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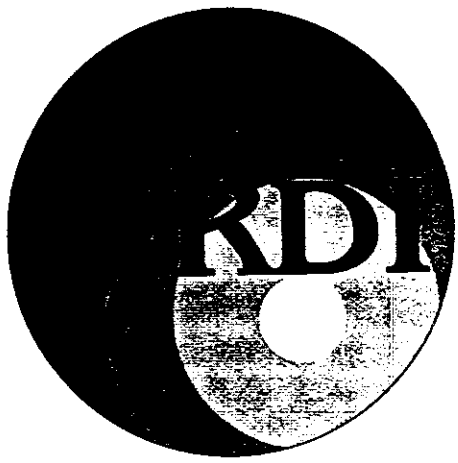

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Report No. 110

QUALITY ASSESSMENT OF COTTON CARRYOVER STOCKS

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List of Acronyms

APCP	Agricultural Production and Credit Project (USAID)
APRP	Agricultural Policy Reform Program (USAID)
ALCOTEXA	Alexandria Cotton Exporters Association
CALCOT	California Cotton Cooperative
CAAES	Central Administration for Agricultural Economics and Statistics
CAPQ	Central Administration for Plant Quarantine (MALR)
CASC	Central Administration for Seed Certification and Testing
CASP	Central Administration for Seed Production
Co.	Company
Cif	cost, insurance, freight
CATGO	Cotton Arbitration and Testing General Organization
CIT-HC	Cotton and International Trade Holding Company
CIF	Cotton Improvement Fund
CRI	Cotton Research Institute (ARC, MALR)
CSPP	Cotton Sector Promotion Program (GTZ)
ETMF	Egyptian Textile Manufacturers Federation.
ELS	Extra long staple cotton
FD	Feddan (equal to 0.42 hectares or 1.037 acres, 4200 square meters)
FOB	Free on Board (In regard to exports of Egyptian cotton this includes all costs incurred in Alexandria in exporting cotton)
FY	Fiscal Year
GATT	General Agreement on Tariffs and Trade
GOE	Government of Egypt
HC	Holding company
HVI	High volume instrument testing systems
ITMF	International Textile Manufacturers Federation
Kg.	Kilogram
Lb.	pound (unit of weight, equal to 0.45359 Kg.)
LE	Egyptian Pound (monetary unit)
LS	Long staple cotton
MK	Metric kentar (equal to 50 Kg of lint cotton)
MT	Metric Ton.
MALR	Ministry for Agriculture and Land Reclamation
MPE	Ministry of Public Enterprise
MTS	Ministry of Trade and Supply
MLS	Medium long staple cotton (varieties produced in Upper Egypt)
PBDAC	Principal Bank for Development and Agricultural Credit
RDI	Reform, Design, and Implementation Unit of APRP

SK	Seed kentar (equal to 157.5 Kg of seed cotton)
SWRMC-HC	Holding Company for Spinning, Weaving, and Ready Made Clothes
TCF	Textile Consolidation Fund
TMT-HC	Textile Manufacturing and Trade Holding Company
UD	Universal Density cotton bale (American size bale of 480 lb.)
US$	United States dollar
USDA	United States Department of Agriculture

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A sincere ***shukran*** goes to the management of all of the public cotton trading companies and the managers of the five gins that we visited. The data they provided to us on their stocks of Giza 70, and for answering our many questions made this study possible. They provided the bulk of the information contained in this report.

We appreciate the assistance of the Chairman and staff of CATGO for providing many types of data that describe the cotton stocks of the seasons from 1996-97 through the current season and for their patient explanations of their procedures and the traditions of the cotton trade.

Executive Summary

In Egypt, small carryover stocks of cotton at the end of each market season are common. However, these stocks began to grow in the 1997-98 and 1998-99 seasons.

At the beginning of the 1999-2000 market season carryover stocks had reached 1.5 million kentars (75,000 MT) of ELS cotton with 1.1 million kentars (55,000 MT of Giza 70.

Despite considerable export and domestic sales during January-March 2000, carryover stocks of Giza 70 were still almost 750,000 kentars (37,330 MT) on 15 April 2000. The bulk of these stocks (65 %) were carryover stocks from the 1998-1999 season and the remainder from the 1997-98 season (28 %) and the 1995-96 and 1996-97 seasons.

The data that were provided on the quality of these stocks were incomplete. However, the available data seem to indicate that the average grade of these carryover stocks is about 1/8th grade lower than that of the original crops from which these stocks were obtained. This indicates that most of the remaining stocks are exportable. But exportability is a definitional problem. ALCOTEXA has usually specified Good + 3/8th as the minimum exportable grade, but this can be changed, and has been changed in the past. Lower grades could be exported and lower grades could be sold to domestic spinners, if the price is right.

Little HVI data were available on the carryover stocks. The available data lead to the conclusion that the remaining Giza 70 carryover stocks are similar in physical characteristics to that of the original crops.

An analysis of data on the 1999-2000 crop of Giza 70 revealed almost no relationship between HVI readings and the grade of the cotton. If HVI readings reflect cotton spinning quality, then Egyptian grades are a poor basis for pricing cotton. This topic needs further research. If, after further study this conclusion is proven correct, then Egypt needs to change its methods of pricing cotton. The grade and HVI data now available at CATGO needs a thorough statistical analysis. Statistical consultants need to be provided to CATGO to assist them with this analysis.

Although most traders said that the type of storage was important, almost half of these stocks (43 %) were found to be stored in open shonas (yards) with no cover against sun or rain. Almost all (99 %) of cotton stored at gins is in open shonas without cover.

Very little conclusive data are available on the losses from deterioration in spinning qualities of carryover stocks from prolonged exposure to rain and sun. This subject needs further study.

The aggregate carrying costs of the Giza 70 stocks from 1995-96 through 1998-99 up to 1 April 2000 is estimated at LE 106 million. The main cost item in the carrying cost is the interest charge (91-94 %). These costs were probably not cash costs but were probably simply added to the accumulated debts of the public cotton trading companies. This is unfortunate. There seems to be no one in the GOE who is anxious to reduce these costs. **We recommend that the public trading companies be charged with the costs of carryover stocks in the future. This recommendation is**

made simply to find someone in the GOE who has some concern for minimizing such costs in the future.

An additional LE 116 million has been lost on these stocks (of Giza 70 only) through the decline in prices. Some of this may be recovered if prices rise in the near future, and these stocks can then be sold. **But the carrying costs continue to mount at the rate of 2 cents per lb. per month. Hence these stocks should be held only if the price is expected to rise by at least 2 cents per month.**

Carryover stocks result from a lack of price flexibility. If the prices had been reduced at the right time, these stocks would have never accumulated. It is quite evident that the price strategy followed was not the best strategy. Some price cut should have been made at some date. Some price flexibility was demonstrated by ALCOTEXA during the 1997-98 and 1998-99 seasons. It appears that the price reductions should have been bigger and quicker.

However, we recognize that hindsight is better than foresight and cannot prescribe exactly what price reduction should have been taken at what time.

It appears that in the past, carryover stocks have been allowed to reach costly levels before any remedial action is taken. A study is needed on safe and necessary stock carryovers. With current trade alternatives, stocks can safely be reduced to very low levels to minimize carrying costs.

A model designed to investigate optimal strategies to reduce stocks indicates that with high interest rates, price cuts should be taken as a way to reduce carrying costs to maximize final revenues. The model indicates that the higher the interest rate, the quicker the GOE should lower the price to sell its stocks.

The Egyptian cotton trade should prepare for Internet auction marketing. This system is now used by the Egypt's main competitors. Such a system presents the maximum possible amount of information on the product to the buyer. CATGO will have a major role to play in such a market system, but CATGO does not currently provide the needed data in a timely and useful manner. CATGO needs to provide HVI data on the current crop to both buyers and sellers during the market season, not after the season is finished.

1. Introduction

1.1 Historical Background

Cotton has been an important export crop for Egypt almost since cotton has been produced in this country. Cotton was exported every year during the entire twentieth century. During the first 40 years of the century, exports equaled 96 percent of total production, which averaged 6.9 million kentars per year (345,000 MT). With the development of the local spinning industry the share of production that was exported began to decline. During the 1940s and 1950s exports were 81 percent of production. Nationalization of the cotton industry occurred during the early 1960's with increased development of local spinning and hence increased local consumption. Exports averaged only 30 percent of total production during the 1980s.

During the 20th century carryover stocks had been an occasional problem. In the 1920-21 season the carryover stocks reached 40 percent of one year's production with some stocks being carried over for the next 3 seasons. In the 1929-30 season (the year of the stock market crash), carryover stocks reached 27 percent of annual production and stocks further accumulated the next season. It was 1935-35 before these stocks disappeared.

The biggest carryover stocks resulted from surpluses between 1939-40 and 1942-43. At the end of the 1942-43 season carryover stocks were 6.6 million kentars (330,000 MT), which was about twice the annual production. It was 1950-51 before these stocks were all liquidated. No large carryover stocks resulted between 1950-51 and 1992. Imports were required during many of the years between 1975 and 1995 to meet domestic needs, although some exports still took place every year.

Under nationalization, the pricing of cotton for export was not market determined. Export prices were set annually at the start of each market season at levels, which were estimated to be appropriate, but little flexibility in prices was demonstrated during the season. Liberalization and privatization of the cotton markets began with the 1994-95 market season when private firms were permitted to trade cotton domestically and the next season, 1995-96, private firms were permitted to export cotton. However, the pricing of cotton for export has changed little since the period of nationalization. Since 1995, export prices have continued to be determined by ALCOTEXA.[1] Private exporting firms have become members of ALCOTEXA, but the management committee, which determines the pricing policing, has been until recently under public control. In the 1999-2000 season the composition of this committee was evenly divided between public and private members.

During this transitional period, ALCOTEXA has followed a policy of inflexible pricing, but not as inflexible as existed prior to that date. For example, during the 1994-95 and 1995-96 seasons no changes were made throughout the market seasons in the opening prices. With these rigid prices, carryover stocks had reached 1.6 million

[1] ALCOTEXA is the Alexandria Cotton Export Traders Association that announces the opening export lint prices each season and meets every Sunday through out the season to consider possible price changes.

kentars on 31 August 1996. But during the 1996-97 season, many price changes were made by ALCOTEXA. The prices of 5 varieties were increased from 8 to 12 cents per lb. (7 to 11 percent) with price changes from 5 to 7 times during the season, varying with variety. However, all price changes were increases. Exports during that season increased dramatically from 376,000 Kts. the previous season to 929,000 Kts. (146 % increase) but carryover stocks increased by nearly 2 million kentars to 3.6 million on 31 August 1997. This increase in stocks implies that the price increases made by ALCOTEXA during the season were probably excessive and perhaps exports could have been increased still more with lower prices.

At the start of the 1997-98 season, ALCOTEXA's opening prices were 10-15 cents/lb. (10 -12 %) below the previous season's ending prices, and some additional price reductions were made during the season. For example, the price of Giza 75 was decreased from its opening price of 97 by three cents to 94 and the price of Giza 70 was decreased from 127 to 124. Actually, these price reductions were accomplished by lowering the minimum exportable grade, rather than lowering the prices per se. In addition, most of these price reductions came very late in the season (week 36 or later). The price of a new variety, Giza 86 was increased in week 4 by 6 cents/ lb. to take advantage of a brisk demand, but this price was also decreased in week 38.

Exports in the 1997-98 season increased from 929,000 kentars (46,500 MT) the previous season to 1.4 M. kentars (70,000 MT) resulting in a slight reduction in carryover stocks at the end of that season of about 100,000 kentars to 3.5 million kentars (175,000 MT).

At the opening of the 1998-99 season, the export prices were again reduced to try to reduce carryover stocks that had existed for three years, and to match declining world prices. The price of Giza 70, for grade Good + 3/8ths was dropped from the previous season opening of 127 by 13 cents to 114 cents/lb., and the price of Giza 86, the replacement for Giza 75, was dropped from 102 to 97. Very little price flexibility was exhibited during this season. The prices of Giza 86, 85, and 89 were increased by 2 cents in week 16. In week 18, a reduction of 4-5 cents was made in the ELS varieties, partly through a price decline and partly through a reduction in exportable grade. In week 38 an additional 5 cents/lb. price reduction was made in the ELS varieties to try to reduce the carryover of these varieties.

The pricing policies during 1998-99 resulted in substantial increases in exports, to 1.87 million kentars versus 1.4 million the previous season (93,500 MT versus 70,000 MT) and resulted in a reduction in carryover stocks to 1.5 million (75,000 MT). But at the end of the 1998-99 market season, 99 percent of the stocks were of ELS varieties and the stocks of Giza 70 were 1.1 million kentars (55,000 MT) or 71 percent of total stocks. This included a very small amount produced in 1995, but sizeable quantities produced in 1996 and 1997 with the majority from 1998.

These past experiences illustrate that carryover stocks are often permitted to reach sizeable quantities before any remedial action is taken. Carryover stocks that are less than one years' production seem to give little concern.

1.2 Purpose of this Study

The objectives of this study include:

1) to make an appraisal of the current carryover stocks of Giza 70 that will be useful in selling the remaining stocks,[2]
2) to arrive at quantitative estimates of the carrying costs of unsold stocks of cotton, and,
3) to suggest some alternative market mechanisms or strategies to reduce this carryover stocks in the future.

A current inventory will be made of the stocks of Giza 70 by year of production. Attempts will be made to classify these stocks by method of storage and by grade and to provide as much HVI data on these stocks as possible.

Cash carrying costs, including bank finance costs, storage charges and insurance costs will be estimated for these stocks. Other costs include any deterioration of the cotton or additional losses from storage. Types of storage will be described and the storage conditions of the stocks will be described as fully as possible.

Alternative marketing strategies and policies will be discussed, including the possibility of selling of carryover stocks on an Internet auction.

[2] For the remainder of this report carryover stocks of Giza 70 exclude unsold stocks form the 1999-2000 season but includes remaining stocks from 1995-96 through 1998-99.

2. Inventory of Current Stocks

2.1 Carryover Stocks at the Start of the 1999-2000 Season.

Table 2.1 provides an overview of the cotton stocks situation, including the carryover on hand at the beginning of the market season and the estimated production from the 1999-2000 season. These data clearly indicate that the excess stocks are primarily of Giza 70. Of the total stocks of about 1.5 million kentars (75,000 MT), nearly 1.1million (55,000 MT) or 71 percent, are of Giza 70.

