide an overview of the organization of the sector, including its actors, key coordination mechanisms, and key problems. Chapter 3 describes the supply chain from seed and other inputs through marketing of lint and sub-products. Chapter 4 uses nationally representative household level data to examine the role of cotton in smallholder livelihoods. Finally, Chapter 5 focuses on emerging policy issues, providing a description and initial assessment of new initiatives coming out of the public sector.

[3] One outgrower company states that in 1999 it attempted to offset its loan defaults by adding a 50% mark up to the price of inputs.

2. OVERVIEW OF SYSTEM ORGANIZATION

2.1. Actors

2.1.1. Small-holders

According to the ginning companies interviewed nearly all seed cotton is grown by small scale farmers with less than three hectares of area devoted to cotton. Data on the number of households involved in cotton are not consistent with each other (Table 1), with estimates from the PHS being consistently lower than derived ginnery estimates, and also lower than the number of households that ginners claim to be working with. Based on probable acreage and yields, it seems very likely that the number of households growing cotton exceeded 100,000 during 2-3 years around the 1998 peak, falling by as much as 2/3 in 2000, but recovering steadily since that time and certainly exceeding the 1998 peak in 2003.

All the firms running cotton out-grower schemes expressed a desire to deal with larger farmers but stated that there were very few large scale farmers involved in cotton growing. One firm stated that it would soon start running a large cotton farm so that it can insure constant supplies of cotton. This initiative will need to be carefully watched, as experience in the region suggests that difficulties in labor supervision combined with high costs of mechanical technology and fuel, often makes large-scale cotton production unprofitable.

2.1.2. Ginners

Dunavant has the largest ginning capacity totaling 93,000 metric tonnes per season (Table 2). Clark has the second largest ginning capacity at 55,000 tonnes per season. Together, Dunavant and Clark account for 74% of the total ginning capacity in Zambia with Dunavant accounting for 46% and Clark accounting for 28%. Dunavant constructed a new gin in Petauke district (Eastern Province) in 2003 with the capacity of 17,000 metric tonnes which was scheduled to start operating in October, 2003. Dunavant was also, as of September 2003, conducting feasibility studies for a similar capacity plant in Lundazi district (Eastern Province). The other gins are owned by Mulungushi, with a capacity of 10,000 mt per season, Continental with 8,000 mt, and Mukuba Textiles with 1,000 metric tones per season. Amaka's gin, with a capacity of 22,000 mt is now defunct and has been put up for sale. As of September 2003, the plant had not yet been bought.

The data on ginning capacity understate the level of concentration in the ginning industry. Data on throughput for the 1997/98 season indicate that Dunavant (Lonrho at the time) and Clark dominate the industry with 90% of throughput between them (vs less than 75% of ginning capacity). The drop-off in ginning by Amaka and Mulungushi from the 2000/01 cropping year, and the closure of Amaka in 2002, suggest that the market shares of Dunavant and Clark have increased from 1997/98. Though data from Clark are not forthcoming, interviews with various participants and observers suggest that its share relative to Dunavant may have fallen since that time.

Table 2. Location of Gins in Zambia

Company	Gin Location	Capacity (MT/season)	Seed Cotton throughput				
			97/98	98/99	99/00	00/01	01/02
Dunavant	Katete, Eastern Province	22,000	14,000	11,832	7,309	13,892	20,992
	Lusaka, Lusaka Province	10,000	7,000	3,866	0	0	3,579
	Mumbwa, Central Province	25,000	12,000	12,119	8,370	15,214	24,956
	Gwembe, Southern Province	19,000	11,000	8,888	4,828	10,538	17,620
	Petauke, Eastern Province	17,000	N/O	N/O	N/O	N/O	N/O
Sub-total		93,000	44,000	36,705	20,507	39,644	67,147
Clark	Two gins in Chipata, Eastern Prov.	55,000	35,000	x	x	x	x
Continental	Kalomo, Southern Province	8,000	3,500	x	x	6,200	x
Mulungushi	Kabwe, Central Province	10,000	3,000	x	x	1,684	x
Amaka	Kabwe, Central Province	22,000	2,500	x	x	400	x
Mukuba	Ndola, Copperbelt Province	1,000	x	x	x	x	x
Total		189,000					

x=data not available. N/O=not operational (Dunavant's Petauke gin was installed in 2003)
Source: Zambian Cotton Sector Review, Ministry of Agriculture, Food and Fisheries 2000; FSRP Ginners Survey 2003

Mulungushi Textiles is a joint venture between the Government of Zambia and the Government of China. This unusual arrangement in an otherwise entirely privatized industry has caused unease among competing private companies, some of whom suggest that the arrangement might confer competitive advantages to Mulungushi, especially in the area of working and investment capital, that these other firms do not have. There is, however, currently no concrete evidence of these and other possible advantages conferred on Mulungushi

2.1.3. Input Dealers

Input dealers in Zambia play very little direct role in providing cotton inputs to farmers. Available evidence indicates that nearly all cotton inputs in Zambia are delivered to farmers through the cotton companies or through cotton company agents (these latter are mostly Dunavant Distributors) who receive the inputs from the cotton companies. The cotton companies negotiate for inputs in bulk from local and international companies. With regard to seed, all companies interviewed reported that they grow their own seed through contract farmers and the seed is certified by the Seed Control and Certification Institute (SCCI), the government's certification unit under the Ministry of Agriculture and Cooperatives (MACO).

2.1.4. Textile Mills

Over 85% of the local demand for lint comes from textile mills in Copperbelt Province and in Kabwe in Central Provinces. Ninety percent of the production of these mills is exported as yarn with only a very small proportion retained for weaving into cloth and blankets. Table 3 shows the location of mills and the total demand for lint.

During the 2001/02 season, Dunavant indicates that it sold nearly 20% of its lint in the local market, exporting the rest. The cotton ginners and Swarp (a spinner) estimate that 90% of Swarp's lint needs are met by purchases from Dunavant and Clark; the balance appears to come from smaller ginners. Mukuba Textiles and Mulungushi Textiles both have gins within their premises and purchase seed cotton for processing. Starflex, Excel, Mulungushi and Kafue have all experienced serious financial problems in the recent past which have led to temporary and sometimes prolonged shut downs. The other smaller spinners indicate that they periodically import to meet their lint needs when they are unable to reach agreement on price with local ginners.

2.1.5. Government and NGOs

From 1994 (when the government privatized LINTCO) through the 2000/01 season, there was very little government involvement in the sector, whether as a direct participant or a significant regulator of private activities. Government still has no role in pricing, competition policy, or marketing regulation. The main role has been agronomic research through the Cotton Development Trust (CDT). The Trust came into being in November, 1999 with the following stated objectives:

(i) To conduct, encourage, assist or support agricultural development in Zambia or elsewhere into aspects of agriculture not limited to cotton.

(ii) To promote and develop cotton including research, extension, farmer training and seed production.

(iii) To undertake cotton programs which Government or other sector bodies may be unable to initiate, continue or complete and to complete and complement and supplement the agricultural research, extension and seed production activities of Government of the Republic of Zambia or other bodies.

Table 3. Spinning Mills and Annual Lint Demand in Zambia, 2002

Textile Mill	Location	Throughput (MT)[1]
Swarp	Ndola, Copperbelt Province	14,000
Mukuba	Ndola, Copperbelt Province	1,900
Starflex	Ndola, Copperbelt Province	1,200
Excel	Ndola, Copperbelt Province	1,650
Mulungushi	Kabwe, Central Province	3,000
Kafue	Kafue	3,000
Others	Mostly Copperbelt Province	1,000
Total		25,750

[1] Sources: Data on Swarp from phone interview with that company. Other data based on estimates by Swarp and Zambian Cotton Sector Review (ZCSR), Ministry of Agriculture, Food and Fisheries 2000

Through 2000/01, the Trust focused exclusively on technical aspects of cotton production, including varietal development. The Trust is managed by a board that consists of government and cotton industry representatives. It was designed to be independent of government, but is criticized by some in the private sector for not being sufficiently independent nor sufficiently responsive to needs in the sector. As a result, CDT is currently funded by government and donors, though the intention is for the ginning companies also to contribute to its support through a ginning levy at some point. The main achievements since its inception have been in the area of agronomic research where the Trust has cooperated with private firms, primarily Dunavant, on the development of new varieties, though none of these have yet been released. Other achievements have been:

1. Seed multiplication in terms of production of breeder and pre-basic seed.

2. The production of a comprehensive cotton hand book for use by farmers and promoters, and smaller guides in Chi Chewa and Tonga for use by smallholder farmers (these guides are being done in collaboration with the French Embassy).

3. The production of a cotton suitability study including maps of suitability classes.

Moving beyond technical research, the CDT worked with private sector to prepare the draft Cotton Act and cabinet memo proposing the formation of the Cotton Board. This legislation has been delayed within MACO for some months, due in part to a complaint to MACO by the heretofore little known Cotton Growers' Association. As of September 2003, MACO plans to hold "stakeholder consultations" on the bill before presenting it to the Minister for onward transmission to cabinet and parliament. Chapter 5 will describe the Act and assess the potential contribution of the Cotton Board in more detail.

In recent years, some NGOs and donors have become interested in building on and further developing the Dunavant Distributor System (see below for further details on this system) in

order to further the cause of farmer organization. The Smallholder Enterprise and Marketing Program (SHEMP), funded by IFAD, has a stated goal of building the loosely defined farmer groups within the Distributor System into autonomous farmer associations independent of Dunavant and able to engage in multiple activities. The project began in 2002. Most recently, CLUSA (Cooperative League of the USA) had expressed interest in collaborating with Dunavant and the Cotton Ginners' Association in its "Food Security and Poverty Alleviation through Cotton" proposal. The proposal called for a rotating fund for cotton inputs which would, additionally, fund a minimal level of inputs for maize production among farmers growing cotton.

Funding was expected by Dunavant and CLUSA from the Government but this has not been forthcoming. Government has opted to put their funding in their own commercialization program which bears some resemblance to the "Food Security and Poverty Alleviation through Cotton" proposal. However, CLUSA have adopted the Distributor system for other crops including maize, albeit for a small pilot group in Central province, and the repayment rates have been between 95 and 100%.

2.2. Key Coordination Mechanisms

Extra-market coordination within Zambia's cotton sector has focused most intensively on vertical coordination between ginners and smallholder farmers, and to a lesser extent between ginners and spinners. Efforts at horizontal coordination among, for example, ginning companies, have been intermittent, as have been sector-wide initiatives involving multiple players from all levels in the system. The Cotton Act and proposed Cotton Board represent the first attempts to encourage such sector-wide coordination. Appendix Table 1 provides a summary of coordination mechanisms observed in the sector.

2.2.1. Ginners and Smallholders

Coordination among ginners and smallholders focuses primarily on efforts by ginning companies to resolve the input delivery and credit recovery problems that began to emerge in 1997. With few exceptions, smallholders as a group have not been able to participate actively in broader coordination efforts. A key reason for this is that there are currently few, if any, independent and self-supporting smallholder farmer organizations in Zambia capable of engaging in commercial negotiations with companies and delivery marketing or other services to their members.[4]

2.2.2. For Input Distribution and Credit Recovery

The recovery of credit delivered in-kind as production inputs has been the principle focus of overt conflict within the cotton sector. After privatization in 1994, this conflict began to

[4] ZNFU is engaged primarily in policy and program dialogue with government and donors. Little is known at this point about the Cotton Growers' Association, though it appears to be composed primarily or large commercial growers.

emerge as early as 1997 and reached a peak in the 1998/99 cropping season. The absence of any direct government role in regulating competition within the sector or in mediating the intense conflicts which emerged meant that ginning companies had to develop their own approaches to solving this problem.

A period of significant private institutional innovation began in 1999 at the initiative of Lonrho, which at the time was already in the process of being sold to Dunavant. Starting with the 1999/2000 growing season, the company began to create what it called its Distributor System to replace its original system for delivering inputs on credit to farmers and recovering the credit. The original system relied on a large number of direct company employees, including approximately 800 extension agents, to carry out the required activities. The Distributor System involved eliminating nearly all directly employed extension agents and selectively offering them a formal written contract as an independent "Distributor". These Distributors were responsible for identifying farmers to whom they wished to provide cotton inputs[5], receiving the inputs on credit from Dunavant, delivering these inputs to their selected farmers along with technical advice, and ensuring the sale of the farmers' crop to Dunavant in order to recover the input credit. The Distributor's remuneration is directly tied to the amount of credit recovered, on an increasing scale. For the first three years of the Distributor program up to 60% recovery, a Distributor would receive 5% of the value of the recovery; upon reaching 80% recovery, the Distributor would receive an **additional** 7.5% of the total recovered amount; and upon reaching 100% recovery, the Distributor would receive an additional 12% of the total recovery. In the 2003 season the bands were revised to 65%, 85% and 100%. Thus, Distributors may earn as much as 21.6% (.65 * .05 + .85 * .075 + 1 * .12 = 0.21) of the total amount of credit they disburse. In the 2003 season the contracts also required more documentation to verify purchases.

Dunavant screens all Distributors, and requires that each produce cotton themselves and live in the same area as the farmers to whom they provide services. Company policy has been to drop any Distributor who does not reach at least 50% repayment. In the most recent season, that figure was raised to 60%; in Mumbwa district of Central province, where the company has been most active and had the best success, the cut-off is now 80%. During the 2001/02 growing season, Dunavant had nearly 1,400 Distributors, each working with an average of about 62 farmers. The organizational structure of the Distributor system includes a "Coordinator" for every five- to seven Distributors. The Coordinator is the company's main link to Distributors, and is responsible for organizing cotton purchases for the company. "Area Credit Managers" are employed directly by Dunavant and oversee about seven Distributor Coordinators in addition to managing depots where the company keeps inputs for delivery on credit and seed and basal fertilizer for cash sale.

The company seems to invest heavily in training of Distributors, providing them with two types of training; credit management and cotton production and harvesting. The credit management course is conducted once a year by Dunavant Headquarters managers in conjunction with their area managers. It aims primarily at improving the Distributor's ability to pick good farmers and keep them. The other main focus of the course is to strengthen

[5] The company refers to farmers under a Distributor as farmer groups. In fact, the farmers are groups in only the loosest sense, being organized explicitly for cotton production and without a structure to allow them to be active as a group in other commercial activities.

credit recovery strategies. These skills are not extension skills but are aimed solely at the distributor.

The production training is conducted in three phases. The first phase occurs before planting, with a focus on production techniques such as timing of planting to maximize yields. The second phase is held just after planting, and is aimed at the best use of chemicals and other products to control weeds and pests. The third phase of the training is on harvesting and storage, with a strong emphasis on how to keep the cotton free from contamination and how to grade properly to maximize homogeneity within grades. The production training is extension training and this is aimed at equipping the distributors with knowledge to be passed on to their farmers.

To maximize their earnings, Distributors need to balance the number of farmers against their knowledge of the farmers and perceived probability that they will be able to repay. They must also judge how much time they should put into extension efforts, and with which farmers, since there will be some trade-off between the number of farmers the Distributor is able to support and the level of support he/she provides to each of them. Several Distributors interviewed informally indicated that they were supporting too many farmers during the past growing season, were having difficulty overseeing them and ensuring credit recovery, and would reduce the number of farmers they supported the following year.

Yet empirical data on Distributor behavior (Table 4) suggest that the typical Distributor steadily increases the number of farmers they work with. In January and February 2003, Dunavant collaborated with the Food Security Research Project to conduct a small interview with about 1,400 Distributors during the second production training.[6] The one-page questionnaire covered the Distributors' age and sex, several questions on years of experience and links to the area in which they work, data on number of farmers the Distributor worked with during each of the past four years (including the current year – 2002/03) and repayment rates for the past three years. In the cropping year 2001/2002 the average number of farmers for distributors who had been operating for one year was 47 compared to 77 for distributors who have been working for four years. Distributors who had worked for three years by that time had increased their number of farmers to 71 from 52 in 99/00 and 64 in 00/01. Regression results from this survey also showed that, while controlling for key factors such as the Distributors' age, gender, education, years working in the same area, and others, the number of farmers that a Distributor worked with was <u>positively</u> associated with repayment rates. This result suggests that the number of farmers is actually an indicator of unobserved managerial abilities of the Distributor that allow him or her to successfully work with more farmers.[7]

Thus, it appears that Distributors have a good deal of flexibility regarding how many and which farmers to support; this observation is consistent with Dunavant's view of Distributors as small businessmen rather than company employees.

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[6] The training was carried out in three different locales over the course of about four weeks. One of the authors traveled to each session to explain the questionnaire and collect it after Distributors had completed it.

[7] See Zulu and Tschirley 2003, forthcoming, for analytical results. This interpretation is consistent with Dunavant's understanding. When presented with the results, Dunavant managers suggested that they had also observed this tendency and associated it with the best Distributors.

From the company's perspective, the Distributor system greatly diminishes the amount of information that the company needs to manage to ensure adequate credit recovery. The company develops strong relationships with a limited number of Distributors and creates incentives for them to recover as much credit for the company as possible. Thus, the company attempts to substitute the Distributors' local knowledge, social capital, and financial incentives (specified in the written contract) for its own data bases and enforcement mechanisms.

Table 4. Average Number of Farmer Per Distributor, by Years as a Distributor in the Same Area

Years as Distributor in same area	Growing Season	Number of Growers per Distributor		N
		Mean	Median	
1	2001/02	47	42	341
2	2001/02	65	54	236
	2000/01	51	44	238
3	2001/02	77	65	353
	2000/01	64	54	352
	1999/2000	52	44	346
Total	2001/02	63	51	930
	2000/01	59	50	590
	1999/2000	52	44	346

Source: Dunavant Distributor Survey 2003.

With the exception of Clark Cotton, which continues to employ its own staff to contract farmers, deliver inputs and recover credit, other cotton ginning companies in the country follow an approach similar to, though less developed than, the Distributor System.

Dunavant reports that credit recovery through this system rose from 67% in 1998/99 (year prior to the system) to 80% in 1999/00, 88% in 2000/01, and 93% in 2001/02. While these trends show clear improvement, it should be noted that 88% and even 93% repayment is still not considered "high" in most finance schemes, and remains well below the rates of 98% claimed by, for example, Cottco in Zimbabwe.

The Distributor system appears to be an important private institutional innovation designed and executed in an environment in which government played no direct role, and only a minor indirect role, in the cotton input credit system. Key questions regarding the system include:

- To what extent can it be credited with the improvement in loan recovery rates during its first three years of operation? Loan recovery had already improved substantially the year before the system was launched, to 67% from 53%. Understanding the reasons for this improvement and the role that the Distributor system played in continuing the upward trend is crucial.

- Is the system financially sustainable for the company? Dunavant indicates that the system remains expensive and suggests that aid money is needed to strengthen groups and, presumably, reduce company costs. The fact that Dunavant promoted the Food Security through Cotton proposal and actively participated in the government-funded Cotton Outgrower Credit Scheme also suggests that the company may not see the Distributor System as a final solution to its input credit challenge.

- What is the Distributors' level of knowledge of cotton production? Dunavant maintains ongoing training activities for Distributors in which it promotes simple, apparently well-designed extension messages. Yet the expense of the system, especially when competitors may not be incurring the same level of expense, suggests that it may be difficult for the company to invest as much as it may like to in this effort.

- How much extension assistance do farmers receive from the Distributors? Even if Distributors are well trained and knowledgeable, they must judge the value to them of investing their time in extension compared to the option of supporting a larger number of farmers. The details of their contract with Dunavant could clearly affect this calculation. Have any Distributors hired anyone to assist them with extension or other duties? How much variability is there among Distributors in the level of knowledge they pass on?

- What are farmer and Distributor perceptions of the system, especially compared to the old system where company employees provided input credit and extension, and recovered credit?

2.2.3. For Price Setting

There has been no government mandated price, nor any pricing guidance of any kind from government, since liberalization in 1994. There is also no evidence that these authors are aware of that ginning companies have engaged farmers in dialogue or negotiation regarding the price that they will pay, although ZNFU (Zambia National Farmers' Union) has been involved in at least two sector-wide stakeholders' meetings since 1999. Dunavant has typically acted as a price leader, announcing a minimum pre-planting price to farmers, which may be adjusted upwards at the start of the buying season. Smaller ginners have typically paid higher prices than Dunavant, but their constrained working capital and smaller buying infrastructure limit the amount of cotton they can purchase.

As competition among private firms began to emerge in 1997, price competition became a key tool in attracting buyers, and also contributed to the serious credit repayment problems which began at that time. A lack of transparency in price setting was stated by some as contributing to misunderstandings between farmers and outgrowers firms, and thus to the repayment crisis (Govereh et al. 2000). There appears still to be some significant variability in the level of support offered to smallholders by the various ginners, which can create conditions for using price to attract sellers who may have received input support from another company.

With the passing of the credit repayment crisis and the reduction in intensity of competition in many areas of the country, there exists the potential for companies with near monopsony positions to suffer reduced efficiency over time and pass such inefficiencies on to farmers in the form of lower prices. Whether or not this happens depends on the organizational culture of the firms involved, on the potential for new buyers to enter if prices fall too far, on the level of education and strength of organization of farmers, and on the role of sectoral organizations in monitoring sector performance.

Table 5 shows the prices offered by some ginning companies at buying stations to farmers during the 2002 harvest season.

Table 5. Prices Offered to Producers for Various Grades of Seed Cotton by Selected Ginners in Zambia, Harvest Year 2002

Quality of seed cotton	Ginning Company			
	Mulungushi	Dunavant	Amaka	Continental
	------- ZK Per kg for 2002 harvest season -------			
Grade A	920	860	960	870
Grade B	900	840	950	850
Grade C	880	810	940	825

Dunavant is the only company that announces a price before planting in late October. For the 2003 harvest season, the company announced a minimum price ZK 1,000 per kilogram in October 2002, though it ended up buying at ZK 1,220 later in the season.

2.2.4. For Conflict Resolution

There is no body in Zambia currently which serves as a forum for ginners and farmers to address and resolve conflicts among them. CDT, whose mandate is broad enough for it to play this role, is currently focusing mostly on technical issues. The Agricultural Consultative Forum in conjunction with the MACO has held a few meetings bringing farmers and ginners together, but there has been no sustained effort in this regard.

2.2.5. Between Ginners and Textile Mills

Other than Mulungushi Textiles and Mukuba Textiles which operate as both ginners and spinners,, all other spinners on the Copperbelt purchase their lint from Dunavant, Continental, and in the recent past Amaka. Mukuba Textiles does not have a bale press in the gin plant and as such cannot store the cotton lint that it produces. As a result, and due to the small size of their gin, they purchase cotton lint for a large part of the year.

Pricing on domestic lint sales has been a source of controversy between ginners and spinners. Spinners suggest that they buy the lint from the ginners at a fob price plus a premium

determined by the ginners. For their part, ginners indicate that they negotiate a price with spinners between import and export parity, as would be expected in a market setting. This issue needs to be better understood, as pricing appears to be a source of much discontent among the spinners.

2.2.6. Horizontal Coordination among Ginners

The Ginners' Association of Zambia was set up in 1999 as a forum for ginners to discuss common problems and lobby government for selected solutions. Currently, the association does not have an office and a permanent secretariat but the members occasionally meet, usually at the Dunavant headquarters office. The Association has regularly lobbied government on policy issues, focusing primarily on credit recovery. In June 2002, it presented to the new government its proposal for "Food Security through Cotton", and then participated actively in the Cotton Outgrower Credit Scheme when elements of the earlier proposal were folded into that.