Table 2.1 Carryover Stocks from Previous Seasons and 1999-2000 Production. (Kentars)

Variety	Carryover Stocks 9/1/99	Production, 1999-2000 Season	Total Available Stocks
Giza 45	43,000	21,355	64,355
Giza 87	1,700	---	1,700
Giza 76	75,000	---	75,000
Giza 70	1,095,000	488,803	1,583,803
Giza 77	320,000	---	320,000
Giza 88	1,300	8,509	9,809
Total ELS	1,536,000	518,776	2,054,667
Giza 86	---	1,066,964	1,066,964
Giza 75	7,000	---	7,000
Giza 89	---	1,252,060	1,252,060
Giza 85	3,000	766,506	769,506
Giza 80	---	438,846	438,846
Giza 83	---	534,501	534,501
Total LS	10,000	4,058,877	4,068,877
Grand Total	1,546,000	4,577,544	6,123,544

Source: ALCOTEXA

The carryover stocks of Giza 70 on 1 September 1999 were in the hands of the public trading companies and were primarily from the 1998-99 season (Table 2.2).[3] The six public trading companies hold almost all of the carryover stocks primarily because the public companies are required to purchase all cotton production that the private trading companies do not purchase. During the three years represented in Table 2.2, the bulk of the seed cotton was purchased from growers at the PBDAC sales rings. In these three seasons the private companies were given their choice of sales rings and any rings not chosen by the private trade were divided fairly evenly between these six public companies. The three public ginning companies also purchased some seed cotton but were given smaller allocations of sales rings. Thus, the six public companies each obtained similar quantities of each variety each season, not only Giza 70. These companies did not compete in the purchasing of this seed cotton, they merely purchased the quantities assigned to them. This indicates that the public companies are the arm of the Government in implementing its cotton pricing policies.

[3] The data in Table 2.2, from CIT-HC, indicates a larger carryover than do the data from ALCOTEXA. The data in Table 2.2 are considered more reliable. The data in Table 2.1 were presented to provide estimates for the LS varieties and on 1999-2000 production.

Table 2.2: Carryover Stocks of Giza 70 by Public Companies on 1 September 1999.

	1996-97		1997-98		1998-99		Total	
Company	Kts	MT	Kts	MT	Kts	MT	Kts	MT
Port Said	31	1.6	63,747	3,187.4	125,972	6,299.0	189,750	9,487.5
Cairo	26	1.3	28,495	1,424.8	123,105	6,155.0	151,626	7,581.3
MISR	16,077	803.9	60,482	3,024.1	112,966	5,648.0	189,525	9,476.3
Alcotan	22,672	1,134.0	48,286	2,414.3	94,472	4,724.0	165,430	8,271.5
Alexandria	28,882	1,444.0	70,992	3,549.6	116,270	5,814.0	216,144	10,807.0
Eastern	23,724	1,186.0	79,551	3,977.6	120,495	6,025.0	223,770	11,189.0
Delta Ginning		0	3,339	167.0	1,666	83.3	5,005	250.3
MISR Ginning		0		0	18,583	929.2	18,583	929.2
El Wadi Gin.		0		0	29,148	1,457.0	29,148	1,457.4
Total	91,412	4,571.0	354,892	17,745.0	742,677	37,134.0	1,188,981	59,449.0

Source: CIT-HC

The data in Table 2.2 indicate that 62 percent of the carryover stocks on hand on 1 September 1999 were from the 1998-99 season, while 30 percent was from the 1997-98 season and 8 percent was from the 1996-97 season.

In these three seasons the private companies chose to purchase small quantities of all ELS varieties. In the 1997-98 season private companies purchased only 6.5 percent of all seed cotton (Table A-3, 5). Only one private firm, Modern Nile, bought any Giza 70 seed cotton that season and at only 6 PBDAC sales rings at which G-70 was sold. The low level of private purchases was due to high seed cotton prices announced by the Government.

In the 1998-99 season the private sector purchased only 10 percent of the ELS cotton (page 32, 11). Many private traders thought that Giza 70 was over-priced in the export markets and hence, exports would be difficult. As a result, on 1 September 1999 the private companies had negligible quantities of Giza 70 carryover stocks.

The Government has a policy of assuming responsibility for the carryover stocks of the public trading companies at the end of each market season (31 August). The stocks remain in possession of the public companies but the carrying costs become the responsibility of the Government. In addition, the Government generally reimburses these trading firms for any loss due to a reduction in the export prices. Under this policy the trading companies have little or no incentive to sell old stocks. For example, the chairman of one of these trading companies reported that he was offering price discounts to domestic spinners if they would purchase cotton from his current (1999-2000 season) stocks, in order to reduce his carrying charges. However, he was not offering similar discounts on the older carryover stocks.

2.2 Estimated Carryover Stocks on 15 April 2000

Traders report that the spinning qualities of the Giza 70 produced in these three years (1996, 1997 and 1998) differed considerable. Hence, to get a useful assessment of these stocks, we attempted to estimate the stocks remaining on hand on 15 April 2000

classified by the year in which it was produced. As reported above, these stocks remain in the hands of the public companies.[4]

The Cotton and International Trade Holding Company (CIT-HC) provided data on the total stocks of Giza 70 on 20 March 2000 for each company. These data included the production of the 1999-2000 season.[5] Note that some differences were reported by the ginning companies for the stocks as of 1 September 1999. It is assumed that the most recent data is the most accurate.

Table 2.3: Stocks of Giza 70 on 1 April 2000 by Public Companies. (Kentars)

Company	Stocks on 1 Sept. 1999	1999-2000 Production	Total Supply	Deliveries this Season	Total Stocks of Giza 70
Port Said	189,750	64,345	254,095	84,084	170,011
Cairo	151,626	52,682	204,308	118,557	85,751
MISR	189,525	48,726	238,251	112,431	125,820
Alcotan	165,430	66,166	231,596	72,436	159,160
Alexandria	216,144	53,549	269,693	78,491	191,202
Eastern	223,770	57,620	281,390	111,657	169,733
Three Gin companies	41,475	17,179	58,654	34,937	23,717
Total	1,177,720	360,267	1,537,987	612,593	925,394

Source: CIT-HC, adjusted to 1 April based on ALCOTEXA data for week 28.

Data on the composition of the carryover stocks of Giza 70 were requested from the six public companies. The request was for data on the quantities from each of the three seasons, by grade, and with accompanying HVI data. The responses were voluntary, but five of the six companies provided most of the data requested, however, the data provided differed somewhat in its makeup. Data on the amount of holdings by season and location were obtained on more than 89 percent of the carryover stocks. The visits with the trading companies, with five gins, and with one gin company revealed that the carryover stocks of Giza 70 held by the three public ginning companies was currently only 23,000 Kts, (1,150 MT) or three percent of the total stocks.

Estimating inventories of Giza 70 at the present time is like shooting at a moving target. The trading companies are making new export commitments of Giza 70 daily and are also moving stocks in preparation for exports or domestic sales. The estimates presented below are very clearly estimates.

Total uncommitted stocks of Giza 70 from all seasons on 15 April 2000 is estimated at 865,000 Kts (43,250 MT). This estimate was based on a CIT-HC report on stocks as of 18-3-2000 with adjustments based on the data obtained from the public trading companies and from six gins that ginned G-70 in 1998-99 and 1999-2000 (see Annex I). In early April 2000 gins reported holding 118,400 Kts. (5,920 MT) of Giza 70 from

[4] As indicated in Table 2.2, some of the Giza 70 stocks are in the hands of the three public ginning companies. The total amount held by these companies on 1 Sept. 1999 was only 2,073.8 MT or 3.5 percent of the total stocks. These companies do not export cotton. They either sell it to the domestic spinners or to the public trading companies for export. Data on their stocks were obtained when visiting the gins. Latest data shows that these ginning companies held only 3 percent of the Giza 70 stocks.

[5] The production of this season (1999-2000), are not considered as carryover stocks and will be separated out below. This production is included here only because the data were made available in this manner.

the 1999-2000 season. Two trading companies also reported small quantities of Giza 70 from the 1995-96 season that were not included in the CIT-HC report. Thus, total carryover stocks on 15 April was estimated at 37,330 MT or 746,600 Kt (Table 2.4).

Table 2.4: Estimated stocks of Giza 70 held by Public Companies as of 15 April 2000 by Season Produced.

Season	Kentars	MT	Percent of Carryover
1995-96	2,380	119	0.3
1996-97	51,320	2,566	6.9
1997-98	207,500	10,375	27.8
1998-99	485,400	24,270	65.0
Total Carryover	746,600	37,330	100.0
1999-00	118,400	5,920	---
Total Stocks	865,000	43,250	---

2.3 Grades of the Carryover Stocks

Before examining the grades of the carryover stocks let us briefly examine the available data on the grades of the entire crop of Giza 70. Data were made available for only three years; 1997-98 through 1999-2000. Only two of these are carryover years but they are the two years with the biggest share of the carryover. The average grades reported for these crops was Good + 1/4 with about 75 percent of the crop falling within four grades between Good + 3/16 and Good + 3/8 (Table 2.5 and 2.6).

Table 2.5: Entire Crop of Giza 70 Classified by grade. (Percent)

Grade	1997-98	1998-99	1999-00
FG-3/8	0.02	---	---
FG-7/16	0.02	---	0.15
G/FG	0.59	1.12	0.85
G +7/16	4.39	5.47	6.3
G +3/8	14.20	15.12	17.4
G +5/16	21.78	19.66	21.7
G +1/4	22.03	19.95	21.6
G +3/16	17.70	13.55	13.1
G +1/8	8.28	7.65	7.0
G +1/16	3.57	5.16	3.4
Good	2.51	5.25	2.6
G -1/16	1.19	1.95	2.0
G -1/8	1.40	2.50	2.0
G - 3/16	1.20	1.26	0.93
G -1/4	0.55	0.61	0.66
G - 5/16	0.06	0.16	0.1
G - 3/8	0.15	0.20	0.18
FGF/G	0.14	0.24	0.04
FGF+ 3/8	---	---	---
FGF + 1/4	0.03	---	---
Ave. Grade	G + 1/4	G +1/4	G + 1/4

Source: CATGO

Table 2.6: Summary of Giza 70 Original Crop by Grade.

	Percent of crop within grades of:	
Season	G+ 3/16 to G + 3/8	G +1/16 to G +7/16
1997-98	75.7	92.1
1998-99	68.3	86.6
1999-00	73.8	90.5

The public trading companies were asked to provide data on the grades and spinning qualities of their carryover inventories of Giza 70. The format of the data on cotton quality provided by these companies differed widely but each company provided some information. Table 2.7 presents a summary of the data reported by three of the public trading companies. The stocks of these three trading companies represented 49 percent of all Giza 70 stocks reported in Table 2.4.

Table 2.7: Distribution of Giza 70 Carryover Stocks by Grade for Three Public Companies. (Percent of stocks)

Grade	1996-97	1997-98	1998-99
Good + 3/8	7.2	7.7	15.9
Good + 1/4	42.6	26.7	37.4
Good + 1/8	20.3	24.8	19.5
Good	18.3	29.8	19.2
Below Good	11.6	11.1	8.0
Total	100.0	100.0	100.0

A fourth company, which had the smallest quantity of stocks, reported that their remaining stocks were primarily from the 1998-99 season and were all below a grade of Good, and in grades G - 1/4, G -1/8 and G - 1/16. Another company reported that 80 percent of its remaining stocks were of sufficient grade to be exportable.[6] Another company reported the following average grades for their stocks of Giza 70:

Season	Average Grade
1995-96	G + 1/8
1996-97	G + 1/4
1997-98	G + 3/16
1998-99	G + 3/16

The average grade of the stocks included in Table 2.7 was just slightly above Good + 1/8th for 1996-97, slightly below Good + 1/8th for 1997-98 and close to Good + 3/16 for the stocks from 1998-99. Since exports must be of certain minimum grades (usually Good + 3/8ths) the average grade of carryover stocks would be expected to be lower than the average for the entire crop. The reduction in grade between the original crop and the remaining stocks here appears to have been about 1/8th of a grade.

[6] This information is not very conclusive. Currently the lowest exportable grade permitted by ALCOTEXA is Good + 3/8 but consideration is being given to reducing this minimum exportable grade on the carryover stocks of Giza 70 as a way to decrease the price to encourage exports of these stocks.

2.4 Egyptian Export Practices

Egypt exports cotton by type. This is a rather ambiguous procedure. Essentially, the Egyptian exporters prepare samples of their cotton that are sent to all of their potential buyers. The buyers examine and test these samples and buy accordingly. When a shipment of cotton is being prepared, the seller traditionally uses farfarra to mix or blend together the proper proportions of cotton that he has in stock.[7] His aim is to produce a lot of a size needed to meet the contract, which is homogeneous, and which matches the sample he has sent to the buyer, for the type contracted for. CATGO has the responsibility to determine that the grade of the cotton being exported is at least the permitted minimum exportable grade, as specified by ALCOTEXA. Currently this minimum exportable grade is Good + 3/8 for all varieties except Giza 45.

The Egyptian export trader is permitted to blend together lint cotton that is within one full grade of the final grade. For instance, if the final grade is to be Good + 3/8, the exporter is permitted to use cotton from grades Good/Fully Good - 1/8 at the top end down to Good - 1/8 at the bottom. In this manner, cotton which is below the minimum grade of Good + 3/8 is blended with higher-grade cotton so that the final result meets the type sold and the lower grade cotton becomes utilized for export.

Since grade is largely a matter of visual appearance, which is a function largely of the foreign matter content, farfarra procedures can also upgrade cotton, thus the lower grades can be used for export (7). Finally, some of the lowest grade cotton is sold to the domestic spinners where no minimum grade is specified.

Public traders reported that currently they are blending the Giza 70 stocks from different years. Thus, for example, low-grade stocks from 1998-99 could be blended with higher grades from 1999-2000 in the preparation of the export lots. But this blending or mixing does not permit all cotton to be exported. Some quantity usually remains that must be sold to domestic spinners at discount prices.

2.5 HVI Specifications of the Carryover Stocks[8]

Again, we begin by providing the available HVI data for the entire original crops of Giza 70 from which these carryover stocks originated. The HVI data for the crop of 1999-2000 are not available at this time for the entire crop.

CATGO reported that HVI testing was optional prior to the 1998-99 season. Hence the data presented here for earlier seasons represented only part of the crop. Reports from the trading company chairmen indicate, that in the past, some of them requested HVI tests only for the cotton which was likely to be exported, and not on the cotton that they expected to sell to domestic spinners. This means that the HVI data in Table 2.8 represents only the higher grades and not the entire crop.