2.3. Key Problems in the Sector

2.3.1. Farm-level Productivity

Farm yields in Zambia appear to be relatively good compared to most Southern and Eastern Africa producers. Dunavant claims average yields in 2002 of more than 600 kg/ha, and 900 kg/ha in Eastern Province. Clark likewise claims yields above 900 kg/ha in Eastern. Yields approaching one tonne per hectare with no fertilizer reflect broad use of treated seed, timely availability of pesticides, and good farm level management. Dunavant's attention to training of Distributors would seem to have made an important contribution in this regard. Yet yields continue to lag well behind those in Zimbabwe and West & Central Africa, and lint quality is substantially lower than in Zimbabwe. These patterns reflect at least in part the fact that only one new variety has been released since liberalization (Ngwezi in 1995), and it has not been taken up. Currently used varieties were released over 10 years ago. See Section VI.C for a discussion of policy approaches to deal with this issue.

2.3.2. Costs of Production

Another problem in the cotton sector that affects almost all economic activity in Zambia are the very high costs of operation. These high costs are related to, among other factors, the country's low population density, its land-locked status and long distance from ports, and a limited and poorly maintained system of secondary and tertiary roads. See section IV for details on farm-level costs of production of cotton.

2.3.3. Ginning Overcapacity

Until 2003, the highest production in the country since sector reform was 1997/1998 with a total ginning throughput of 105,000 metric tonnes, according to derived ginnery estimates.

With ginning capacity of 169,000 metric tonnes, the sector as a whole was paying relatively high unit processing costs. However, production in 2002 was 116,000 mt, and may have reached 150,000 mt in 2003. At the same time, Amaka's ginnery with 22,000 mt capacity went out of business, and Dunavant added 17,000 mt of additional capacity. Working capacity in the country is therefore about 167,000, hardly excessive in light of this year's production. More generally, the production variability in Zambia due to rainfed production systems means that the sector needs to maintain excess capacity in most years to be able to handle years of high production. In this light, ginning capacity in Zambia is not excessive, and may in fact need to be expanded if production levels continue to rise.

2.3.4. World Prices

International cotton lint prices rose in the 2002/03 marketing year (August 02-July 03) to nearly US$0.56/lb, from the historic low of US$0.42/lb the previous year. September 2003 projections by ICAC (International Cotton Advisory Council) are for prices to continue their recovery and to average US$0.60/lb for the 2003/04 marketing year, then to fall slightly to US$0.59/lb for 2004/05. Past patterns in world markets show long declines followed by only partial recovery over 2-3 years, resulting in a steady secular decline in prices. If this pattern repeats itself, world prices may not continue to increase after the current marketing season. This implies that Zambia needs to proceed on two tracks if it is to compete on the world stage. First and foremost, it must invest in productivity enhancing technology and cost reducing public investments. While developed country subsidies to cotton producers, especially in the U.S. (Becker, Geoffrey and Womack 2002), have substantially contributed to the recent very low prices and profitability crisis for ginners and farmers in Zambia and throughout Sub-Saharan Africa, the long-term trend for cotton, as for nearly every other agricultural commodity, is primarily driven by productivity increases throughout the world. The progress that the two main firms have made improving smallholder management practices and raising yields must continue, and must be complemented by improved cotton varieties, by a serious examination of the potential for Bt cotton in the country, and by infrastructural investments that reduce the cost of doing business in the country.

Second, it would be in Zambia's interest to join the recent move by Brazil, India, China, South Africa and other developing countries depending on agricultural exports to form a negotiating block in the WTO. Balanced application of free trade rules in the WTO would certainly lead to the elimination of developed world subsidies on cotton – and on other commodities – and allow Zambia and other producing countries to compete on a level playing field.

2.3.5. Loan Default

After subsiding substantially during the 2000 and 2001 harvests, there were fears that loan default by farmers would reemerge as a significant problem during the drought-affected 2002 harvest. In fact, Dunavant indicates that, while recoveries may have fallen, the decrease was modest. Nevertheless, the legal system to address loan default is weak and expensive relative to the average costs of these loans, meaning that affected companies will have little redress if the problem does reemerge with more force in future years.

2.3.6. Lint Pricing

The pricing of lint by the local gins to the local spinners has been seen as a major draw back to spinning in Zambia. Prior to Lintco privatization, lint was available at Liverpool Index price less the freight element. Currently, spinners indicate that the ginners put a premium on the Liverpool Index price which is treated as the Liverpool fob price (Patel & Mtonga 2002).

2.3.7. Import of Subsidized Textiles, Garments, and Used Clothing

The influx, particularly from Asia, South Africa, and COMESA countries, of subsidized textiles and garments nearly precludes the development of a garment industry in Zambia at the current time. The salaula (imported second hand clothes) factor, whatever its social and political benefits, has had an adverse effect on the local clothing industry.

2.3.8. Government Sectoral Policies

Zambia has a long history of concentrating agricultural incentives heavily on maize. Prior to the beginning of liberalization a decade ago, heavy fertilizer and transport subsidies for maize threatened to bankrupt the country. Policy reforms since that time have reduced much of that support, but governments have found it difficult to broaden their policy focus beyond this crop. Until recently, the Food Reserve Agency delivered fertilizer on credit to farmers for use on maize; because of very low repayment rates, the scheme amounted to free fertilizer for many maize producers. During 2003 it was proposed to abolish the FRA and replace it with a Crop Marketing Authority (CMA), which would continue to focus on maize but would not have any role in fertilizer distribution. While the proposed move away from subsidized fertilizer distribution through FRA was positive, the proposed focus of CMA on maize would have continued the country's long fixation on that crop. The situation in late 2003 is unclear, as CMA has been taken off the table due to concerns about its feasibility, and the possibility remains that FRA will begin once again to distribute fertilizer.

Government also continues periodically to suggest that it will pay attractive support prices for maize, announcing in 2001 at planting time that it intended to offer US$140/metric tonne. Some ginners feel that this focus on maize distorts farmer decision making and results in swings into maize (and out of cotton), then back out of the crop when government fails to fully deliver on its commitments. Other observers and some farmers suggest that these policy statements have little effect on farmer behavior due to skepticism about government's ability to deliver. Recent policy initiatives by government, including the Cotton Outgrower Fund and the proposed Cotton Board, suggest the beginning of a broader focus within government more driven by comparative advantage or at least by perceived commercial opportunities within the agricultural sector.[8]

[8] See Chapter 5 for more detail, including an assessment of the potential problems with these initiatives.

3. DESCRIPTION OF THE COTTON SUPPLY CHAIN

3.1. Seeds

3.1.1. Varietal Development & Agricultural Research

Prior to the formation of CDT, all cotton research was done by the MACO Research Branch. The ministry's researchers conducted trials with government funding and were responsible for releasing varieties. All these responsibilities were transferred to CDT after its inception. The ministry's researchers were also transferred to CDT. Three varieties developed by MACO which have been released are Chureza (1988), F135 (1992/93) and Ngwezi (1995). The ginners have chosen to multiply Chureza and F135, meaning that it has been almost 10 years since a new variety entered the production system in Zambia. Chureza is best adapted to dry areas and predominates in Southern and Eastern provinces, while F135 is mostly used in Central and Western provinces. CDT reports that the ginners are satisfied with the fibre characteristics of these two varieties and that is why they are not multiplying Ngwezi, the most recent release. Other varieties that CDT indicates are in the pipeline are CDT1, CDT2 and CDT3.

3.1.2. Seed Multiplication and/or Importation

Interviews with ginners and MACO representatives indicate that there is no cotton seed that is imported into the country. All ginning companies collect seed from their ginning process and then use this seed as input for their contract farmers. The seed that is grown by the contract farmers is then certified by officials from the Seed Control and Certification Institute. Other than Dunavant and most likely Clark,[9] all other ginners distribute their seed untreated. Dunavant makes a range of seed available to farmers, including "fuzzy" untreated seed, mechanically delinted treated seed, and acid-delinted treated seed. The company offers seed as part of the credit package, but at different prices, and farmers are able to choose which they want to use. Acid-delinted is used almost exclusively by commercial farmers with mechanical planters. Mechanically delinted seed is first mechanically delinted and then treated with systemic fungicides. The primary purpose of delinting is to minimize the amount of chemical needed for the treatment. Delinting also makes it easier to avoid overseeding, since the fuzzy seed tends to stick together. A potential advantage of fuzzy seed is that the thick hair on the seed retains moisture around it, and may make the seed less susceptible to dry conditions. In 2001/02, two-thirds of Dunavant smallholder farmers used mechanically delinted treated seed, and the rest used fuzzy untreated. For 2002/03, the proportion of fuzzy seed is expected to fall to 15%.

[9] Clark Cotton is South African owned, with local headquarters in Chipata, Eastern Province, and no office in Lusaka. They have historically not been involved in the discussions and initiatives emanating from Lusaka, and have offered only limited collaboration in this study.

3.2. Testing, Distribution, and Use of Other Inputs

The bulk of the inputs are distributed by the ginners or their agents. Each ginner has a standard package with standard use rules. These packages and use rules are similar among the ginners, generally consisting of micro-nutrient (boron) foliar feed, aphicide, bollworm complex, and buffering solution. Jassids do not appear to be a serious problem in Zambia because both varieties in use are relatively hairy. Due to this hairiness, which also protects against aphids, Dunavant recommends spraying for aphids only late in the season to avoid honeydew, which has emerged as a quality concern in Europe.

One of the major companies is very interested in promoting the use of herbicides on cotton in Zambia, due to concerns about labor bottlenecks. Green leaf spot has reduced maize yields in many areas of the country, requiring households to grow larger areas to meet their needs. In addition, livestock has been devastated by foot and mouth disease, especially in Southern Province, further stretching available household labor. The company is promoting "Zamwipe", essentially a push broom with a tube to apply Roundup or another herbicide to the brushes through a bag carried by the applicator. This approach seems fast and eliminates drift, but adoption rates do not appear to be high at this time. There is also strong interest among ginners in Bt and Roundup-ready cotton, but Zambia's biosafety regulations are not yet sufficiently developed to allow this.

Three public sector bodies have some dealing with testing of products manufactured or imported into the country, these are the Phytosanitary Unit (PU) of the MACO, the Environmental Council of Zambia (ECZ), and the Zambia Bureau of Standards (ZABS). The PU is mostly engaged with assessing the suitability of agricultural products, the ECZ is mostly visible when there is an environmental concern, and ZABS has the mandate to monitor and set up standards of an almost unlimited range of products.

The lack of a clear law as to who should test inputs such as fertilizer, herbicides or insecticides has created a situation where firms import these inputs and sell them with no central review and approval. At times firms conduct their own "tests" usually for commercial effect (CDT 2002).

All the ginning firms interviewed reported that they supply sprayers to a few farmers. This is about the only equipment supplied by the firms and it also an imported item.

3.3. The Farm Level

3.3.1. Technical Advice

The 2000/01 Post Harvest Survey and linked Supplemental Survey[10] included simple questions on the type and source of technical advice that farmers received during the 1999/00 growing season. It should be kept in mind that this season coincided with the lowest cotton production since liberalization in 1994, and was also the first season that Lonrho/Dunavant was launching its Distributor system. It therefore seems likely that the results from this survey reflect a lower level of technical assistance than is currently practiced.

[10] See Chapter 4 for more detail on the Supplemental Survey

Dunavant and Clark are known to have worked at developing clear extension messages emphasizing a few key points, such as “plant early”, “weed early”, and “apply pesticides on time”. Results from the Supplemental Survey lend some support to this claim, showing that company agents explained the proper use of pesticides to 94% of all cotton growers, and explained the health risks of pesticides to 92% of growers. As a point of comparison, only 19% received such messages from MAFF agents, and about 35% received them from neighboring farmers.

Dunavant (and perhaps Clark) promotes conservation farming[11] among all its farmers through training of Distributors and claims that, where practiced, it contributed substantially to minimizing the effects of the serious drought during the 2002 growing season on cotton yields. The Supplemental Survey suggests that there was little difference in adoption among cotton growing and non-cotton growing households during the 1999/00 season. For example, about 49% of each left residues on the field, and slightly more non-cotton growers use conservation basins (7.4% vs. 5.3%). Haggblade and Tembo report that adoption of conservation farming techniques grew dramatically from 2001/02 to 2002/03, due in large measure to two successive years of short rains. They estimate that use of such techniques grew about 70% among Dunavant cotton farmers – to perhaps 12% of its growers – and by as much as two or three times among other farmers.[12] Rapid growth across the spectrum of smallholder farmers – not just cotton growers – is consistent with the fact that both GRZ and many NGOs have aggressively promoted the techniques, especially since 1999.

The same authors also demonstrate that Distributor use of conservation farming techniques in their own fields has a substantial effect on farmers’ use of the same technique. For example, among Distributors who used conservation basins in their own fields, 24% of their farmers also used them; this compares to an average of only 8% among farmers whose Distributors did not use basins. Among Distributors using rippers, 10% of their farmers also used the implement, compared to less than 3% among Distributors who did not use it. These results suggests that Distributors are engaging in a substantial amount of extension with their farmers.

Dunavant has also attempted to promote the use of nitrogen fertilizers in cotton, making it available for cash purchase at their depots and encouraging Distributors to promote it. These efforts have met with limited success, for a number of reason. First, farmers in Zambia have in the past been told that cotton “does not need” fertilizer, and some local chiefs in fertile areas apparently will not allow fertilizer into the area for cotton. The Supplemental Survey shows cotton growers to be about equally divided between those that believe it is “beneficial to apply fertilizer to cotton”, those that believe it is not beneficial to do so, and those who said they do not know. Also, according to Dunavant field staff, limited experience in the 1999/00 growing season was not positive because extremely heavy rains caused much

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[11] The term "conservation farming" covers a wide range of practices. Haggblade and Tembo (2003) define it as "a package of several key practices: dry-season land preparation using minimum tillage, ... crop residue retention, seeding and input application in fixed planting stations ("conservation basins") and nitrogen-fixing crop rotations."

[12] These authors note that estimates of the number of "spontaneous adopters" is highly imprecise, but that all evidence points to large increases.

leaching of fertilizer. An additional difficulty is that past and present policies in Zambia have used fertilizer as a tool of political patronage, distributing it "on credit" but often not requiring repayment, thus making it difficult for private companies to profitably sell fertilizer. Finally, most research shows that fertilizer application is generally less profitable on cotton in SSA than it is on maize (Kelly 2000.)

Despite the limited success in promoting fertilizer and herbicide use, it appears that, at least for the dominant firms in the industry, serious efforts are being made to ensure some level of extension assistance. There is also evidence that extension has been quite effective in raising adoption rates of conservation farming techniques among cotton growers (and others) Establishing how effective this assistance is in other dimensions awaits further work at the farm- and distributor levels.

3.3.2. Cotton Production

Provincial data on cotton production are publically available only through the 1998 harvest (1997/98 cropping season), and only from the Post-Harvest Survey (Table 6). There is concern that this survey may substantially overestimate cotton yields in the country, and underestimate the number of growers, so the data need to be interpreted with caution. Nevertheless, these data confirm perceptions from cotton companies and others in the sector that Eastern Province has emerged as the largest producer of cotton in Zambia in recent years. This province also appears to achieve the highest yields, though knowledgeable observers and ginning companies indicate that yields are lower than indicated by PHS. Northern, North Western, and Copper Belt provinces produce little or no cotton. Nearly all cotton production is by smallholders, though the larger ginning companies are making some effort to work with selected large commercial farmers.

3.4. Post-Harvest

3.4.1. Seed Cotton Marketing

Because the only practical means of recovering input credit from farmers is by discounting the cost of the inputs at the time of purchase, seed cotton marketing has been the focus of intense conflict within the sector. As indicated earlier, this conflict began to emerge 2-3 years after liberalization in 1994, associated with low and falling credit repayment rates, and reached a crisis point during the 1998/99 cropping season. During the following two cropping season (1999/00 and 2000/01), credit repayment improved very substantially, may have reemerged to some extent during the drought-affected 2001/02 season, but improved again in 2002/03.

Table 6. Cotton Production By Province 1993 To 1998 Post Harvest Survey Estimates

	Zambia	Central	Eastern	Southern	Northern	N/Western	Copperbelt	Lusaka	Western
Area (ha)									
1992/93	32,343	13,129	13,834	4,123	NA	NA	159	866	233
1993/94	28,669	8,472	12,141	7,667	NA	NA	11	377	NA
1994/95	28,450	11,860	13,700	2,496	NA	NA	96	193	104
1995/96	64,084	21,776	34,184	6,923	NA	NA	10	1,060	131
1996/97	74,279	19,520	40,068	12,268	NA	195	52	1,036	1,141
1997/98	79,272	16,784	49,094	11,515	NA	32	20	1,153	673
Production									
1992/93	23,102,772	8,082,516	12,881,013	1,599,485	NA	NA	97,125	372,883	69,750
1993/94	18,383,661	5,494,888	9,077,568	3,614,705	NA	NA	4,200	192,300	NA
1994/95	27,990,903	9,229,070	14,999,616	3,684,265	NA	NA	56,352	18,000	3,600
1995/96	63,858,498	20,090,697	36,607,170	6,373,494	NA	NA	9,750	706,212	71,175
1996/97	58,050,598	13,322,425	38,915,021	4,700,252	NA	23,400	8,560	688,128	392,813
1997/98	72,560,478	12,257,940	49,505,651	9,318,152	NA	NA	17,525	1,207,575	253,635
ield (kgs/ha)									
1992/93	714	616	931	388	NA	NA	611	431	299
1993/94	641	649	748	471	NA	NA	375	510	NA
1994/95	984	778	1,095	1,476	NA	NA	587	93	35
1995/96	996	923	1,071	921	NA	NA	975	666	542
1996/97	782	683	971	383	NA	120	165	664	344
1997/98	915	730	1,008	809	NA	NA	876	1,047	377

Source: Central Statistical Office, Lusaka, Zambia

The substantial increase in repayment rates since 1998/99 is associated in time with the rise of Dunavant's Distributor System, and of similar systems for Mulungushi and Amaka.[13] Especially in the case of Dunavant, the system appears to be a serious and well designed effort to overcome the information problems at the center of the credit repayment challenge while at the same time building strong relationships with Distributors and, through them, with farmers.[14] To what extent the improved repayment rates are directly attributable to this institutional innovation, however, is not clear at this time. At the same time that Dunavant was launching and improving its Distributor System, some of the smaller ginners experienced financial difficulties that reduced their ability to compete in the cotton market. This alone may have lead to improved repayment rates for the larger players. The partial re-emergence of credit repayment problems in the 2001/02 season is associated with the serious drought, which reduced cotton yields in Southern and portions of Eastern Province and may have lead

[13] Clark declines to speak about its input distribution credit recovery system, considering it proprietary information.

[14] Dunavant also uses large meetings of potential growers with Distributors and company staff at the beginning, middle, and near the end of the cropping seasons to build more direct ties with farmers, extending information about the company's practices and policies along with basic extension information. See section II.B.2 for more information on training.

to more intense competition among ginners for the available cotton[15]. Thus, a key research question in Zambia is to what extent the Distributor System, especially as practiced by Dunavant, has been responsible for improved credit repayment and can be expected to continue to deal effectively with this problem.

For a number of years the Ginner's Association, with strong support from Dunavant, has promoted a "revolving fund" for financing cotton inputs, and linked it to food security by including selected inputs for maize. The proposal was based in part on the experience in Uganda. The continuing interest of the Ginners' Association in this proposal suggests that they view credit repayment as a continuing source of potential problems, despite the apparent improvements in recent years. Experience in Uganda, however, suggests that the revolving fund is not a panacea for credit repayment problems (Goodland and Gordon 2000; Lundbaek 2002). Until recently, the idea garnered little interest in Zambia from government and donors, and had been put on the back burner by the Association. With the seating of a new government in late 2001 more committed to agriculture, the proposal re-emerged in modified form. Chapter 5 will discuss the resulting Cotton Outgrower Fund in more detail.

3.4.2. Processing of Seed Cotton and Marketing of Lint

About 75% of ginning capacity, and 90% of ginning throughput in 1997/98 in Zambia were concentrated in Dunavant and Clark Cotton. Clark's operations are limited to Eastern Province, while Dunavant operates in Eastern, Southern, Central, and Lusaka provinces. Thus, it seems clear that Dunavant has a dominant market position outside Eastern province, while within the province the two companies compete only against each other.

All gins in Zambia are saw gins, with an average ginning out-turn ratio of 38%. All companies appear to use the official grading system of A, B, and C for seed cotton, though Dunavant recently added A+. This company estimates that 60% of the seed cotton arriving during the 2001 harvest was graded either A or A+, and it maintains strict separation of grades of seed cotton for ginning.

Dunavant spearheaded what is probably the major success achieved by the cotton sector in recent years: control of polypropylene contamination. Until 1999, most cotton in Zambia was bagged at the farm level using polypropylene bags. Fibers from these bags then entered the seed cotton and remained in the cotton lint. Since the polypropylene fibers will not accept dyes, lint contaminated in this way received substantial discounts among buyers in Europe. Dunavant addressed this problem in two ways. First, they informed farmers that they would not accept cotton arriving at buying stations in anything other than plastic bags. Second, they designed cleaning stations at the entrance of gins, essentially slow moving conveyor belts at which women were seated, finding and manually removing polypropylene fibers. Dunavant indicates that, while some contamination remains, it has been dramatically reduced and is no longer considered a major problem by European buyers. We do not know at this point in time whether other companies have similar practices regarding polypropylene.

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[15] Interviews with various stakeholders suggest that this competition is especially intense among the two large players in Eastern Province.

Grading of lint cotton export is based on a two digit system, the first digit referring to brightness (0=best, 5=worst) and the second digit referring to length (1=shortest, 5=longest). Thus, the best quality is 05. Each bale is graded in this way prior to export. At the present time there is no HVI equipment in Zambia for more thorough testing of lint quality.

The two largest ginners (Dunavant and Clark) devote over 90% of their lint for export while the smaller gins devote over 70% of the lint for local consumption. Mulungushi and Mukuba, being owners of spinning plants, devote 100% of their production to their spinning plants. Historically, exports by Dunavant have been destined primarily to Europe, while Clark seems to supply the South African market (personal communications). The U.S. Africa Growth and Opportunities Act (AGOA) has resulted in significant foreign investment in spinning and garment making in South Africa, Mauritius, and Madagascar, suggesting that these countries may become more important export markets for Zambian cotton in the near future.

3.4.3. Marketing of Seed and Other Sub-products

All the ginners interviewed reported that they devote about 10% of the seed from gins for redistribution and sell about 80-90% to local oil processors. The bulk of the yarn (over 90%) produced by the spinners is usually destined for the export market. The rest is retained for weaving into cloth-mainly ‘chitenge’ material and blankets (Ministry of Agriculture, Food and Fisheries 2000).

4. COTTON IN SMALLHOLDER LIVELIHOOD STRATEGIES

In March 2001, the Food Security Research Project in Zambia conducted a "Supplemental Survey" to the Post Harvest Survey (PHS) carried out annually by Zambia's Central Statistical Office (CSO). The Supplemental Survey linked to the October 2000 PHS, which covered the 1999/00 cropping season. Thus, Supplemental Survey results pertain to that year. Final data files from the Supplemental Survey include 6,924 of the 7,699 households in the final PHS sample. The 776 missing households are due to either incomplete or extreme data on household incomes.

The PHS collects basic data on crop production and practices. The supplemental survey used these data, adding sections on household demography, crop marketing behavior, livestock, and off-farm income, among others. In this chapter, we use the combined data bases to characterize the role of cotton in the livelihood strategies of rural households in Zambia. To ensure comparability among cotton- and non-cotton growing households, analysis is limited to Census Supervisory Areas (CSAs) that had at least one cotton grower; CSAs with no cotton growers were not included.[16]

4.1. Geographical Distribution of Growers

Over 95% of cotton growers are found in Eastern, Central, and Southern provinces, with Eastern accounting for about 60% of all growers. Based on earlier PHSs, the proportion of all households involved in cotton fell from just under 30% in 1997/98 and 1998/99, to 23% in 1999/00. These results are consistent with other data on cotton production, and reflect the crisis that the sector suffered during that year. Since that time, it is known that the number of households involved in cotton production has increased dramatically (see also Table 1).