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[7] The exporter who presses UD bales at the gin directly for export does the blending of cotton as seed cotton prior to ginning.

[8] HVI means high volume instrumentation for measuring the physical fiber properties. CATGO performs HVI tests on Egyptian cotton. For a sample of results see *The Egyptian Cotton Gazette*, Issue No. 11 pages 106-107.

Table 2.8: Physical Fiber Properties of the Original Crop of Giza 70 by Season.

	Season				
Physical Properties	**1994-95**	**1995-96**	**1996-97**	**1997-98**	**1998-99**
Length					
2.5 % span length (mm)	35.9	35.0	35.0	35.3	35.4
Uniformity Ratio	50	50	50	51	47
Strength					
G/Tex	33.7	34.0	34.2	34.6	34.0
Elongation (%)	5.4	5.6	5.5	5.3	5.7
Micronaire	3.6	4.0	3.73	3.88	3.85
Maturity Index	76	77	74	76	NA
Non-lint Content (%)	4.6	4.2	3.6	3.3	1.3

Source: CATGO tests reported in ***The Egyptian Cotton Gazette,*** Issues 111 and 113.

HVI data were provided by only three of the public trading companies, but fortunately, these three companies had the largest stocks (Tables 2.9 to 2.11). The HVI data that were provided differed by company, however, any differences that may exist between the original crops and the remaining stocks, in terms of the HVI readings, are not obvious. The differences between the original stocks and the remaining stocks appear to be random differences and do not indicate that any selection of the cotton has occurred on the basis of the HVI readings.

Table 2.9: HVI Data for Giza 70 stocks of MISR Company.

Season	2.5% Staple Length	Pressley Index	Strength Gram tex	Micronaire	Maturity Index
1996-97	35.03	11.33	34.38	3.67	75
1997-98	35.32	11.29	34.71	3.66	76
1998-99	35.00	11.36	34.60	3.48	73
1999-00	35.31	11.37	35.13	3.75	84

Table 2.10: HVI Data for Giza 70 stocks of Eastern Company.

Season	2.5% Staple Length	Pressley Index	Strength Gram tex	Micronaire	Maturity Index
1996-97	34.8	11.0	34.0	3.8	72
1997-98	34.6	11.0	34.3	3.7	76
1998-99	34.4	11.5	34.3	3.4	79
1999-00	35.0	11.4	33.8	3.67	86

Table 2.11: HVI Data for Giza 70 stocks of Alexandria Commercial Company

Season	2.5% Staple Length	Micronaire
1995-96	34-34.5	3.4-3.6
1996-97	34.5-35.2	3.4-3.6
1997-98	35.2-35.5	3.75-4.0
1998-99	34.5-34.7	3.4-3.5
1999-00	35.0-35.5	3.9-4.0

2.6. Grade Versus HVI

As stated above, the HVI tests conducted by CATGO were performed on a voluntary basis prior to the season of 1998-99. Previous to that date, HVI tests were done only when requested by the cotton owner. Hence the data presented in Tables 2.8 to 2.11 may be slightly biased. Since 1998-99, HVI tests have been made of all cotton lint.

Both before and after 1998-99 the HVI tests performed by CATGO have been on the basis of lots. Bales of the same variety, owner, area of production, and of similar grade have been grouped together into lots with a maximum number of 30 bales per lot and HVI test results applied by lots.

To fully describe the carryover stocks, CATGO was requested to provide HVI data for each grade of Giza 70 from the recent seasons. However it was learned that the HVI data were not computerized prior to 1999-2000. Hence an analysis of the HVI data on the carryover stocks was not possible. However, CATGO provided data on a sample of lots from the 1999-2000 season cotton instead for an experimental analysis.

Data were provided representing 99 lots of Giza 70 produced in the 1999-2000 season. The data provided for each lot included the following:

- Grade
- Strength
  - Gram tex
  - Elongation percentage
- Length
  - Uniformity Index or Ratio
  - 2.5 % span length (mm)
- Micronaire (fineness)
- Impurity
  - Trash count
  - Non-lint % by area
- Humidity

The data for each variable is plotted by grade (Fig. 2.1 to 2.8). These graphs indicate that there is very little relationship between any of these variables and the grade.

This relationship was then tested using statistical methods. Results from an analysis of these data with regression and correlation techniques are summarized in Table 2.12. These results also show very weak relationships existing in this set of data between the grade and any of the HVI test results.

Very weak relationships are to be expected between grade and humidity or the measures of length. However, since grade is primarily a measure of appearance, a high trash content should reduce the grade. Also, the micronaire is associated with maturity and immature fibers in the cotton would tend to lower the grade.[9]

[9] See Ref. No 13 in particular for a discussion of lint quality and characteristics in Chapter 5 and the relationship between grade and lint characteristics in Sec 6.2.6. page 414.

Figure 2.1. Giza-70, 1999. Relationship between Grade and HVI Measurements: Strength (gram/tex)

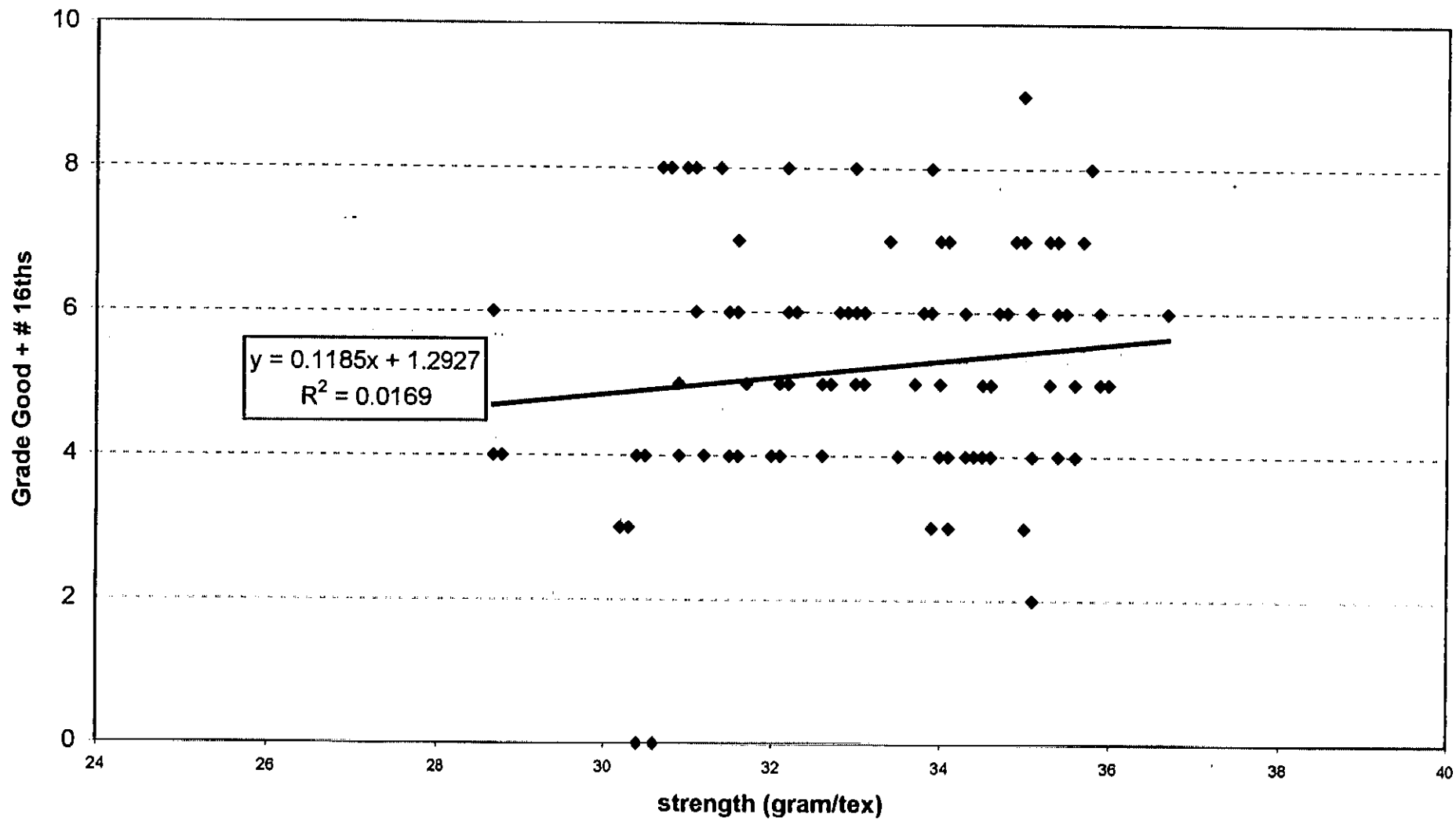

Figure 2.2. Giza-70, 1999. Relationship between Grade and HVI Measurements: Strength (elongation %)

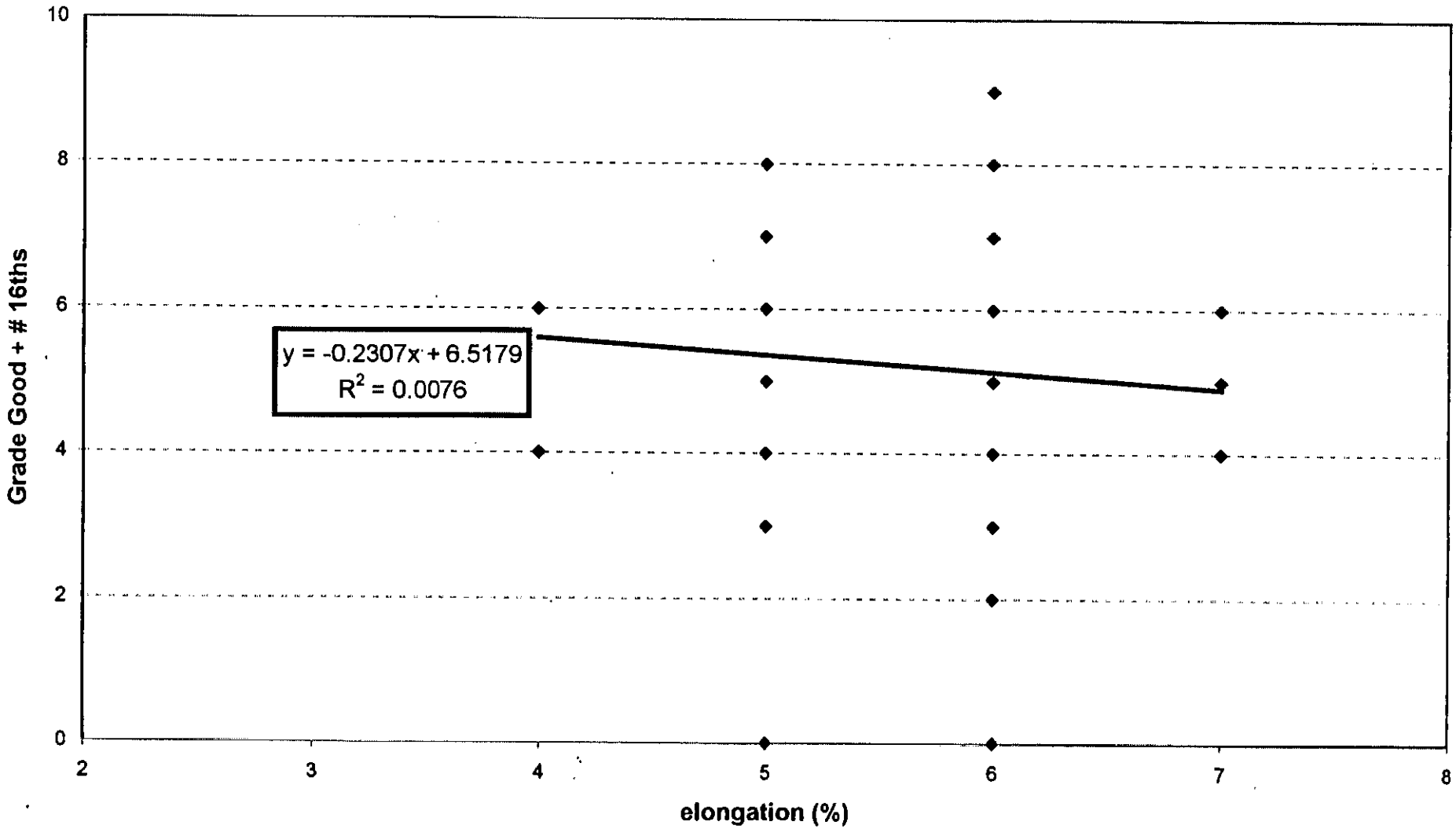

Figure 2.3. Giza-70, 1999. Relationship between Grade and HVI Measurements: Length (uniformity ratio)