4.2. Characteristics of Cotton- and Non-Cotton Growing Households

Table 7 below divides the small-holder farming sector into households growing cotton and households that did not grow cotton in the 1999/00 growing season and gives the mean values of demographic, agricultural and asset indicators for each of the two groups. Only CSAs with at least one cotton grower are included in the analysis.

With regard to demographic indicators, the mean number of members in households growing cotton is 6.6, 10% higher than those not growing cotton (6.0). The number of adults 13-64 is also higher for cotton growing households, and the proportion of female headed households is substantially higher among those not growing cotton (24.6% compared to 13.6%). These patterns together suggest that households growing cotton tend to have more family labor available to them, which is consistent with results typically found in other countries. The heads of cotton growing households do not appear typically to be older than other household heads, but may have slightly more education (5.2 years versus 4.8 for non-growing households).

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[16] CSAs are the sampling unit immediately above the primary sampling unit in CSO's sample frame. See FSRP Working Paper No. 2 for more detail.

Agricultural indicators show that households growing cotton have access to about 1.5 ha more than non-growing households, and dedicate about one additional ha to annual crops. Thus, cotton growing households appear to fallow at least as much land as non-growing households. Despite cropping more land, cotton households were only slightly more likely to use animal traction. Mean area in maize and total production of maize are both nearly identical among cotton and non-cotton households, as is the probability of using fertilizer. Note that fertilizer is seldom used on cotton in Zambia; nearly all reported use will be on maize or horticultural crops. Thus, cotton growing households do not appear to be sacrificing maize production in favor of cotton

Table 7. Selected Indicators for Cotton Growing and Non-cotton Growing Households in Zambia, 1999/00 Growing Season

Indicators	Cotton Growing Status	
	HH Grows Cotton	HH does not Grow Cotton
Demographics		
Household size	6.6	6.0
... of which adults 13-64	3.6	3.2
Female headed (%)	13.6	24.6
Age of head of hh (years)	42	44
Education of head of hh (years)	5.2	4.8
Agriculture		
Land Holdings (ha)	3.8	2.4
Land cropped (ha)	2.7	1.6
... of which maize	1.2	1.2
... of which cotton	0.6	0.0
Per capita maize production (kg)	359	368
HH used animal traction	50.8	47.0
HH used fertilizer	65.4	69.4
Assets (% owning/using)		
HH owns a bicycle	65.5	44.3
HH owns a radio	50.0	31.1
HH home has an improved roof	13.5	13.1
HH home has brick or concrete block walls	16.2	18.6
HH home has cement floor	13.9	14.8

Cotton growing households are substantially more likely to own bicycles and radios than non-growing households but, perhaps surprisingly, they are no more likely to have improved roofing material or walls or floors in their homes.

Cotton growing households enjoyed incomes 50% higher than non growing households in 1999/00, and were heavily dependent on their cropping activities for this income; on average, about 15% of income came from off-farm activities or remittances for cotton growing households, compared to 25% for non-cotton households (Table 8). Similar results showing cotton growing households earning less income off-farm have been found earlier in Mozambique (Tschirley and Weber 1994).

Table 8. Income Levels and Shares for Cotton and Non-cotton Growing Households in Zambia, 1999/00 Growing Season

Income/Income share	Cotton Growing Status	
	HH Grows Cotton	**HH does not Grow Cotton**
Mean HH Income ('000 Zkw)	2,016	1,339
HH Income Share (%) from ...		
... Crop production	81.4	70.8
... Livestock	4.3	4.8
... Business	7.6	10.6
... Salary/Wage	4.6	9.8
... Remittance	2.0	3.8

In summary, cotton growing households are distinguished from their non-cotton growing neighbors primarily by having more family labor and more land to cultivate. They dedicate most of this additional land to cotton while continuing fallow land, and earn higher incomes primarily as a result of growing this crop. This income is reflected in higher holdings of assets such as bicycles and radios, but does not appear to have been invested systematically in improvements in family homes. Because cotton growing households have higher land holdings, they do not appear to sacrifice maize production in favor of cotton.

4.3. Profitability of Cotton

When the cotton sector in Zambia was first reformed in the mid-1990s, the very high international prices for cotton lint allowed ginners to pay attractive prices to farmers, and likely made cotton growing a highly profitable enterprise for both companies and small farmers. The long-term decline in world prices since 1995 may have undermined this profitability, given that prices of seed cotton in Zambia have fallen from US$0.56/kg in 1995 to an average of US$0.225/kg over the past three harvest seasons (2001-2003).

Table 9 presents synthetic budgets for cotton and maize over the past three seasons. Cotton yields are from Dunavant, while purchased inputs and labor days for both crops (and yields for maize) are weighted averages from Haggblade and Tembo over four technology types.[17] Returns to labor are calculated as gross margin divided by number of days of labor on the crop, without subtracting any charge for land. Results suggest that, during the past three years, farmers who were able to sell all their maize crop at going market prices were better off devoting their land to that crop. Maize's advantage diminished in 2003 due to the improved cotton price, and may diminish further in 2004 if the very high international cotton prices of November 2003 persist. At yield levels of 900-1,000 kg/ha reported by both Dunavant and Clark in Eastern province, cotton generates returns slightly above those for maize at 2003price levels for both crops. One must also keep in mind that the marketing of maize is far more risky than that of cotton; in the latter case, as long as the quality is acceptable, sale at the announced company price is guaranteed for most farmers. Access to inputs on credit for cotton is also a major advantage for frequently cash-constrained smallholder farmers. Thus, point in time profitability analysis, while very important, is only one aspect that should be considered in evaluating the attractiveness of cotton for these farmers. Given the rapid recovery in the number of cotton growers since the decline of 1999, it is apparent that many of them place great value on the input credit and the guaranteed output market for that crop.[18]

Table 9. Partial Budget for One Hectare of Smallholder Cotton and Maize in Zambia, 2001-2003

Budget Item	Harvest Season					
	2001		2002		2003	
	Cotton	Maize	Cotton	Maize	Cotton	Maize
Yield (kg/ha)	600	1,763	630	1,763	660	1,763
Price (Zkw/kg)	840	421	860	582	1,220	517
Gross Revenue (Zkw//ha)	504,000	742,223	541,800	1,026,066	805,200	911,471
Purchased input costs (Zkw//ha)	221,261	166,590	234,432	176,506	248,608	187,180
Gross margin (Zkw//ha)	282,739	575,633	307,368	849,560	556,592	724,291
Labor days	130	107	130	107	130	107
Returns to labor (Zkw/day)	2,175	5,380	2,364	7,940	4,281	6,769
Exchange Rate (Zkw/$)	4,200	4,200	4,450	4,450	5,000	5,000
Returns to labor (US$/day)	0.52	1.28	0.53	1.78	0.86	1.35

Using slightly different assumptions on input costs and labor days, Poulton et al. compare returns to labor and land for cotton across Tanzania, Zimbabwe, Mozambique, and Zambia

[17] Input costs from Haggblade and Tembo are comparable to those indicated by Dunavant.

[18] It should also be noted that maize yields from Haggblade and Tembo are above those reported by ACF (2002), based on MACO data. ACF reports average yields from 1997 through 1999 of about 1,350 kg/ha, vs the weighted average of 1,768 in Haggblade and Tembo. Even at these lower yield levels, however, maize appears more financially profitable than cotton, assuming effective marketing.

(Table 10). Returns to labor are calculated as in Table 9; returns to land are gross margins per ha without any charges for family labor. Until 2002, when drought and depressed prices reduced cotton's profitability, Zimbabwe clearly stands out for generating the highest returns to farmers. As stated by Poulton et al, "The 2001 figures show that, even with weak prices, the Zimbabwe sector can generate higher returns to producers than those obtained in the other countries, because of the higher yields achieved".

Table 10. Seed Cotton Prices, Returns to Land, and Returns to Labor in Four Eastern and Southern African Countries, 1998-2002

Seed Cotton Price (US$/kg)						
	1998	1999	2000	2001	2002	Mean
Tanzania	0.27	0.22	0.22	0.20	0.19	0.22
Zimbabwe	0.24	0.39	0.33	0.16	0.11	0.25
Mozambique	0.25	0.17	0.15	0.12	0.13	0.16
Zambia	0.29	0.18	0.21	0.24	0.19	0.22
Returns to Land (US$/ha)						
	1998	1999	2000	2001	2002	Mean
Tanzania	56	95	98	67	94	82
Zimbabwe	157	272	261	113	40	166
Mozambique	93	68	31	29	32	51
Zambia	105	53	73	98	75	81
Returns to Labor (US$/family labor day)						
	1998	1999	2000	2001	2002	Mean
Tanzania	0.56	0.95	0.98	0.67	0.94	0.82
Zimbabwe	1.31	2.27	2.17	0.94	0.40	1.39
Mozambique	0.93	0.68	0.31	0.29	0.32	0.51
Zambia	1.05	0.53	0.73	0.98	0.75	0.81

Tanzania and Zambia provide an especially interesting comparison. Input supply in Tanzania largely collapsed with the liberal reforms in the sector beginning in 1994, and competition for seed cotton is intense. Prices paid to farmers in Tanzania have been comparable to those paid in Zambia, while yields in the latter have been higher, due to higher input use. Nonetheless, the higher yields in Zambia have been insufficient to substantially increase profitability to farmers: returns to land and labor in the two countries have been comparable over the past five years. This suggests that Zambia will require some additional years of sustained growth in cotton yields for the current technology package to clearly generate higher returns to farmers.

5. RECENT POLICY INITIATIVES

This chapter deals with three key policy initiatives which have emerged over the past two years in Zambia's cotton sector: the proposed creation of a Cotton Board, government's recent support to input credit provision for smallholder producers of selected cash crops, including cotton, and the emergence in 2003 of District Council levies as a point of conflict between local governments and cotton companies.

5.1. The Proposed Cotton Act

Beginning as early as 2000, Dunavant began working with CDT and other stakeholders in the cotton sector to develop a regulatory framework that would allow the orderly development of the sector over time. A key concern which drove this process was avoiding a repeat of the credit default crisis that nearly destroyed the sector from 1997 through 1999. The central provision in the proposed Cotton Act is the creation of a Cotton Board with broad regulatory powers. This section reviews the basic provisions of the act, its current status, and key issues which need to be considered in reviewing the proposed act.

5.1.1. Basic Provisions of the Act

The proposed Act establishes a Cotton Board with nine voting members, appointed by the Minister of MACO upon nomination by their own institution. Members are the PS of MACO, two persons each from CDT, the Cotton Ginners' Association, and the Cotton Growers' Association, the Controller of Seeds (one person), and one person from the Environmental Council of Zambia. The Board would have no authority to set prices nor to directly engage in marketing behavior. Rather, its stated functions are regulatory and advisory. Specific stated functions of the Board are to:

- *Regulate* the production, processing, and marketing of cotton,
- *Advise* government on regulations and policies related to the sector,
- *Monitor and report* on implementation of policies and matters related to the sector, and
- "Carry out such activities as are necessary ... to the better performance of its functions"

All decisions of the Board are by majority vote of those present. A quorum is 2/3 of appointed members. Specific guidelines are provided for providing notice of the calling of meetings. The Board can create committees of its choosing, and appoint people from outside the Board to serve on those committees. The Act has strong provisions against the revealing of information obtained through carrying out duties under the Act. Penalties include five thousand "penalty units" and up to six months in jail. (Part III, section 14).