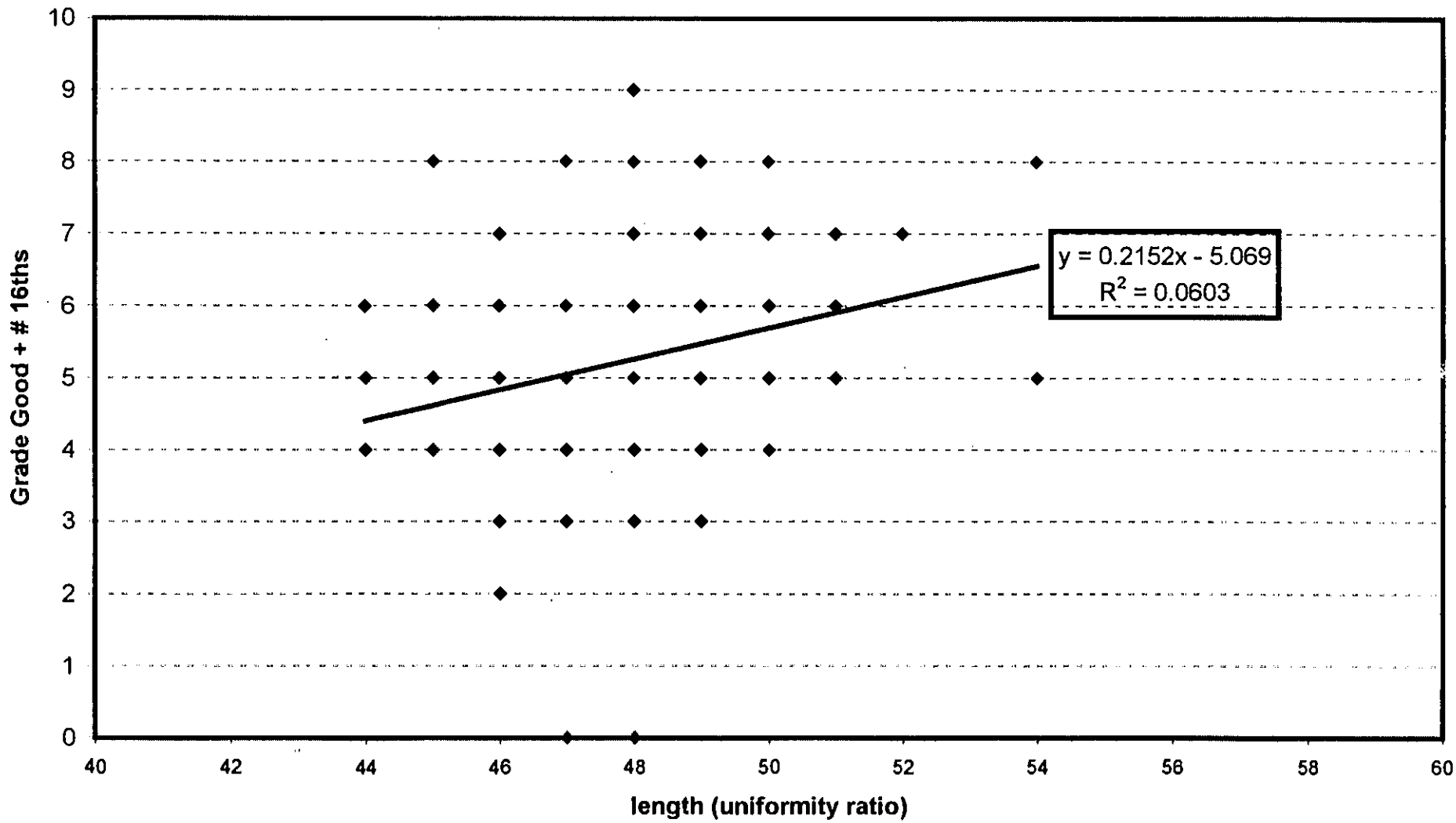

Figure 2.4. Giza-70, 1999. Relationship between Grade and HVI Measurements: Length (2.5% span length, mm)

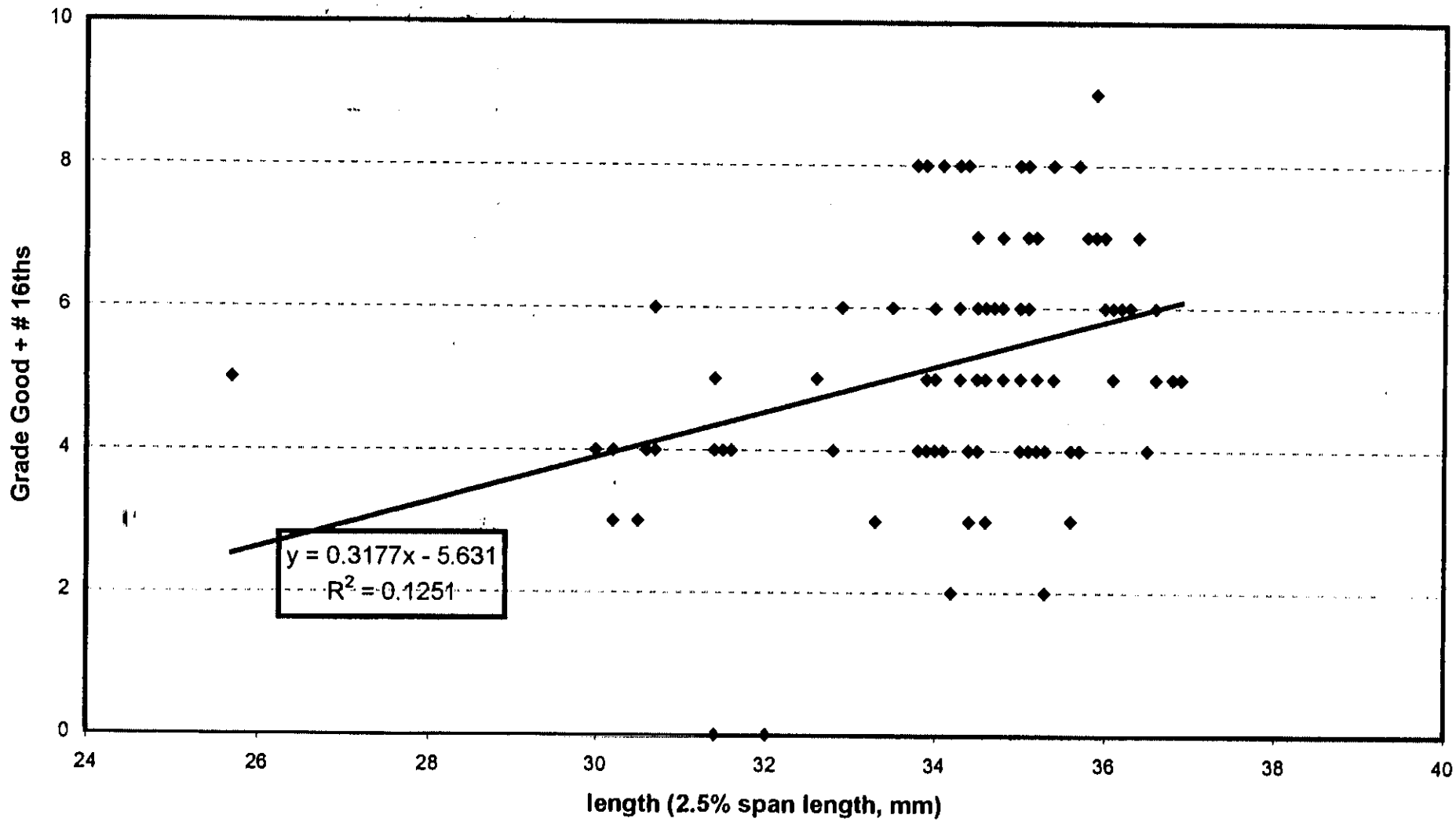

Figure 2.5. Giza-70, 1999. Relationship between Grade and HVI Measurements: Micronaire

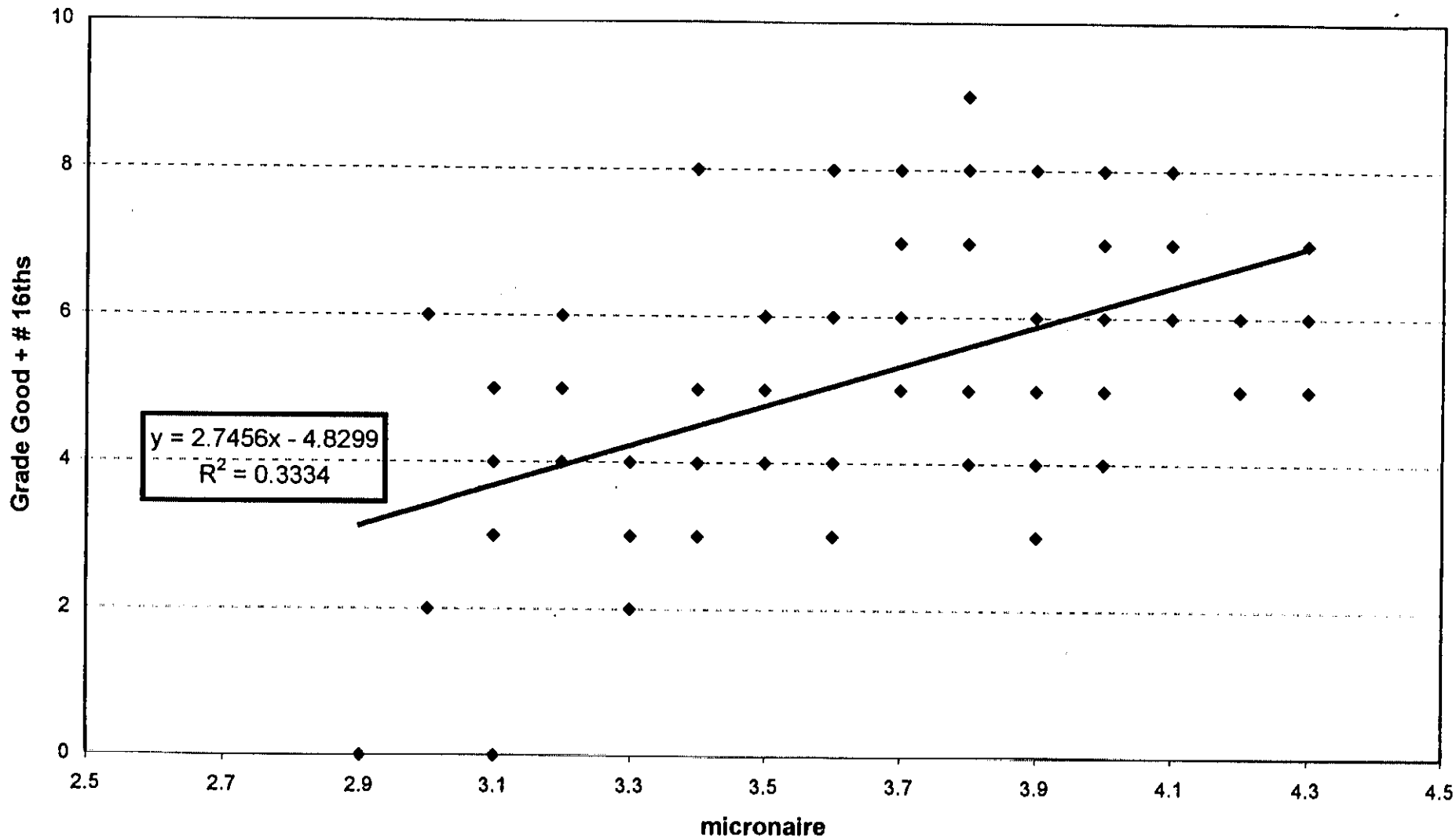

Figure 2.6. Giza-70, 1999. Relationship between Grade and HVI Measurements: Trash count

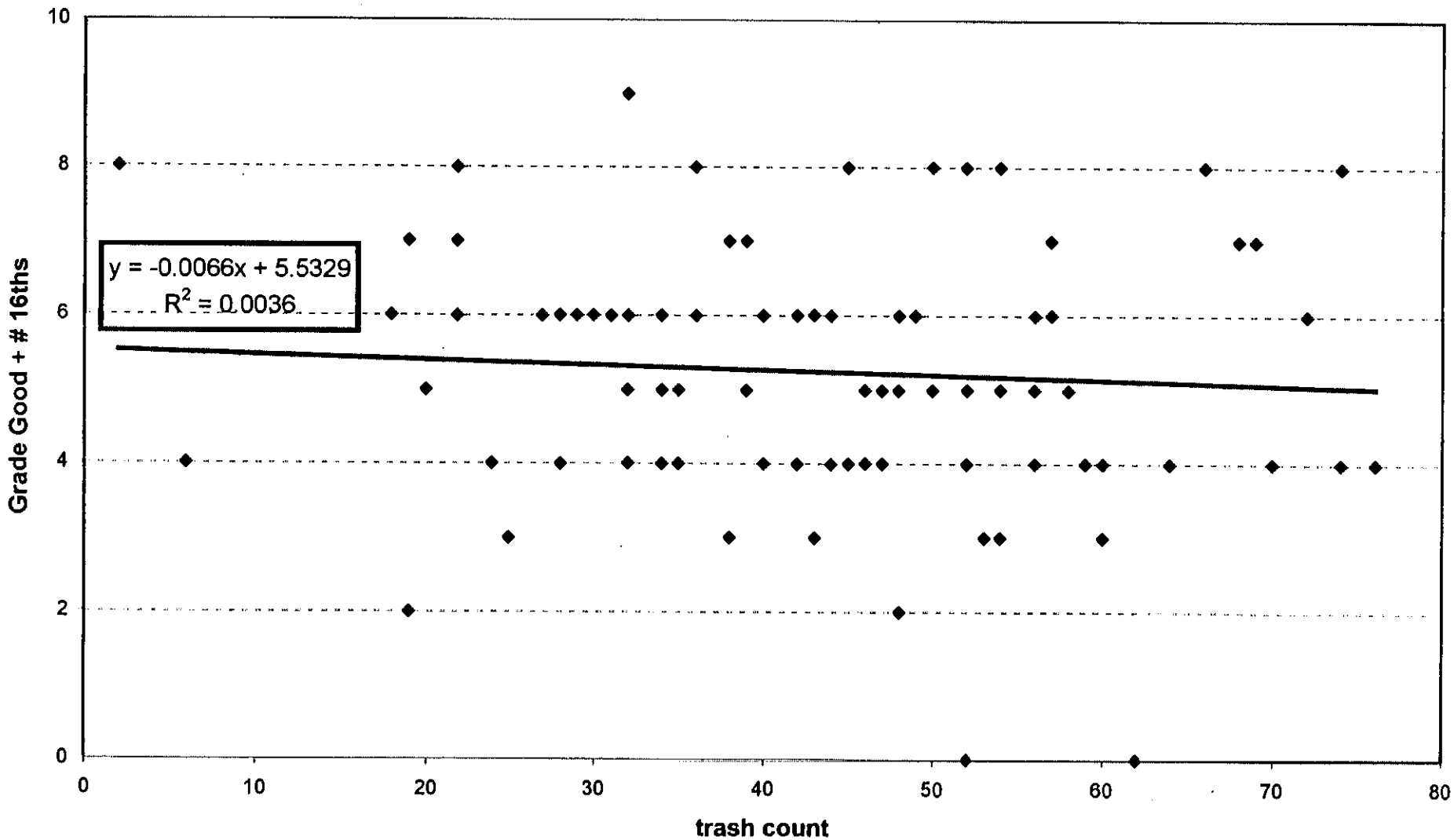

Figure 2.7. Giza-70, 1999. Relationship between Grade and HVI Measurements: Foreign matter, by area (%)

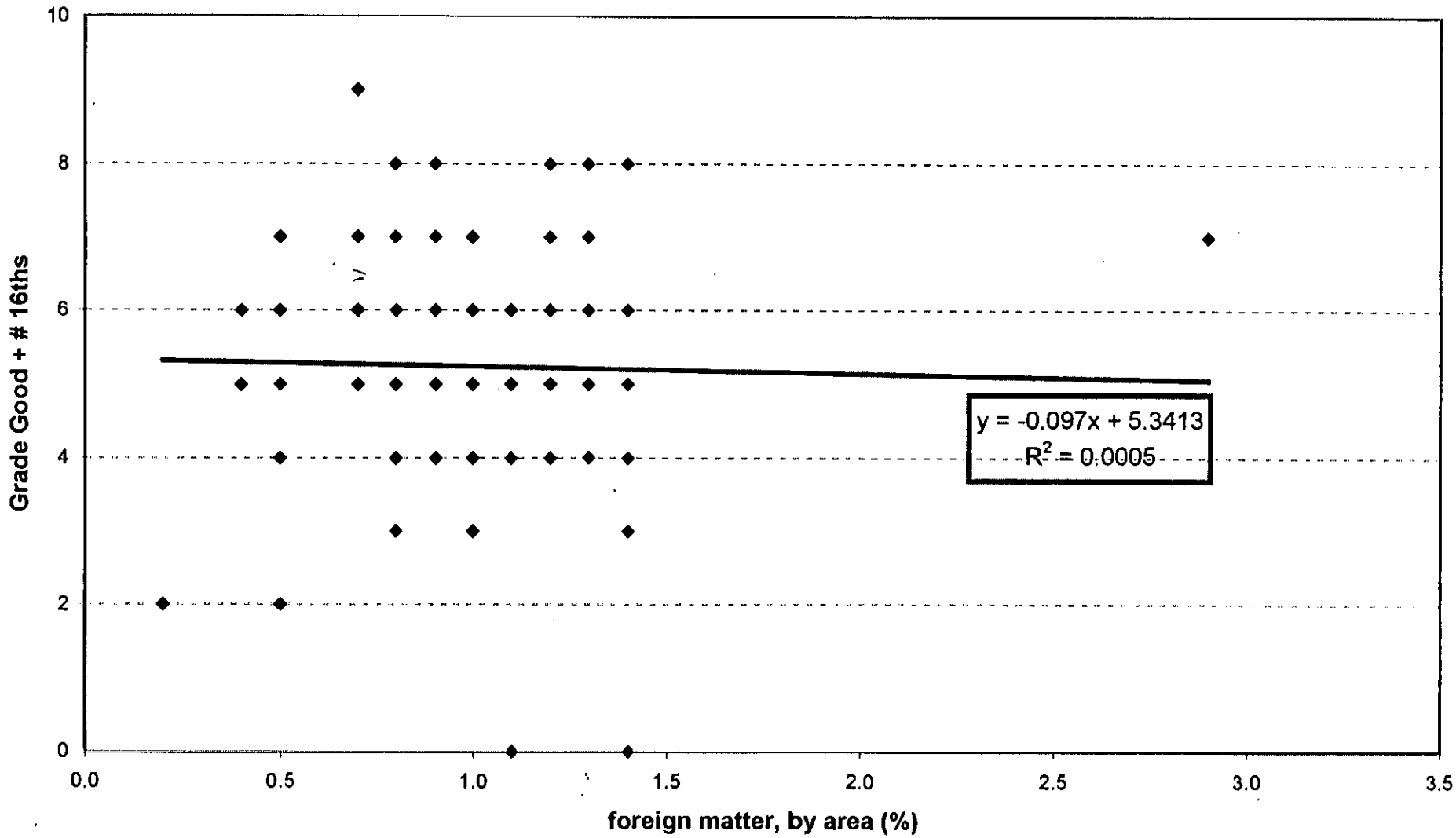

Figure 2.8. Giza-70, 1999. Relationship between Grade and HVI Measurements: Humidity (%)

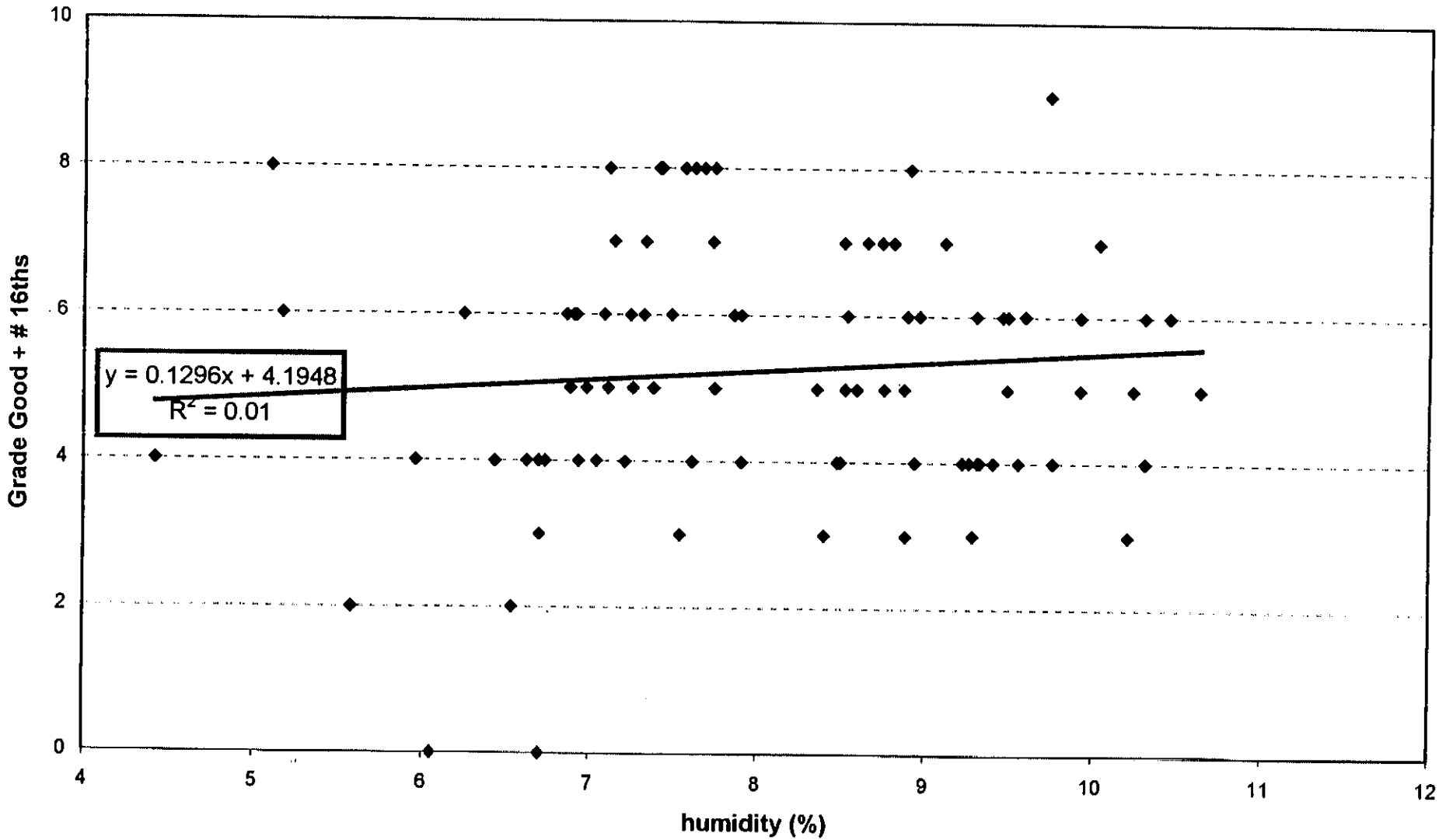

Table 2.12. Regression Output of Grade on Micronaire

Regression Statistics	
Multiple R	0.577
R Square	0.333
Adjusted R Squa	0.326
Standard Error	1.421
Observations	92

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	90.926	90.926	45.009	1.689E-09
Residual	90	181.813	2.020		
Total	91	272.739			

	Coefficients	*Standard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-4.830	1.508	-3.203	0.002	-7.826	-1.834
Micronaire	2.746	0.409	6.709	0.000	1.933	3.559

Table 2.13. Regression Output of Grade on HVI Measurements

Regression Statistics	
Multiple R	0.636
R Square	0.404
Adjusted R Squa	0.362
Standard Error	1.383
Observations	92.000

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	6	110.23	18.37	9.61	4.69138E-08
Residual	85	162.51	1.91		
Total	91	272.74			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-15.46	4.52	-3.42	0.00	-24.45	-6.46
Micronaire	2.36	0.44	5.39	0.00	1.49	3.23
Length	0.24	0.09	2.55	0.01	0.05	0.43
Strength	-0.04	0.10	-0.47	0.64	-0.24	0.15
Dirt %	0.47	0.41	1.16	0.25	-0.34	1.28
Uniform %	0.11	0.08	1.33	0.19	-0.05	0.27
Elongtn %	-0.05	0.24	-0.22	0.83	-0.52	0.42

This poor statistical relationship between grade and the technical measures of the physical properties of the cotton is not expected and is somewhat perplexing. What does this mean? First of all, further study is needed before we can make general conclusions. The sample used here was considered to be adequate in size (No. of observations) and was fairly homogenous, representing only one variety and one season. On the other hand we cannot extrapolate these results to other varieties of seasons until similar data for other varieties and seasons are examined. CATGO has the data needed for further studies of this matter.

If analyses of more cotton from more varieties and seasons provide similar results, than there are several possible interpretations. One can question the procedure of pricing cotton strictly on the basis of variety and grade if these factors do not reflect the physical characteristics of the cotton, which presumably determine the value of the cotton in spinning and hence the value of the cotton to the spinner. The grade does have some influence on value because grade should at least describe the cleanliness and impurities in the cotton. But the spinning characteristics of the cotton are also very valuable.

Or, perhaps, the value of a lot of cotton to the spinner may depend upon the physical characteristics of this lot in relationship to other cotton that he has available. For example, he may have a large quantity of cotton with a certain characteristic and he is hoping to find additional cotton to blend with his current stocks to produce a different average lint characteristic. This means that one lot may be worth much more to one spinner than to a different spinner.

Both of these interpretations argue for providing the spinner with all of the data available on the cotton so that he can determine its value to him specifically and hence would increase his bid for the cotton. In general, the less uncertainty a buyer has about the characteristics of a commodity, the greater will be his interest in the commodity and the higher the final price. Cotton is an extremely complex commodity. If a lot is inferior, than the seller may be better off in the short run by hiding the characteristics of this lot so that he can sell it. But this is not true in the long run. Traders continue to argue that the cotton export market is based on trust and experience. In the long run, providing buyers with full, accurate, detailed data on the lint they are buying can only enhance the prices of Egyptian cotton. These arguments argue also for providing correct detailed HVI data for each bale if possible.

3. Cotton Storage

3.1 Storage Procedures

After cotton is ginned it is pressed into bales at the gins. Most gins have what is called a "hydraulic press" that produces a large size, but low-density bale. These bales contain 6.5 to 9 kentar with an average of about 7.6 kentars (380 KG). UD bale presses have been recently installed at 13 gins by private firms. Three of these gins have been ginning Giza 70.[10] The UD bale is denser than the usual gin bale and is considered exportable whereas the usual hydraulic gin bale is not exportable because of the high shipping cost.[11]

After the cotton has been pressed it may be stored at the gin, in a warehouse in Alexandria, or in other company stores, or it may be sold and thus delivered to a domestic spinner or exported. Carryover stocks will be normally stored at the gins, in warehouses in Alexandria or in other stores controlled by the public trading companies.

Storage at the gin is the cheapest in terms of storage charges but the owner will incur higher insurance costs and may incur higher losses during storage. Storage in enclosed warehouses in Alexandria is more expensive in terms of storage charges but results in lower insurance costs and provides better protection for the cotton against natural elements.

The lower grades of cotton will more likely remain in the gin shonas,[12] whereas exportable grades of cotton will more likely be moved into warehouses. Public trading company officials reported that the better grades of cotton would probably be stored in enclosed warehouses in Alexandria since the better grades are normally exported. Transfer of this cotton to Alexandria will likely be necessary at some date because Alexandria is the usual port of export, and because farfarra is performed on most cotton exported by the public companies at the Egyptian Pressing Co. in Alexandria. The Egyptian Pressing Company also has a large amount of storage capacity in Alexandria.

The lower grade stocks of Giza 70 will more likely be delivered to domestic spinners. Hence, cotton that is stored in the shonas at the gins will most likely by the lower grades. The trading companies do not perform farfarra on cotton delivered to domestic spinners. Spinners are located through out Egypt.

The risk of fire is much greater for cotton stored in an open yard than in an enclosed warehouse, and gin bales, due to their lower density, burn much easier than do the denser bales. Cotton fires at the gins are rare but do occur and are hard to control, hence local government officials prefer to have cotton removed from the gin shonas in their area before the dry summer season begins.

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[10] The three gins with UD presses that ginned Giza 70 in 1999 were the El Nil gin at Etay El Baroud, the El-Arabia gin #3 at Damanour, and the Delta gin at Kafr El Dawar (See Ref. No 12, Table 4.1)

[11] The typical hydraulic presses at the gins produce bales with a density of only 200-230 Kg./cu. meter. The UD press produces a bale with about 500 KG/cu. meter and the steam press at the Egyptian Pressing Company produces a bale with a density of 625 KG./cu. meter. Since most cotton is now exported in containers, the density is an important cost factor.

[12] A Shona is a yard for storage that normally is within a fence or wall. It may or may not be covered. Very few shonas are covered.

3.2 Storage Types and Capacities

3.2.1 Warehouse storage

Storage facilities for gin bales can be classified into four categories.[13] The best storage, from the standpoint of protection for the cotton, is the enclosed warehouses (*makhzan*). All enclosed warehouses for ginned cotton (except what may be owned by spinning mills) are located in Alexandria. By far, the Egyptian Pressing Company owns the single largest capacity of warehouse storage. This company has enclosed warehouse capacity for 125,000 gin bales and 106,000 steam pressed bales.

The four major public banks; MISR, Alexandria, Cairo and National, have warehouse capacity for storage of cotton. Capacity data on bank warehouses were not made available.[14] One public trading company official also reported storage of nearly 10,000 bales (78,000 Kts.) with a public export company. The chairman of one of the public trading companies estimates total warehouse storage for cotton in Alexandria at 150-170,000 bales, or about 55,000 to 68,000 MT. (1.1 to 1.36 million kentars).

The public banks finance the bulk of the cotton trade (Chapter 13, 11). When financing cotton trade these banks require that all cotton used to secure bank loans must be kept under their supervision. The banks store cotton under loan at the pressing company warehouses, in their own warehouses, in their own shonas and at gin shonas. Hence, the warehouse storage capacity is not available for storage of carryover stocks only. It appears however that generally the exportable cotton is more likely to be stored in warehouses than is that destined to be sold to the domestic mills, and most cotton will be stored at the gins for several months before it gets moved into enclosed storage.