Key sections of the proposed Act are on licensing (Part III, section 15) and registration (Part IV). The Board will have a Cotton Licensing Committee of not more than seven members. Functions of the Licensing Committee are to issue certificates and licenses, approve "distinguishing marks" (company trademarks), and maintain data bases on land planted with cotton, registered cotton growers, and distinguishing marks. The proposed Act stipulates that

“any person dealing in cotton” must be registered, and must pay a fee for registration, and that any cotton leaving a registered ginner must have the distinguishing mark clearly shown (subsection 30.1). Licensing is specified for cotton ginners, cotton seed sellers, cotton seed producers, Inspectors, and “any other license which the Board may prescribe”

The Board may refuse to register a person “giving reasons in writing” if it is “satisfied that the applicant *or a person employed by the applicant* does not have sufficient knowledge or experience in the cotton trade” (emphasis added, Part VI, subsection 33.3). No criteria are provided as a basis for making such a judgement. All licence holders must maintain records on cotton transactions, which “shall be open to inspection at all reasonable times, by the Board ...” (Part VI section 35). Once granted, registrations can be cancelled by the Board for, among other reasons, buying pre-financed cotton without authorization from the financer, engaging in “pirate buying”[19], or engaging in “any other activity not registered with the Board”.

Cotton Board Inspectors must show their identification upon demand (Part VIII, subsection 43.3), and must provide a receipt prior to the seizure of any item, but have very broad powers. These include the power to:

1. Enter and search any premise and seize and remove any cotton based on “reasonable cause”
2. Stop, search, and detain any vehicle based on “reason to believe ...”
3. Inspect all records related to cotton
4. Arrest and detain based on reasonable suspicion.
5. Seize machinery or material if he believes an offense has been committed *or is likely to be committed* (emphasis added; section 44.1.c)

The Act appears to prohibit appeal of Board decisions to Courts. The appeals procedure is first to the Board, then to the Minister. No further appeals are possible. (See subsections IV.22.2 and VI.37.4).

The Act provides the Board with the ability to raise funds through Parliamentary appropriations, fees, grants, donations, and loans, and stipulates the establishment of a Cotton Development Trust Fund, to be used for various technical activities (Part VII, Subsection 39).

5.1.2. Assessment[20]

The proposed Cotton Act appears focused on two issues of great importance to any export industry attempting seriously to engage in contract farming with smallholder farmers: credit repayment and product quality. Each of these aspects can be negatively affected when large numbers of cotton buyers operate in the sector, especially if some of these do not have long-

[19] "Pirate buying" is not defined in the Act, and the difference between it and "buying pre-financed cotton without authorization from the financer" is not clear.

[20] The proposed Cotton Act is a legal document and as such requires legal expertise for a full assessment. Here we raise key issues from a public policy standpoint.

term commitments to the sector. Buyers who do not provide input credit to farmers can offer more attractive prices and thus promote strategic default by farmers – decisions to not repay their loan despite sufficient production to do so. These same buyers are unlikely to pay attention to the careful post-harvest practices needed to ensure high quality cotton for export, nor are they likely to abide by the agreements nor support the long-term efforts needed to increase productivity in the sector.[21]

Viewed in this context, efforts to impose some level of control over who can operate in a cotton sector are understandable. Too many players with too little long-term commitment to the sector can destroy any possibility for long-term development. Yet it must also be recognized, first, that abuses can be committed not only by new and potentially fleeting players, but also by established players who have accumulated too much power in the sector and may over time come to favor short-term profits over long-term development. Second, some level of competition among players is probably necessary to promote private sector innovation that reduces costs, increases value-added in the sector, and distributes this value-added widely enough that smallholder farmers engaged in the activity can earn sustained profits and escape poverty. Finally, regulation has costs as well as benefits, and a successful industry will keep its eye on reducing the costs of – and need for – formal regulation by investing in relationships that increase trust, especially between smallholder farmers and the much larger industrial buyers. The challenge, then, is to devise a regulatory approach that is workable, that has sufficient "teeth" to impose effective penalties but does so only when strictly needed, that is balanced enough to avoid capture by large established players, and that builds trust among players over time.

From this perspective, the Act's heavy emphasis on policing provides reason for serious concern. The Act grants very broad policing powers to the Cotton Board, creating in fact a parallel police force, uses vague language in specifying the conditions under which these powers can be exercised, and attempts to insulate decisions of the Board from judicial review. It also transfers powers and responsibilities reasonably within the mandate of MACO to an agency another step away from political accountability. This combination of characteristics suggests that the Board's powers could easily be abused, especially if the sector becomes more concentrated than it already is. The membership of the Board appears balanced, and its size – nine members – may make it difficult to attain a majority for hard line positions. Yet a quorum is only six, and it is of course impossible to predict how shifting alliances and power balances in the sector may play themselves out in any given vote.

The tone of the Act, and the powers proposed for the Board and its Inspectors, suggest not only that its design has been heavily influenced by the credit repayment crisis of the late 1990s, but also by a vision of the sector that emphasizes regulation and mandated orderly processes at the potential expense of competition and innovation. Given that the sector has emerged from the crisis of the 1990s due in large measure to the institutional innovations and

[21] For example, varietal zoning agreements are important to maintain varietal purity over time; collective action which by definition limits the freedom of individual actors is often needed to avoid contamination of cotton with synthetic fibers; voluntary levies are often an effective means to finance research into varietal and other improvements to raise productivity; increased farm level productivity also depends on sustained improvements in farmer management practices over time, which require investments in farmer training. Firms promoting strategic default by farmers are unlikely to support many of these efforts.

improved management that emerged from competition between the two major players, one might ask why such a potentially restrictive regulatory framework – and one open to serious potential abuse – is needed at this point in time. More specifically, one should ask, first, whether it will it be possible to implement such an approach in Zambia, or whether the regulatory and policing burden will be more than the Board can handle. Second, even if it is possible to implement, will this approach be in the best interests of the cotton sector and the broader society? Finally, are there other approaches that may simultaneously be less intrusive and more effective?

Definitive answers to the first two questions are beyond the scope of this paper. We suggest, however, that the regulations may be very costly to apply in practice and hold the possibility of serious abuse if they are effectively applied. In short, we suggest that the public good would be better served by alternative approaches that rely less on policing powers and focus more on facilitating solutions to root causes of the sector's difficulties.

5.1.3. Alternative Approaches

The proposed Act is noticeably missing any serious treatment of the problems of information and collective action to improve credit repayment, quality, and productivity[22]. The problem of assuring credit repayment is in large part a problem of the cost of information regarding the credit worthiness of farmers. Collective action – some voluntary but some likely requiring legal sanction – is key to resolving this problem, and is also necessary to conceive, finance, and ensure adherence to procedures and programs to improve the quality of cotton for export and productivity at the farm and ginning levels. While the Dunavant Distributor System (and perhaps Clark's less well known approach) has been remarkably successful reducing default and improving quality and productivity, the system likely remains costly, and apparent credit repayment rates of 85-90% remain well below levels that a purely financial institution would consider acceptable.

All companies could achieve higher repayment rates at lower cost if the sector were able to operate some kind of effective credit bureau – a clearinghouse for information on the credit status of borrowers. Credit bureaus can take many forms, from largely voluntary informal sharing of information among firms in a sector to legally mandated reporting and public availability of information on delinquencies and defaults. While the institutional and legal challenges of establishing a workable credit bureau are substantial, such an approach holds the prospect of providing a much lower cost solution to the credit repayment problem than does a heavy regulatory approach as embodied in the proposed Act.

The Act does stipulate the creation of a Cotton Development Trust Fund for technical activities, which is a positive step. This section would be strengthened if specific mechanisms were proposed for the sector to generate funds from within itself to finance programs to improve quality and productivity, e.g., ginning or export levies.

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[22] The Act does mandate that the Board shall maintain data bases on land planted with cotton and registered cotton growers, among other items. Yet it does not tie this function into efforts to address credit repayment problems.

Well functioning commodity sectors have the ability to generate regular and reliable information about key aspects of sector performance beyond credit histories of borrowers. Such information is currently very difficult to obtain. Examples of key information which should be regularly and publically available include costs of production and profitability of the crop relative to alternatives in production, an assessment of key bottlenecks that increase costs and reduce profitability, international price levels and forecasts, trends in input use and yields relative to neighboring countries, number of producers, and total production. Providing such information in a reliable fashion requires collaboration between public and private sectors. The Act should include a proposal for the institutional home and operational mechanisms to provide such information.

Another point that the Cotton Act could consider is to have programs to improve grower's capacities to negotiate and sign informed contracts. Such an effort is especially important in light of the near-monoposony positions of the major buyers in many areas of the country, and the fact that most smallholders are small farmers with very limited education. This may require that the Board works with associations such a well functioning Cotton Growers Association to facilitate group formation.

In summary, this review suggests the following. First, the concept of bringing together formally a broad set of stakeholders in the cotton sector to grapple with key sectoral development issues has great merit. Properly focused, such a group could play a central role mobilizing resources and political will to make the types of long-term investments in productivity and quality that are crucial for the sector's continued success. Second, however, the current heavy focus of the proposed Cotton Act on policing is inappropriate. If approved in its current form, the Act would create an institution with its own policing powers, vaguely defined limits on those powers, relatively little political oversight, and no judicial oversight. The probability of abuse in such an organization operating within the Zambian context is prohibitively high. Third, and as a result of these concerns, if sector leaders remain committed to the creation of a Cotton Board, its focus should be shifted from policing and controlling the sector to facilitating collective solutions to the sector's chief problems. Any policing powers considered absolutely essential should be well defined, limited in scope, and subject to normal political oversight and judicial review.

The sector needs seriously to deal with at least four issues that are either ignored or treated very briefly in the proposed Act. A redesigned Cotton Board could play a key role in addressing these issues by:

- Developing legal bases and operational approaches to improve information on borrowers' credit history. The Board could then operate or help oversee the operation of any resulting credit bureau;
- Promoting collective action for specific procedures and programs to improve cotton quality. The objective should be to develop a system of grades and standards and set of operational procedures that help create a Zambian cotton "brand" and maximize its acceptability in international markets, much as Zimbabwe did in the 1980s and

1990s.[23] The board could offer testing and grading services charging a fee to the buyers or get an appropriation for the service.

- Promoting collective action for programs to improve cotton productivity at farm and ginning levels. The CDT is already well placed to carry out such activities, so Cotton Board actions should focus on improving CDT's ability to do this job. The Board could play an advisory role towards CDT and, through its broad-based membership, generate political support for funding of its activities through a mixture of appropriations, levies, and fees.
- Proposing a specific institutional home and operational mechanisms to improve the monitoring of sector performance beyond credit repayment. The Board itself may be the most appropriate institutional home for this activity, as the process of generating monitoring information will yield insights that help refine existing programs and develop new ones that respond to the sector's evolving needs.
- Advising government on policy and programs that will affect the sector's performance. For example, the Board could generate research and position papers regarding the impacts of maize and fertilizer policy on the production of cotton and other cash crops, and thus on the country's foreign trade balance. It could critically review the performance of the Cotton Outgrower Scheme and suggest adjustments to improve its effectiveness. It could review problematical macro policies and highlight for policy makers their effects on the agricultural sector in general and the cotton sector in particular. These activities would be a natural extension of the monitoring responsibilities proposed in the previous point.

5.2. Cotton Outgrower Fund

In January 2002, Zambia elected a new President to replace Fredrick Chiluba, who had served his constitutional maximum of two terms. The new president, despite being from the same party and having some of the same people in his government, appeared to favor a more activist policy with regard to agriculture. Around the same time a proposal spearheaded by the Cotton Ginners' Association to promote food security through cotton was being presented at various fora including the Minister of Agriculture's office. The main provision of the proposal was that government would provide around US$2,000,000 to ginning companies which would be used to fund credit schemes for outgrowers with the package being a blend of cotton and maize inputs. It is not clear what effect this proposal had on the plans of the government, but during the President's inaugural speech at the opening of parliament it was revealed that the government was setting up a scheme to provide funds for on-lending to farmers for various crops, not just cotton.

[23] Careful attention to cotton quality in Zimbabwe generated a reputation in international markets for high and homogeneous lint quality, resulting in a premium above Index A of about 10%. The procedures and practices that generated this reputation began under the single channel system but were maintained well into the reform period. More recently, there is concern that quality may be undermined by the general economic crisis in the country and the entrance many new players into the cotton sector. See Poulton et al. for more information.