3.2.2 Storage in Shonas

The second best type of baled cotton storage, in terms of protection are the covered shonas. The cover, usually a metal roof, provides very good protection against rain and sun. This type of storage was reported by only one trading company, in their own shona and was being currently used for 7,000 bales of carryover stocks of Giza 70. None of the gins reported the use of covered shonas. Covered shonas were found at some gins but it was being uses to store cotton seed which was to be used for planting seed and for scarto which is stored in sacks, not baled.

In visits to five gins that ginned G-70 the last two years it was learned that gins are not paid for storage of ginned cotton in the gin shonas (See list of gins in Annex I). Because of the current excess ginning capacity in Egypt, gins have bargained away charges for storage in attempts to lure trading companies to bring their cotton to their gins (13). Both public and private trading companies are currently permitted to store gin pressed bales in the gin shonas as long as they desire, with no charge. On the other hand, almost all cotton stored at the gins was found to be stored in open shonas with no roof or any plastic or cloth covers. The only carryover stocks of Giza 70 found in the shonas of the five gins in April 2000 under any type of cover were 636 bales in the

[13] All carryover stocks are in gin pressed bales since farfarra operations are not performed until after export contracts have been confirmed and the cotton is being prepared for export.
[14] The banks and the Egyptian Pressing Co. were reluctant to provide any details on current inventories.

Delta gin at Kafr Dawar that was owned by the Delta Ginning Company that were covered with canvas. Hence, 99 percent of the carryover stocks of Giza 70 stored at gins was uncovered.

The capacities for storing ginned bales at the gins are perhaps limited but are very large. Many gins have shonas for storing seed and ginned cotton of as much as 35-40 feddans. On the other hand, some gins have limited shona space. Baled cotton is stored in shonas on top of wooden timbers placed on the ground to allow some air movement under the bales. Cotton was observed piled 5 bales high in the gin shonas. Leaving half of the ground open for moving and sorting cotton, one could still store 2-3000 bales per feddan. One can assume that most gins have sufficient space to store the ginned cotton from one season and some have space to store the cotton from several years. Two of the gins that gin the largest share of the Giza 70 have large shonas to store the crop of two or three seasons.

An open shona of 6 feddans for storing gin bales is located at Kom E Farag which is owned jointly by the Alexandria Commercial, MISR, Port Said, and Alcotan trading companies. Currently 7,000 bales of Giza 70 are stored at this location. One public company had 11,000 bales of Giza 70 stored at the Delta Spinning and Weaving Co. in Tanta. Other spinners have shonas for storing cotton, but no other reports were received of current storage of Giza 70- stocks with spinners.[15]

The CIT-HC also owns a company which trades wood products that owns a shona that has been used for cotton storage. It was also reported that the four national public banks have over 30 shonas in the Alexandria area in which they store cotton. Thus, the capacity for storage of cotton in open shonas is unknown but is very large. Storage capacity does not appear to be a factor determining the quantity of cotton in storage.

3.3 Storage of Current Carryover Stocks of Giza 70

The Egyptian Pressing Co. reported current stocks of all varieties of cotton of 85,000 bales, but it would not provide data on quantities by variety or company. Similarly, the public banks would not divulge their data on stocks since these stocks represented security for loans. However, data were obtained on total quantities of Giza 70 currently stored at six gins. The public trading companies also reported quantities stored in other shonas outside of gins. Hence it was assumed that the balance of the stocks of Giza 70 were assumed to be stored in various warehouses in Alexandria (Table 3.1).

The estimates reveal that only half of the current Giza 70 stocks are in enclosed storage and only 57 percent of these carryover stocks are currently under some type of cover. Unfortunately, data are not available to classify the storage type by grade. Based on comments from traders, we can only assume that the better grades of cotton are stored in the enclosed warehouses and the lower grades are in the open shonas, but no quantitative estimates are available.

[15] The manager of the Delta S. & W. Co. at Tanta reported that none of the domestic spinners have warehouse storage for their lint supplies; only open shonas.

Table 3.1 Estimated Storage of Carryover Stocks of Giza 70 as of 15 April, 2000.

Type of Storage	Bales	Kentars	MT	Percent
Enclosed warehouses	52,326	372,848	18,642.4	50.0
Covered Shonas	7,000	45,500	2,275.0	6.0
Open shonas, no cover				
At gins	24,708	187,800	9,390.0	25.2
Other shonas	18,000	136,000	6,800.0	18.2
Subtotal	42,708	323,800	16,190.0	43.4
Open shonas with cover	636	4,452	222.6	0.6
Total	102,670	746,600	37,330.0	100.0

The resulting estimates of the carryover stocks of Giza 70 distributed by season produced, storage type, and grade (Table 3.2) are based on the grade estimates for three companies from Table 2.7. The survey of the gins revealed that all carryover stocks from 1995-96 and 1996-97 are currently stored in enclosed warehouses. These stocks were probably put into warehouses the year after ginning.[16]

Table 3.2: Estimated Carryover stocks of Giza 70 by Season Produced, Storage Type and Grade.

Season &Type	G + 3/8	G + 1/4	G + 1/8	Good	Good -1/8	Total
(Kentars)						
1995-96			2,380			2,380
1996-97	3,695	21,862	10,418	9,392	5,953	51,320
1997-98						
Open shona	4,397	15,246	14,161	16,958	6,338	57,100
Warehouse	11,581	40,157	37,299	44,669	16,694	150,400
Total	15,978	55,403	51,460	61,627	23,032	207,500
1998-99						
Open shona	43,113	101,411	52,875	52,061	21,692	271,152
Closed shona	7,234	17,017	8,872	8,736	3,640	45,500
Warehouse	26,831	63,112	32,906	32,400	13,500	168,748
Total	77,178	181,540	94,653	93,197	38,832	485,400
Grand Total	96,851	258,805	158,911	164,216	67,817	746,600
(MT)						
1995-96			119			119
1996-97	185	1,092	521	470	298	2,566
1997-98						
Open shona	220	762	708	848	317	2,855
Warehouse	579	2,008	1,865	2,233	835	7,520
Total	799	2,770	2,573	3081	1,152	10,375
1998-99						
Open shona	2,155	5,071	2,644	2,603	1,085	13,558
Closed shona	362	851	444	437	182	2,275
Warehouse	1,342	3,156	1,645	1,620	675	8,437
Total	3,859	9,078	4,733	4,660	1,942	24,270
Grand Total	4,843	12,940	7,946	8,210	3,391	37,330

[16] The carrying cost estimates will be made assuming that the current type of storage prevailed for the entire life of the stocks. This methodology will slightly over estimate carrying costs since cotton now in warehouses was not stored there the entire time since ginning. However it would be impossible to track the movement of these stocks from one type of storage to another type.

4. Carrying Costs of Stocks

4.1 Cash Carrying Costs

There are potentially three cash carrying costs for storing cotton; bank finance charges, storage charges, and insurance costs.

4.1.1 Bank Finance Charges

By far the greatest cost of carryover stocks is the bank finance charges. Since September of 1996 the bank interest rates have varied between 13 to 15 percent, varying by the financial health of the customer. A rate of 14 percent will be used in the following calculations of carrying costs.

4.1.2 Storage Charges

As stated above, trading companies do not pay any storage charges for cotton stored at gin shonas. Other storage charges varied from LE 0.10/ bale/day up to LE 0.20/bale/day. Assuming an average gin bale of 7.5 Kts., these storage changes varied from LE 0.40/Kt./month to LE 0.80/Kt./month or LE 4.80/Kt/year and LE 9.60/Kt./year.

4.1.3 Insurance Costs

Insurance charges are based on the estimated market value of the cotton but differs by type of storage and type of bale. Data were obtained for a variety of conditions in the cotton trade. These rates cover the risks of fire and theft. They are based on the cost per annum per LE 1000 of value of the cotton. The value of the cotton is equal to its export price.

Type of cotton, condition and location	LE/LE1,000 of value
Seed cotton in gin shonas	20
Lint cotton in gin bales in gin shonas	5
Lint cotton in gin bales at Mina El Basal or warehouses	5
Lint cotton in gin bales in bank shonas	5
Lint cotton in steam pressed bales at pressing company	3
Cotton in farfarra rooms	8-12
Lint cotton in gin bales in spinning company shonas	15
Bales at the harbor	8

All carryover stocks are gin-pressed bales stored at either gin shonas, bank shonas or in warehouse. Hence, the rate for all stored cotton is LE 5/LE 1,000 of value. For example, a MT of Giza 70 valued at 120 cents/lb. is worth LE 9,000 and the insurance

cost would be LE 45/annum/MT stored in the gin or bank shonas. A kentar of cotton valued at LE 550 would have an annual insurance cost in storage of LE 2.75.

In the following calculations of storage costs the insurance cost is calculated on the basis of the original cost of the cotton, not on the accumulated carrying costs.

4.2 Storage Losses

Potential storage losses are of three types:

1. loss in cotton due to pilferage of cotton in the bales of losses in transport due to actual physical losses of lint.
2. loss in value due to deterioration of the outer layer of the bales, and
3. deterioration in spinning quality of the cotton throughout the bale.

Numerous people in the trade were asked if prolonged storage would reduce cotton quality. Most responded that cotton could be stored for long periods with very little deterioration, but that the type of storage is important. Most replied that baled cotton should be stored with protection from the sun and from moisture. The moisture content of the stored cotton should not be too dry or too wet. Wet conditions will cause molds, fungus and rot. Exposure to the sun will severely dry the cotton and turn it a dark gray color.

While most of the public officials in the cotton trade maintain that there is very little or no loss from storing cotton, most of these same officials stressed the importance of good storage. They all stressed the need for enclosed warehouse type of storage where the cotton would not be exposed to the sun or the rain. But as we saw above, only 57 percent of the current Giza 70 carryover stocks have received such storage.

No hard data on storage losses are available. Many public officials gave estimates of such losses. The range in the estimates received were from 0.5 percent up to 5 percent with most of these estimates at the low end of 0.5 to 2 percent. Logically, some losses occur with the storage and transport of cotton within the same marketing season. Many f the gin bales are poorly covered and some losses occur due to pilferage of cotton while it is sitting in the gin shonas and while it is being transported from the gins to Alexandria. In this study the object was to determine if these losses increase as the length of storage increased.

ALCOTEXA export data show approximately 1,000 MT of "Type Exportateur" cotton was committed for export in the 1999-2000 season out of 90,000 MT. This type of cotton is essentially cotton waste that is obtained during the preparation of cotton for export. This type of cotton has not been exported every year but during the 1990s this type has represented from zero to 4.4 percent but average only 0.4 percent. We also learn that this type of cotton waste from ELS cotton lint is still worth 70 cents/lb.

One spinner reported to us that normal losses from storage are only 0.5 to 1 percent if the cotton was stored in good storage, which means enclosed or covered to protect from the sun and rain. In this case the spinner can remove a small layer from the outside of the bales, but this lint can still be used in open end spinning which produces useable products but of some lower value. However, he also reported that improper storage

(exposure to sun and rain) may result in serious deterioration of the strength of the cotton with reduction of 30-40 percent in the RKM readings. The value loss of this is unknown.

We conclude that prolonged improper storage results in some losses (of types 1 and 2 listed above). Storage in warehouses is definitely better than storage in open gin shonas. With the current status of data on storage losses we can only estimate such losses. Hence zero losses are assumed on cotton stored in warehouses and covered shonas and 0.5 percent on all cotton stored in open shonas.

No solid data are available on deterioration of the cotton in terms of spinning values. Again, most public officials interviewed claimed that there is no deterioration of the physical characteristics of the cotton within 4-5 years "if the cotton is under proper storage". However, some public officials are not so sure of this. CATGO offered to sample 50 lots and conduct HVI tests of the current carryover stocks of Giza 70. Such test results could have been compared to the HVI tests taken previously on these same lots. ***Permission of the cotton owners was needed before these tests could be taken but such permission was not given.*** Some public officials were concerned that the test results would prove that deterioration had occurred and thus that the public trading company management had been negligent in its storage methods. This is tantamount to admitting that deterioration during storage is possible.

Hence, the question of storage losses remains unanswered. ***However, if the GOE continues to pursue marketing policies that occasionally result in long-term cotton storage it should investigate the extent of these losses under different types of storage, or simply provide for sufficient covered storage.*** Enclosed warehouse storage appears to be unnecessary but provision of covered shonas on well drained, sand or gravel soil types would minimize storage costs and losses.

4.3 Computation of Carrying Costs.

Total carrying costs of the Giza 70 carryover stocks will be estimated in this section. These costs will include bank finance charges, storage charges, insurance costs and storage losses. To estimate these costs the initial cost of the cotton to the public trading companies must be estimated.

Cost of cotton, 1995-96

Some simplifications are necessary to make the estimates of the original costs. The procedures will differ between years because of differences in the marketing system each year. In 1995-96 season the GOE announced floor prices that were not related to international prices. The price of seed cotton, Giza 70, grade Good and a ginning outturn of 100 percent was set at LE 566 with a price differential between each 1/8th grade of LE 2.50/ Kt.

The cost of a kentar of lint cotton, grade Good, is calculated as follows:[17]

Kentar of seed cotton = LE 566 X 1.15 =	LE 650.90	
Minus value of byproducts	75.00	
	575.90	
Plus Marketing costs	60.00	
	635.90 /1.15 =	LE 553.00

Cost of cotton, 1996-97

The GOE announced floor prices for 1996-97 that were similar to that of the previous season for Giza 70. The differential between grades was increased from LE 2.50 per 1/8th grade to LE 3. Hence the cost of lint to the public companies differed slightly, from the previous season depending upon grade (Table 4.1).

International prices had dropped significantly after the floor prices had been announced and as a result the private companies bought practically none of the seed cotton. Thus the public companies were forced to buy all of the seed cotton at a loss that season (5).

Cost of cotton, 1997-98

The GOE again announced floor prices for seed cotton that were similar to the previous two seasons but raised the grade requirements and ginning outturn requirements. Also the differential between grades was increased from LE 3 per 1/8th grade to LE 6. The effect of the change in grade and ginning outturn requirements on the effective seed cotton price has been estimated at 7 percent (3).

International prices declined further this season, again making trade by the private sector unprofitable. A deficiency payments scheme was announced requiring purchases at the PBDAC sales rings. This scheme enticed only two private traders into the seed cotton market and thus the public companies again purchased the bulk of the crop (3 and 4).

Cost of cotton, 1998-99

The GOE abandoned the program of floor prices in 1998-99 and determined the seed cotton prices on the basis of the export prices announced by ALCOTEXA. For our purposes we will use the prices of lint to the domestic spinners. In 1998-99 this price was equal to the export price minus 12 cents/lb. for fobbing expenses. The differential between grades in 1998-99 at the export level was set by ALCOTEXA at 3 cents/lb. per 1/8th grade. As shown in Table 4.1, the costs of lint to the trader, and thus the price to the farmer declined drastically this season.

[17] For more details on these costing procedures see Ref. No.9, page 19.

Table 4.1: Estimated Cost of Lint, Giza 70
1995-96 through 1998-99 to Public Trading Companies.
(LE/lint kentar)

Grade	1995-96	1996-97	1997-98	1998-99
Good + 3/8	560.50	562.00	532.25	382.50
Good + 1/4	558.00	559.00	526.25	371.25
Good + 1/8	555.50	556.00	520.25	360.00
Good	553.00	553.00	514.25	348.75
Good -1/8	551.50	550.00	508.25	337.50

These lint cost estimates (Table 4.1) are based on marketing cost estimates that include carrying costs to the end of the current ginning season (1 April of each year). Carrying costs for each crop will be estimated up to 1 April 2000. Hence, costs of carrying cotton from the 1995-96 season up to 1April 2000 will represent carrying costs for exactly four full years.
The following example is used to demonstrate the costing procedure for one kentar of cotton of grade Good + 1/8th from1995-96 when stored in warehouse storage. In this procedure the costs are compounded annually. It is assumed that since the trading company has financed the original cost of the cotton it must also finance the storage and insurance costs from the time of purchase until it is sold for the full term of storage.

Carrying costs for cotton in storage with grades below good are priced as Good - 1/8th. The carrying costs per kentar determined with this methodology are presented in Table 4.2 per kentar of cotton for each year, type of storage, and grade as shown in Table 2.8. The estimates in Table 4.2 also assume a loss of 0.5 percent on cotton stored in open shonas. This cost was calculated as 0.5 % of the sum of the initial cotton cost plus the carrying charges.

Cost Assumptions:
Initial cost of lint: LE 555.50
Interest rate: 14 percent
Storage charge in warehouse LE 0.10/bale/day = LE 4.80/Kt/year
Insurance costs of LE 1/1000.

Computations

Initial cost	LE 555.50	
Interest	77.77	
Storage charge	4.80	
Insurance	2.78	
Total	640.85	= Cost at end of 1st year(1 April 1997):
Interest	89.72	
Storage charge	4.80	
Ins.	2.78	
Total	738.15	= Cost at end of 2nd year(1 April 1998):
Interest	103.34	
Storage charge	4.80	
Ins.	2.78	
Total	849.07	= Cost at end of 3rd year(1 April 1999):

Interest	118.87
Storage charge	4.80
Ins.	2.78
Total	975.52 = Cost at end of 4th year(1 April 2000):
Initial cost	555.50

Carrying cost = LE 420.02/ Kt. with zero loss of cotton.

In this calculation insurance represents only 2.6 percent of the carrying costs, storage charges represent 4.6 percent and the balance of 92.8 percent of the cost was interest.

Table 4.2: Carrying Costs per Kentar of Giza 70 to 1 April 2000 by Season Produced, Type of Storage, and Grade.

	Grade				
Season & Type of Storage	**G + 3/8**	**G + 1/4**	**G + 1/8**	**Good**	**G - 1/8**
1995-96					
Warehouse	----	----	420.02	----	----
1996-97					
Warehouse	284.57	283.12	281.67	280.22	278.77
1997-98					
Open shona*	171.49	169.62	166.91	165.04	163.18
Warehouse	175.43	173.57	171.71	169.84	167.98
1998-99					
Open shona*	55.74	54.10	52.46	50.82	49.18
Covered shona	55.46	53.83	52.20	50.57	48.94
Warehouse	60.26	58.63	57.00	55.37	53.74

People in the trade give a rough estimate of LE 7/ kentar/ month as the average carrying charge for storing cotton. The estimates in Table 4.2 show a cost of LE 8.75/Kt./ month for the cotton stored since 1995-96, from LE 7.75 to LE 7.90 for cotton stored since 1996-97, LE 6.80 to LE 7.30 for cotton stored since 1997-98, and from LE 4.08 to LE 5.02 for cotton stored only one year. Obviously the carrying cost per month depends upon the original cost of the cotton and the amount of accumulated interest charges.

As shown in Table 4.2, the only difference between the carrying costs for cotton stored in open shonas and cotton stored in a covered shona for 1998-99 is the 0.5 percent loss of cotton. As these estimates indicate, this is a very small loss.

The estimated accumulated costs per kentar and total costs for all Giza 70 carryover stocks are presented in Table 4.3. The total carrying costs for all stocks of Giza 70, as of 1April 2000 is estimated at LE 77.3 million. About LE 1 million (1%) is for stocks from 1995-96, LE 14.5 million (19 %) is for stocks from 1996-97, LE 35.3 million (46 %) for stocks of 1997-98 and LE 26.5 million (34%) for stocks of 1998-99.

Table 4.3 Total Carrying Costs to 1 April 2000 of Current Stocks of Giza 70. (Million LE)

	Grade					
Season & Type of Storage	G + 3/8	G + 1/4	G + 1/8	Good	G - 1/8	Total
1995-96						
All warehouse			.97			.97
1996-97						
All warehouse	1.05	6.19	2.93	2.63	1.66	14.47
1997-98						
Open shona*	0.75	2.59	2.36	2.80	1.03	9.54
Warehouse	2.03	6.97	6.40	7.59	2.80	25.80
1998-99						
Open shona*	2.40	5.49	2.77	2.65	1.07	14.38
Closed shona	0.40	0.92	0.46	0.44	0.18	2.40
Warehouse	1.62	3.70	1.88	1.79	0.73	9.71
Grand Total						77.26

4.4 Carrying Costs of Liquidated Stocks

The above methodology provides an estimate of the total losses from only a part of the carryover stocks of Giza 70. Remember that carryover stocks were estimated at 1,095,000 Kt.(54,750 MT) as of 1 September 1999. The above cost estimates were based on only those stocks remaining on 1 April 2000 of 746,600 Kt., but not the carrying costs on the 348,400 Kt (17,420 MT) that were disposed of between 1 September 1999 and 1 April 2000.

We do not know the composition of the carryover stocks that were disposed of between 1 September 1999 and 1 April 2000. However, estimates of these costs can be made if we assume that the stocks disposed of were of the same grade and were produced in the same season as those still remaining on 1 April.

Weekly reports from ALCOTEXA on export commitments indicate that exports did not significantly dip into carryover stocks of Giza 70 until about 1 March 2000. Hence we will estimate carrying costs on the 348,400 Kts. until March 1.

Using this procedure, the carrying costs for those additional stocks of 348,400 Kts which were disposed of is estimated at LE 38.31 million. **Thus the carrying costs of these carryover stocks of Giza 70 to 1 April 2000 is estimated at LE 115.6 million.** These carrying costs continue as long as the stocks are not sold. Theses costs accumulate at the rate of LE 7/ Kentar/ month, or 2 cents / lb./ month on export cotton. **These stocks should be kept only if the export price is expected to increase at more than 2 cents month.**

4.5 Price Losses.

The preceding section dealt with the carrying costs of those carryover stocks of Giza 70. There have also been losses due to the declines in prices. Estimation of such losses is somewhat hypothetical because we do not know the price at which these stocks will sell. As of this date (15 May 2000), sales of Giza 70 are preceding at a brisk rate and ALCOTEXA on 14 May lowered the minimum exportable grade from Good + 3/8 to Good + 1/4, to increase sales, but also raised prices by 2 cents/ lb. When all stocks will be sold is simply a matter of conjecture.

An estimate was made of the losses suffered from price declines from the time these stocks were purchased until 1 April 2000 (Table 4.4). This cost estimate applies only on the stocks remaining on hand on 1 April, and is determined by assuming that all stocks are valued at the ALCOTEXA export price on 1 April 2000. This estimate is based on the same estimate of stocks as reported in Table 3.2 and the original purchase costs as shown in Table 4.1. The export price on 1 April 2000 for Giza 70 grade Good + 3/8 , as set by ALCOTEXA, was 100 cents/ lb. The price differential by grade is set by ALCOTEXA at one cent/lb./ 1/16th grade.

However, these carryover stocks are not exportable in their current condition. Costs of preparation for export are estimated at 10 cents/ lb., which is the GOE estimate of fobbing costs for this season. The loss per Kentar is simply the purchase cost less the current value. The estimated loss per kentar varies from LE 30 to LE 244 and the estimated total losses from price declines on these 746,600 Kt.(37,330 MT), is an additional LE 72 million.

Table 4.4 Losses from Price Declines to 1 April 2000 in Carryover Stocks of Giza 70.

Grade	G + 3/8	G +1/4	G +1/8	Good	G -1/8	Total
Export value (cents/Lb.)	100	98	96	94	92	
Value before Fobbing (cents/Lb.)	90	88	86	84	82	
(LE/Kt.)	337.5	330	322.5	315	307.5	
Loss per Kt. (LE)						
1995	223	228	233	238	244	
1996	224.5	229	233.5	238	242.5	
1997	194.75	196.25	197.75	199.25	200.75	
1998	45	41.25	37.5	33.75	30	
Total Losses (M.LE)						
1995			0.55			0.55
1996	0.83	5.01	2.43	2.24	1.44	11.95
1997	3.11	10.87	10.18	12.28	4.62	41.06
1998	3.47	7.49	3.55	3.15	1.16	18.82
Grand Total						72.38

This procedure is somewhat subjective. This estimate implies that all of these stocks could be liquidated on 1 April 2000. The market would have been severely depressed if all of these stocks had been dumped on the market and forced to sell on one day. On the other hand, world prices are increasing and perhaps these stocks may actually appreciate in value.

Price losses on those stocks (the 348,400 Kts.) that have been liquidated be estimated in the same manner. The price of Giza 70 remained constant from 1 September 1999 until 1 April 2000, hence the price loss per kentar for these stocks is the same as those still in stock and is estimated at LE 33.75 million.

Thus, total carrying costs up to 1 April 2000 of all carryover stocks of Giza 70 is estimated at LE 115.6 million and total price losses are estimated at LE 106.1 million for a grand total of LE 222 million, and still growing.

5. Future Strategies

5.1 Price Flexibility

Carryover stocks result from a lack of price flexibility. If the prices had been reduced at the right time, these stocks would never have accumulated. It is quite evident that the price strategies followed during the past 2-3 years were not the correct strategy.

Export prices have been announced by ALCOTEXA. As discussed above, some price flexibility was demonstrated by ALCOTEXA during the 1997-98 and 1998-99 seasons. However the major price reduction made were small and made late in the market season. It appears that the price reductions should have been bigger and quicker.

It seems logical that the willingness to reduce prices should be greater in periods when production prospects are good and world prices are going down than when production is declining and prices are rising. However, we recognize that hindsight is better than foresight and cannot prescribe exactly what price reduction should have been taken at what time.

The GOE seems to have two options; either put their export cotton on an auction or bid system or invest more heavily in situation and outlook research so that they can better predict price movements.

5.2 Internet Market Options

The USDA has begun to sell its CCC stocks of Pima on an Internet auction web site. This operation has been successful. Bids are made by lots of 250 bales but HVI data are made available for each UD bale (480-500 lb.). The US Pima crop of 1999-2000 consisted of 650,000 bales.

Perhaps Egypt could follow this example. CATGO has not made HVI tests for each bale. CATGO currently makes three HVI tests for each lot of 20-30 bales. CATGO reports that they have the capacity to make 400 HVI tests per 8-hr. shift and could run two shifts. This could produce 800 tests per day or 4,000 per week. They now charge LE 9/ lot and hence could do the HVI tests for LE 3/ bale. The entire Egyptian crop of 1999-2000 of all varieties was about 4.5 million kentar, which would be about 600,000 gin bales, about one million UD bales, or about 675,000 steam pressed bales. The 1999-2000 season exports are now at 90,000 MT, which is about 415,000 UD bales or 270,000 steam pressed bales.

HVI data may not be needed for each bale. If it is needed, CATGO will need to invest in additional HVI equipment and laboratory facilities to fill the need. This option should be investigated.

5.3 Selling by Specification Rather than Type

Egypt has sold cotton by type for many years. Specification buying usually means that the seller agrees to provide cotton that meets contract specifications. Public traders wish to avoid this type of trading, but under the present system many traders provide the buyer with all HVI data they have on their cotton. This data provides

"specifications" of the cotton without contract obligations. Provision of the data reduces the uncertainty of the buyer regarding the spinning value of the cotton, and increases the possibility of a sale. Provision of HVI data to buyers without contract obligation is a practice that needs to be encouraged.

5.4 Cotton Data: Research Purposes

CATGO has graded every sack of seed cotton and every lot of lint cotton for many years. CATGO also has obtained HVI data on a voluntary basis for most exported cotton for several years and for all lots of lint cotton since the 1998 crop. CATGO is not a research agency or a public information agency; it has responsibilities for cotton quality control. However, the data available in CATGO, which was obtained from the testing procedures, should be used to further the study of the relationship between grade and lint characteristics, as discussed above (See Section 2.6 above).

If Egypt expects to have prolonged periods of cotton carryover stocks in the future it should investigate the relationship between type of storage and lint deterioration. Most traders reported that cotton can be stored for long periods without deterioration but they also proclaimed that the type of storage was important. How important is it? No one seems to know.

5.5 Cotton Data: Market News Information

As stated above, in the past, CATGO has published annual summaries of the physical characteristics of each crop by variety. These results were generally published after the marketing season was completed. The information obtained from these tests is valuable to the buyer. Buyers want to know the specifications of the lots they are buying but they would also like to know the characteristics of each new crop as it is ginned.

Uncertainty regarding a product reduces its value and knowledge increases value. The more that one knows about a product, he more he is willing to pay for it. This is particularly relevant in regard to a commodity, such as cotton, that is used to produce a finished product. Lint cotton has value only as a derived demand. Lint has value only because of the yarn that it will produce. Increasing the knowledge about an Egyptian cotton crop will increase its value to the buyer, and hence to the seller.

But the physical characteristics of cotton of a given variety will differ considerably from one area to another and from one season to another. For example, the Giza-70 crop of 1998-99 of has the reputation as a much poorer crop than that of 1997-98 or of 1999-2000.

HVI tests are normally run as soon as the cotton has been ginned. The ginned cotton is placed into lots. Each lot is limited to 30 bales. Each lot contains cotton of only one variety, that was ginned at the same gin, is within a small range of grade, and is all owned by one owner. This is considered to be a homogeneous lot. The physical characteristics of cotton is affected by growing conditions, hence cotton grown in the same area will presumably have the same characteristics.