5.2.1. Objectives and Operation of the Scheme

The main objective of the new initiative was to increase the number of farmers growing cash crops by increasing the amount of money available to finance inputs. According to CDT, an additional objective in the cotton scheme was to reduce pirate buying. The logic was that if firms received low cost funds from government to lend out to farmers, and if they understood that these funds could be terminated if they did not play by the rules, they would be less tempted to pirate buy and would instead focus on building effective relationships with farmers and recovering their loans.

The total amount for the scheme was originally ZK 15 billion (about US$3.5 million) of which the cotton sector was to receive ZK 3.5 billion (about US$800,000). Government identified the Cotton Development Trust as the vehicle to deliver these funds to the cotton sector. Several discussions were held between CDT and the Zambia Cotton Ginners' Association The initial idea was to on-lend these funds to all the Ginners at an interest rate of between 13% and 15% on what CDT termed a pro-rata basis, a proportion of the crop processed by each ginner. In the end the available money was lent only to two ginners: Dunavant and Continental Ginneries in Livingstone. Some ginning companies refused to take part in the scheme namely Zambia-China Mulungushi Textiles and Mukuba Textiles. Clark Cotton, the second biggest cotton company in Zambia, was excluded because its location, Eastern province, was not in the pilot scheme in the year 2002.

Government signed a contract with CDT stipulating that the funds would be lent to CDT at 8% annual interest. Twenty percent of the total amount was a grant to CDT for mobilization but the CDT board resolved that all the funds should be given to the participating ginners. Government released ZK 450m in a first tranche in August 2002. The next tranche of ZK 650 million was released in December 2002. No further funds were released which meant that only ZK 1.1b of the planned ZK 3.5b had been released. Dunavant received close to ZK 1 billion while Continental Ginneries received the balance. CDT reports that payments are on schedule and that the last payment is expected in January, 2004.

The late disbursement of these funds, where the major amount was released in December 2002 as opposed to October, reduced the effectiveness of the scheme. The amount released is also small, representing about 5% of what Dunavant alone lent out in the 2002/2003 season.

CDT has planned for a scheme of ZK 2.2b for the 2003/2004 agricultural season, and plans to include all ginning firms including Clark Cotton. MACO reports that the Cotton Growers Association have applied to be the host of the funds. MACO has requested a list of members, legal status and audited accounts of the association before they could be considered. These items have not been provided and as such MACO has written to CDT to inform them that they would continue to be the host of the funds in the 2004 season. Close to ZK1 billion has been raised for the scheme this season and has already been transferred. The balance is to come from the recoveries.

5.2.2. Key Issues

To date the scheme has avoided the error of centralizing input procurement and distribution to farmers within itself. By channeling credit to private cotton companies already working with farmers and allowing them full freedom on how to use it, the scheme essentially becomes a means to increase lendable funds in the system and reduce borrowing costs for the companies. By attempting to involve all major firms in the sector in the scheme, it may create some leverage to discourage pirate buying, and also promote an attitude among buyers that could have similar effects.

A further potential benefit of the scheme may be in helping smaller firms remain in the market while at the same time giving them a vested interest in playing by the rules. As mentioned in the previous section, a major risk in allowing new, often small entrants into the cotton sector is that they may have little long-term investment in the sector and may, together, create major credit repayment problems that undermine the entire enterprise. At the same time, we have argued that some level of workable competition is probably needed to stimulate private institutional innovations that improve quality and productivity while sharing profits equitably and sustainably with farmers. Thus, it would have to be considered a major policy success if the Cotton Outgrower Credit Scheme succeeds in helping smaller firms remain in the market while providing input credit and not engaging in pirate buying. As a condition of participating in the loan program a Ginner could be required to maintain open records of loans to growers and their repayment.

The scheme would benefit from clarification of at least three key questions. First, what precisely is its purpose? Purposes which have been explicitly mentioned by players are increasing lendable funds in the sector, reducing the cost of borrowing for cotton companies, and reducing pirate buying. An additional original intention was to use 20% of the fund's assets to capitalize CDT, but at least during the first year this objective was dropped. We have suggested that a perhaps unrecognized but potentially important benefit relates to the effect of the scheme on the structure of the industry at the ginner/first buyer level. CDT, the cotton companies, and MACO would be well served by clarifying and prioritizing precisely what the objectives of the scheme are.

Second, will the scheme be financed with a revolving fund, or will it rely on new appropriations every year? A revolving fund would provide much greater stability for the Scheme, as long as the resources were managed properly and transparently. If such management cannot be reasonably assured, then recurring appropriations are probably the best funding option. Yet such a design leaves the scheme vulnerable to political and budgetary changes, and for that reason would probably undermine strong commitment by key players in the sector. To date, the scheme has not been managed as a revolving fund: CDT was required to fully repay the ZK1.1b after the first year and receive a new appropriation of ZK 2.2b. It seems imperative to these authors that a strong and transparent management structure be put in place so that the scheme can begin operating as a revolving fund.

Finally, what criteria should be used in deciding each firm's eligibility and their share of the financial resources? It is critically important that the program not be turned into a credit "give away". Thus, one key criterion for eligibility must be the ability of the firm to repay the loan. This will depend upon the ginner's ability to set up a lending organization of agents

with knowledge of growers and their ability and inclination to repay loans, and an incentive for the agents to get the repayments. This implies that CDT must make some impartial assessment, based on criteria agreed to by the Ginners' Association, of the effectiveness of a company's input credit disbursement and collection system prior to granting eligibility. Once eligibility is granted, each company's share of the resources should also be based on transparent criteria agreed to by CDT and the Ginners' Association. During the program's first year, Dunavant received nearly 90% of all funds. It is likely that with the new funding of ZK2.2b and presumed entrance of Clark and other companies, Dunavant's share will fall substantially.

5.3. District Council Levies

The levying of fees on crops traded within a district or across its borders became a point of intense conflict between some local governments and cotton companies in early 2003 when it came to light that Chadiza District in Eastern Province had raised its levy on cotton from ZK5/kg to ZK100/kg. The ensuing negotiations between cotton companies and Chadiza, and reactions by some other Districts, have raised important issues about mechanisms of public finance at the local level and impacts on economic activity and smallholder farmer incomes.

5.3.1. Operation of the Levies

According to the Ministry of Local Government and Housing (MLGH), district councils in Zambia have for many years had the power to set levies on the sale of agricultural produce within their districts or its transport out of their district. This power was made more explicit in the Local Government Act of 1991, passed under a new, democratically elected government with an agenda to cut subsidies, liberalize markets, and devolve decision making power to the local level. Under the new government, funding levels from central government to local councils declined, meaning that Councils felt greater need to exercise their strengthened powers to raise funds. Given the relative lack of non-farm economic development in rural areas, agricultural produce levies have been the primary tool at their disposal.

The interpretation of the agricultural levies by all councils in Zambia is that they are charged on any agricultural produce grown and sold within the district, or transported out of the district. Indications are that, prior to the 2003 marketing season, levies on cotton were uniform across districts at ZK5/kg, though it is not clear that all districts collected the levies on all marketed crops. In January 2002, Chadiza District gained approval from MLGH for Statutory Instrument No. 6 of 2002, in which it established new levies for maize, paprika, cassava and potatoes (grouped together), cotton, tobacco, tomato, cabbage, and watermelon. The value of the levy per kilogram, and the implicit percentage levy, varied widely. For cotton, the levy was set at ZK100/kg, higher than for any crop except tobacco, which was set at ZK300/kg.

Local businesses appear to have been unaware of the new levy schedule at the time it was passed, and the Chadiza District Council did not charge the levy at the time the crops were marketed. Instead, it provided businesses with demand notices in November 2002 (after the

close of the marketing season) regarding the total value of 2002 levies due. In February 2003, an *ad hoc* group composed of representatives of Clark Cotton, Dunavant, Stancom (tobacco), Dimon Zambia (tobacco), and a local petrol filling station formally protested the new levies and requested that the District Council reconsider them. The cotton and tobacco companies emphasized that they would fully pass the levy on to the producer, reducing the price they pay by the amount of the levy. In April, the Council reduced levies on cotton to ZK40/kg, and to ZK70/kg for tobacco. Levies on other crops remained largely unchanged, except for maize, whose levy was raised from ZK 300 per 50 kg bag to ZK 3,000. It remains unclear whether businesses were obliged to pay the full value of the originally assessed 2002 levies.

Interviews with Dunavant and MLGH officials indicate that all other districts are charging levies of ZK 10/kg, or 1% of the anticipated price of cotton at the time they were set (the actual prevailing price is about ZK 1,200/kg). However, interviews with Ministry of Local Government and Housing (MLGH) reveal that Katete District Council gained approval for its revised by-laws in June, 2003, raising the cotton levy to ZK 200 per kilogram for cotton seed and ZK 100 for raw cotton. These new rates will not take effect until the by-laws are printed and circulated by the Government Printing Office. As of September 2003 there were no other by-laws on cotton or other crops pending approval by MLGH.

Table 11 shows the number of Dunavant farmers in each District of the country, and the potential revenue that each District could collect from its levies. It assumes that the Katete levy of ZK100/kg will remain in place. Potential revenue from Clark Cotton in Eastern is likely to be in the range of that for Dunavant: about US$350,000, coming primarily from Katete and Chadiza. These are substantial sums of money for District Councils which have few other sources of public revenue.

5.3.2. Key Issues

These events raise several issues. The first is a narrow procedural issue, regarding the way in which the levies were passed. District Councils are required by law to post proposed bills on a notice board at the district offices for three months, and to take comments on them during that time. Companies interviewed indicated that this procedure had not been followed; the fact that they raised no protests until 13 months after the final *printing* of the Chadiza statute would seem to support their contention. MLGH reports, however, that in their view all procedures required to pass a law as spelled out in the Local Government Act have been followed.

While full clarity on what procedures were followed may never be attained, it does seem clear that local governments have incentives to be less than transparent when proposing such actions, due to the economic power wielded by large agro-industrial companies in poor rural areas. It is perhaps telling that Chadiza levies were reduced by 60% for cotton and 77% for tobacco, while they were raised by a factor of 10 on maize; the latter is traded primarily by small traders with little ability to organize and make their voice heard in government. From the Council's perspective, however, maize is also a much less attractive crop to levy, because only a portion of it is marketed, and collection of the levy on what is sold requires them to deal with large numbers of traders rather than one or two. What options, then, are open to District Councils to raise sufficient funds to carry out key public sector activities?

Table 11. Number of Dunavant Farmers per District, District Council Levies, and Potential Revenue to District Councils

Province	District	# of farmers	Levy (ZK/kg)	Potential Revenue (US$)
Eastern	Chadiza	2,724	40	30,645
	Chama	724	10	2,036
	Chipata	6,166	10	17,342
	Katete	9,305	100	261,712
	Lundazi	4,000	10	11,250
	Mambwe	2,860	10	8,044
	Nyimba	1,175	10	3,305
	Petauke	3,802	10	10,693
Central	Chibombo	9,223	10	17,293
	Kabwe Urban	959	10	1,798
	Kapiri Mposhi	2,441	7	3,067
	Mkushi	2,219	10	4,161
	Mumbwa	17,279	10	32,398
Southern	Choma	3,534	10	6,626
	Gwembe	2,198	10	4,121
	Itezhi-tezhi	996	10	1,868
	Kalomo	2,015	10	3,778
	Kazungula	872	10	1,635
	Mazabuka	4,103	10	7,693
	Monze	2,860	10	5,363
	Namwala	1,897	10	3,557
	Siavonga	260	10	488
	Sinazongwe	1,758	10	3,296
Other	Mpongwe	93	10	174
	Chongwe	2,034	10	3,814
	Kafue	476	10	893
Total		85,973		447,050

Note: Number of farmers from Dunavant records. Levy from interviews with MLGH and Dunavant field agents. Potential revenue assumes 1.5 ha cotton per farmer, yields of 900 kg/ha in Eastern province, 600 kg/ha elsewhere

This paper will not answer that question; simply raising it should make the point that it is probably in the interests of these agro-industrial companies to work with local governments on this issue, demonstrate their appreciation for the Councils' quandary, and agree to pay reasonable levies. At least some players indicate that they are doing this. At the same time, District councils need to understand the longer term consequences of their taxing policies. Almost all governments in the rest of the world avoid taxing exports and often subsidize them. Their objective is to be more competitive in world markets and promote economic activity. Since the price of cotton in world markets is not influenced by the small quantities marketed by Zambia, the ginners cannot pass the tax on to buyers in the world market. Most

of the tax will fall on the growers. At some level of taxation growers will reduce the production of cotton. Migration of cotton production from districts with high taxes to those with low taxes is likely. It is also likely that this migration will be out of districts with comparative advantage in cotton production and into those with less comparative advantage. The result will be some economic loss to the economy. The worst case would be that ginners find it unprofitable to remain in Zambia

The use of the taxes will also influence the outcome. If tax funds are used to reduce costs of delivering cotton, the negative effect of the tax will be mitigated. Examples include improved roads, greater security, or improvement in the enforcement of contracts. If councils were to market their levies in a way that the benefits of these levies were seen directly to impact on reducing the cost of running the business of the taxed firms companies and individuals may start viewing the tax as an opportunity. The point is that taxation policy is complex, suggesting that government and donors should consider technical assistance to local councils to grapple with this issue.

6. STRATEGIC ISSUES FOR THE FUTURE

6.1. Concentration at Ginning Level

In a review of cotton sector performance in six SSA countries, Poulton et al (echoed by Boughton et al) suggest that, while liberalization has brought benefits to most countries, it has worked best where the ginning sector is relatively concentrated. As Poulton et al state, "we find that the two 'concentrated, market-based' sectors in our review have been the most successful in meeting the common coordination challenges facing the sectors and that they have done this whilst still maintaining reasonable prices to producers." After reviewing performance in seven SSA countries, Tschirley and Zulu (2003) conclude that "Zambia's cotton sector emerges ... as a remarkable success. With no direct support from government or donors, the sector has improved productivity and quality while paying farmers a higher average price share than any other country in the analysis". They suggest that one reason for this success is that "Zambia appears to have found an effective balance between the often conflicting needs for coordination and competition in the sector".

If these conclusions are correct, then one of the key challenges that Zambia's cotton sector faces is how to maintain this balance of *workable competition* in a dynamic market setting. The expansion of Dunavant in the country has to date had a positive influence on the sector. Competition between it and Clark in Eastern province is probably also positive – farmers in the province enjoy the highest yields in the country and neither company complains of serious problems of credit default (though they do indicate that some goes on). The closure of Amaka in 2002 is not in itself a problem unless it foreshadows the closure of other smaller players; competition from players such as Continental and Mulungushi Textiles outside of Eastern province is probably important as a discipline on Dunavant's performance.

This line of argument suggests that the Cotton Outgrower Fund which was initiated in 2002/03, and which is slated to double in size for 2003/04, could be an important tool to assist smaller firms to stay in the market while providing them with incentives to provide better support to farmers and not promote strategic default. Continental and CDT believe that the program in 2002/03 helped it to nearly double its assistance to outgrowers. The challenge for managers of the fund will be to maintain the support of the largest players (primarily Dunavant) while not having it be captured by them.

6.2. Productivity and Quality

As noted earlier in the paper, farm yields and ginning ratios in Zambia continue to lag well behind those in Zimbabwe and West & Central Africa, and lint quality is substantially lower than in Zimbabwe and Tanzania. Varietal development can have major impacts on each of these aspects. Thus, the fact that no new varieties have been released and taken up since liberalization does not bode well for the sector's future performance. Development, dissemination, and maintenance of new varieties and consistent delivery of high quality extension assistance require substantial resources over long periods of time, and this may be difficult to ensure at needed levels through exclusive reliance on forced savings (e.g., levies) within the sector. Operating procedures within the sector to continuously improve seed cotton and lint quality also require funds and effective collective action. These areas thus

become an obvious candidate for funding by government and donors. The key to obtaining and successfully deploying funding for this issue will be strong collaboration between government, private companies, and farmers to ensure a clear vision and effective management. Ideally, a Cotton Board focused on long-term development issues as outlined in section V.A.iii, rather than on policing of the sector as is currently contemplated in the Cotton Act, would play a central role in this process. A strengthened and perhaps reorganized CDT would also need to make a major contribution.

In this context, and as part of a broader effort to improve productivity and quality through the system, Zambia needs seriously to assess the potential contribution of Bt- and "Roundup Ready" cotton on profitability for smallholders and cotton companies. Work on Bt cotton in 1999 was abandoned due to the lack of a biosafety regulatory framework. Currently, such a framework is bogged down at the Ministerial level. A key step forward would be to recognize that biotechnology in a non-food cash crop like cotton raises fewer controversial issues than it does in maize, and to move forward with a framework that would allow the testing of Bt and perhaps Roundup Ready cotton.

6.3. Loan Default

Loan default has receded since 2000 as a major issue in the sector. Yet as long as the country has serious competitors to the main players (and we argue that it is important that it does), loan default will remain a potentially serious problem. The government's first foray into this issue – the Cotton Outgrower Fund – is small in scope and needs clarification on a number of issues (see Chapter 5 for more detail). Yet the program is encouraging in the sense that it works with and through private companies, focuses on reducing the cost to these companies of providing input and extension services to farmers, and does not attempt to replace or fundamentally alter the private systems already in place. If the program is scaled-up in its current form and managed properly, there is no reason to expect that it will discourage continued innovation by private firms as they compete on the quality of their service, and there is some basis to expect that it will help maintain a workable level of competition for the main players.

Assuming the program continues to expand, it must avoid errors seen in Uganda and Tanzania, in which a governmental or quasi-governmental organization procured inputs and distributed them to farmers. An initial assessment of the system in Uganda (Goodland and Gordon)[24] suggests that, while the approach substantially improved the very poor performance of the country's cotton sector, it suffers from rent seeking at all levels, lack of timely delivery of inputs, and an "inherently paternalistic" approach in which farmers learn to see the inputs as free (since the cost is "hidden" in the price paid to farmers) rather than a loan which needs to be repaid. In addition, the system as designed would seem to reduce incentives for individual companies to innovate and improve the quality of their extension and input services to farmers.[25] Given the well functioning outgrower schemes in Zambia, there is no reason for the country to move in this direction.

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[24] See also Gibbon 1999, and Baffes 2002, for details and competing views on Tanzania

[25] Clark Cotton implies this when it suggests that it would not support the program "if it put everyone on the same level" in terms of quality of assistance (personal communication).

6.4. Government Policy on Food Cropping and Fertilizer Use

As a land-locked and drought-prone developing country, the Zambian government's preoccupation with food crop production is both understandable and unlikely to change in the near future. At the same time, cotton companies and others are concerned that government initiatives in this area are erratic, not sustainable, and potentially harmful to their own activities, which also play an important, though perhaps under-appreciated, role in rural livelihoods and food security. Three recent decisions by the new government suggest that the preoccupation with maize may be weakening. First, fertilizer distribution through FRA, which focused almost entirely on maize and helped perpetuate a tendency among farmers to view distributed inputs as grants rather than loans, was terminated, although there are some indications that it might resume. The history and political sensitivity of this issue unfortunately make it a very fluid area of policy, with frequent changes in direction. Second, government recently withdrew its proposal for a new Crop Marketing Authority, which many feared would have repeated many of the mistakes of the FRA (Nijhoff et al. 2003). Finally, the new government launched a program of assistance to outgrower schemes for several cash crops including cotton; while one can raise legitimate concerns about design of these programs, the fact that the government is broadening its attention beyond maize to key cash crops has to be taken as a positive development.

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Appendix Table 1: Relationships for Vertical, Horizontal, and System-wide Coordination in Zambia's Cotton Sector

Coordinating Bodies:

Zambia National Farmers' Union was previously called the Commercial Farmers Bureau, when it represented only commercial farmers. Has expanded its mandate in recent years to include smallholders, but has to date not played an active coordination role on their behalf.

Cotton Ginners' Association was formed in 1999 to represent interests of ginning companies. Has been very active in presenting policy and program proposals to government and donors, and in encouraging some level of broader, sector-wide coordination.

Cotton Development Trust is a private, non-profit organization formed primarily with ex-public sector personnel involved in technical cotton research. Has focused on varietal development ...

Agricultural Consultative Forum was formed with explicit objective of promoting dialogue and conflict resolution across the agricultural sector. Has helped facilitate at least two cotton sector-wide meetings since 1999.

FSRP (Food Security Research Project involving Michigan State University, MAFF, and ACF) has co-sponsored sector-wide meetings in 1999 and 2001 with ACF.

Type of Coordination	Objective	Potential Coordination Mechanisms		Observed Coordination Mechanisms
		Market	Non-Market	
Horizontal	Provision of public goods	NA	Voluntary adoption of common grades / grading procedures;	All companies seem to use common grades as developed by CDT. Grading *procedures* at the gin level, however, can vary substantially.
			Information sharing on defaulters (formal or informal);	Information sharing has been proposed to deal with credit recovery problem, but has been very limited in practice.
			Joint funding of research;	Currently all cotton research carried-out by CDT with government and donor funding. Mechanisms for private sector funding in process of being implemented.
			Varietal zoning agreements;	Agreements are informal, larger companies are very committed to maintaining zoning practice
	Reducing investment risk (primarily related to improving information)	NA	Voluntary adoption of a common contractual form;	No formal adoption of common contractual forms, though several companies moved in similar directions starting in 1999 regarding organization of outgrower scheme. Best known of these is the Dunavant Distributor System
			Information sharing on defaulters (formal or informal);	Little or none (see above). Some information is shared, but not acted upon.
			Area of operation agreements (formal or informal);	No formal agreements. Evidence of attempts at informal agreements, but little success in maintaining.

Type of Coordination	Objective	Potential Coordination Mechanisms		Observed Coordination Mechanisms
		Market	Non-Market	
	Setting prices	Price leadership	Price fixing (typically informal);	Not clear
			Price negotiation with producer organizations;	None
			Price negotiation with government;	None
			Area of operation agreements (formal or informal);	See above.
	Influencing government policy (lobbying)	-	Meetings / activities of ginners' association;	Ginners' Association, with leadership from Dunavant, has regularly lobbied government on policy issues, focusing primarily on credit recovery issue. Currently (July 02) has proposal for "Food Security through Cotton" before government.
			Collaboration between CDT and private sector.	CDT worked very closely with ginners and other stakeholders developing a) proposal for sector-wide credit fund, b) new Cotton Act to form Cotton Board.
			Sponsoring of open public/private fora;	ACF and FSRP in collaboration with Ginners' Association and ZNFU have sponsored two such forums, with broad policy focus.
			"Closed-door" lobbying (typically informal?)	Not clear, but likely that this has increased with new administration coming to power in late 2001, which is more focused on agriculture.
Vertical	Reducing investment risk (primarily related to improving information)	Long-run supply contracts	Vertical integration;	Mulungushi Textiles integrated backwards to ginning in 1999. Mukuba Textiles also owns a small gin but buys most of its lint.
			Contracting with farmers (contracts can have *multiple objectives*);	Predominant mode currently is contracting with distributors/contact farmers/agents, who then contract with farmers. Contracts with farmers appear to be primarily informal.
			Contracting with input firms;	None
			Promoting farmer organizations;	Some collaboration of NGOs with Dunavant and other ginners; SHEMP project and "Food Security through Cotton" project.
	Increasing productivity	--	Contracting with farmers (contracts can have *multiple objectives*);	See above. Most developed system is Dunavant Distributor System.
			Contracting with input firms;	None
			Promoting farmer organizations;	See above

Type of Coordination	Objective	Potential Coordination Mechanisms		Observed Coordination Mechanisms
		Market	Non-Market	
Sector-Wide	Affecting government policy	--	Annual cotton stakeholders' forum;	No formalized annual forums, but at least two broad stakeholder meetings since late 1999.
			Crisis meetings when whole sector faces trouble	Yes; see previous statement. 1999 meeting focused on credit recovery problem and deficiencies in legal system.
	Problem solving (private collective action)	--	Annual cotton stakeholders' forum; Crisis meetings when whole sector faces trouble	See above