To enhance the value of each cotton crop, all available HVI data should be made available to all potential buyers as soon as possible. The cotton owner pays for the HVI test and hence the HVI results are personal property, but when sufficient data are available to overcome the problem of personal identity these data should be published. The Giza 70 crop of 1999-2000 for example was about 489,000 KT. This represented about 65,000 bales or about 2,500 lots. This crop was ginned in about 5 months or 20 weeks giving an average of 125 lots per week. The data on ginning for each week could be aggregated without disclosing the results for any individual lot or owner.

At the start of each season when at least 50 lots are tested per week the results should be aggregated on a computer and put onto a CATGO web site on the Internet. This act would make the data available to any one of interest. These test results should be put on the Internet for all export varieties. The data could provide the quantity of cotton, the average grade, and the average HVI results.

Later during the season, when sufficient data are available, and at the end of the season, a cross-tabulation could be prepared for each variety and put onto the Internet. These results would show the quantity of cotton and the average HVI test results for each 1/8th grade.

Some may argue that the release of all of this data would give the buyer too much information. They would argue that it takes away the advantage of the seller. It certainly makes the market more transparent. But as stated above, uncertainty reduces value.

In comparison, the USDA sells its CCC stocks through an Internet auction in which ***HVI data are made available for every bale of cotton.*** Egypt should consider this method of selling cotton.

5.6 A Carryover Stock Disposal Strategy Model

A spreadsheet cotton carry-over-stock disposal model was developed to examine the question of how fast should the Government sell the cotton in order to get the most value from an initial stock of 60,000 tons.

Four elementary pieces of information are needed to design such a model:

- the volume of cotton on stock on April 1st, 2000 (in thousand tons),
- the rate of interest paid to commercial banks (in percent),
- the carrying-costs other than interest (in cents per libra per quarter), and
- a demand function relating prices and ELS consumption in the world market.

A hypothetical world market demand function is derived to reflect the current market situation: the size of the ELS world market is roughly 400 kilotons per year (100 kilotons per quarter), at an average reference price of roughly 100 cents/libra of, say, American Pima. The price elasticity of this hypothetical ELS world demand is assumed at -3.0, which means that a one percent increase in price will induce a three percent reduction in consumption.

In order to get the most value, decision makers responsible for disposal of the cotton carry over stock must strike a careful balance: Selling a large volume of stock at once will reduce prices dramatically, but selling too slowly will increase interest and carrying charges. The demand function allows to estimate how much prices are likely to fall depending on the volume of stock put up for sale in a given quarter.

The problem is decomposed into a series of quarterly decisions. At the beginning of each quarter the decision-maker must decide how much stock to offer for sale. Quarterly sales are broken down into discrete multiples of 5 kilotons, to reduce the computations to manageable level.

An arbitrary end point far into the future is needed to give closure to the analysis. A terminal stock of zero tons must be reached by September 30th, 2001.

Given these information, the problem is to find the sequence of quarterly sales that will generate the highest value at the end of the period, or alternatively, the highest present value of expected future earnings less carrying costs and interest.

Base Case. Table 5.1 depicts an idealized situation when the interest rate of zero, and there are no additional carrying charges. The best strategy under such circumstances is to sell the same amount of stock each quarter, namely 10 kilotons. That reduces the average ELS world price to 97 cents/libra. At the end of the analysis period, on September 30, 2001, the Government would have an end-balance of $128 million in the bank. The present value of that balance on April 1st, 2000 is also $128 million (at zero interest rate). The average price received per libra is 97 cents. The top-left corner of Table 5.1 shows the assumed initial conditions. The best sales strategy appears in the middle tableau, and the end-balance situation in the top-right corner table. The bottom half of Table 5.1 shows the same best strategy information in graphic form.

Effects of Low Interest Rate. Table 5.2 shows how the sales strategy changes when a low interest rate of 10 percent is introduced, but there are still no additional carrying charges beyond interest. Stock sales now are higher in the first quarter and taper off throughout the analysis period: start selling 20 kilotons in the first quarter, followed by 15 kilotons in the 2nd quarter, and 10 kilotons in the 3rd and 4th quarters, and finally 5 kilotons in the 5th quarter. The effect of these sales is to reduce prices to 94 cents/libra in the 1st quarter, then 95 c/lb in the 2nd, 97 c/lb in the 3rd and 4th quarters, and 98 c/lb in he 5th quarter. At the end of the planning period the bank balance reaches $138 million, but the net present value at 10 percent discount is only $119 million. The average price received for the stock is only 90 cents/libra in present value terms discounted to April 1st, 2000.

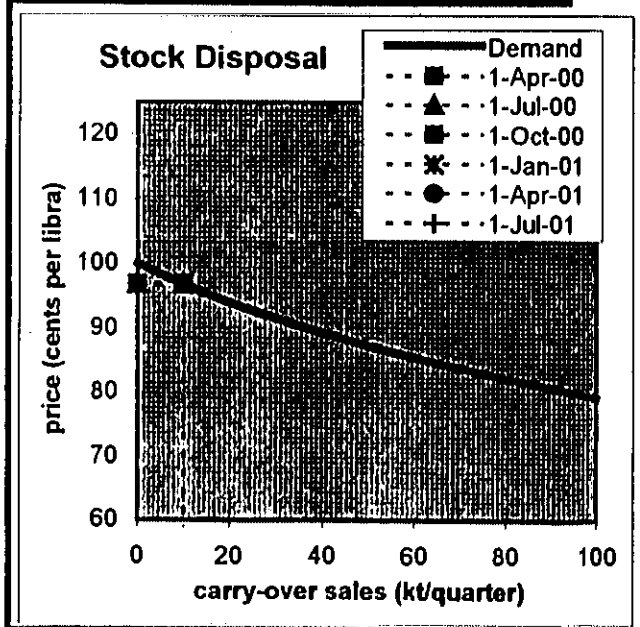
Commercial Rates of Interest. Table 5.3 introduces a more realistic commercial interest rate of 15 percent. At this higher rate sales in the 1st quarter should be increased to 25 kilotons, followed by 20, 10, and 5 kilotons in subsequent quarters. The effect of those sales on prices are shown in Table 5.3. The final bank balance on September 30, 2001 will be $145 million, including accrued interest. After discounting at 15 percent, the net present value is only $116 million on April 1st, 2000, or 88 cent/libra of stock.

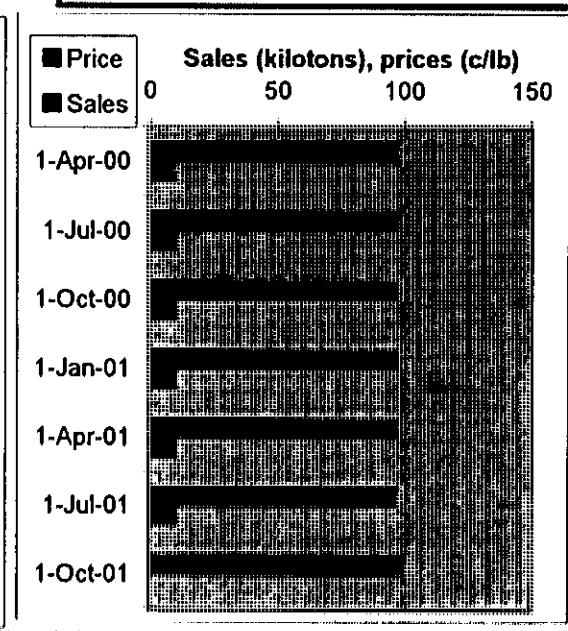
Table 5.1. Cotton Carry-Over Stock Disposal. Base Case

Stock	Cost,$m	Quarter
60	0	1-Apr-00
0	0	1-Oct-00
0.0	Carrying cost, c/lb/qtr	
0.0%	Interest rate	
0	End stock Sep 30, 01	
-3	Demand Elasticity	

Quarter	Price	Sales	Stock
1-Apr-00	97	10	60
1-Jul-00	97	10	50
1-Oct-00	97	10	40
1-Jan-01	97	10	30
1-Apr-01	97	10	20
1-Jul-01	97	10	10
1-Oct-01	100	0	0
		60	

0	Stock 9/30/01
$128	Bank Balance, $m
$128	Net Income, PV, $m
97	Revenue/lb, cents
0	Stock 9/30/01
$128	Bank Balance, $m
$128	Net Income, PV, $m
60	Stock 9/30/01
$0	Bank Balance, $m
$0	Net Income, PV, $m





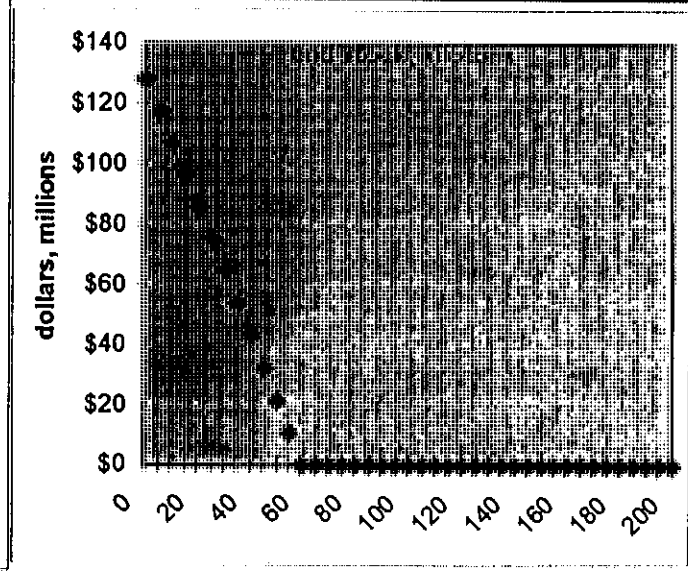
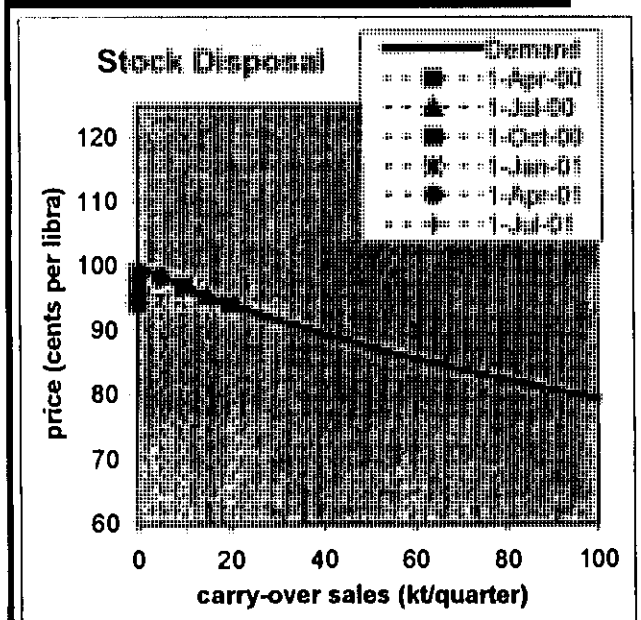


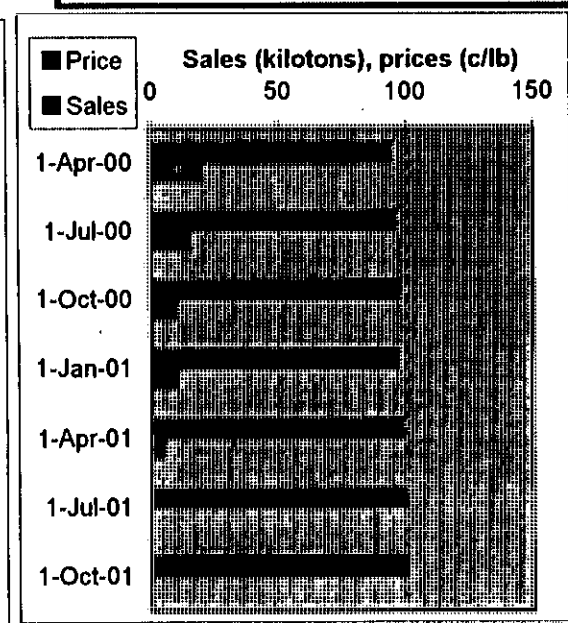
Table 5.2. Cotton Carry-Over Stock Disposal. Low Interest Rate (10%)

Stock	Cost,$m	Quarter
60	0	1-Apr-00
0	0	1-Oct-00
0.0	Carrying cost, c/lb/qtr	
10.0%	Interest rate	
0	End stock Sep 30, 01	
-3	Demand Elasticity	

Quarter	Price	Sales	Stock
1-Apr-00	94	20	60
1-Jul-00	95	15	40
1-Oct-00	97	10	25
1-Jan-01	97	10	15
1-Apr-01	98	5	5
1-Jul-01	100	0	0
1-Oct-01	100	0	0
		60	

0	Stock 9/30/01
$138	Bank Balance, $m
$119	Net Income, PV, $m
90	Revenue/lb, cents
0	Stock 9/30/01
$138	Bank Balance, $m
$119	Net Income, PV, $m
60	Stock 9/30/01
$0	Bank Balance, $m
$0	Net Income, PV, $m





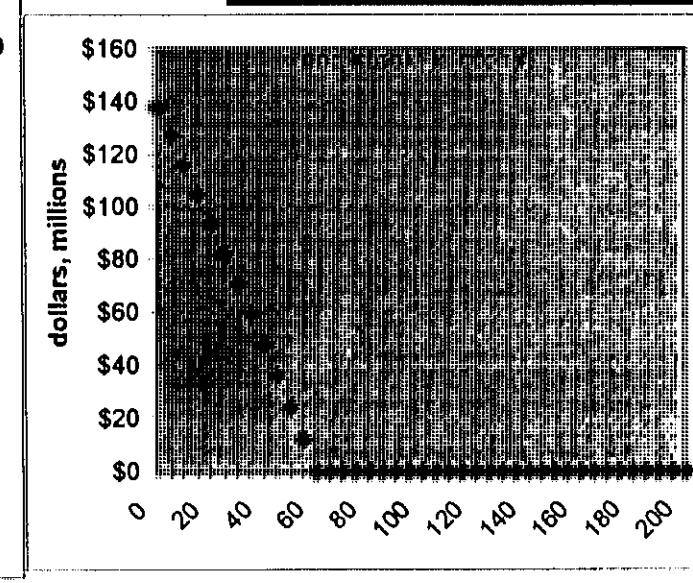
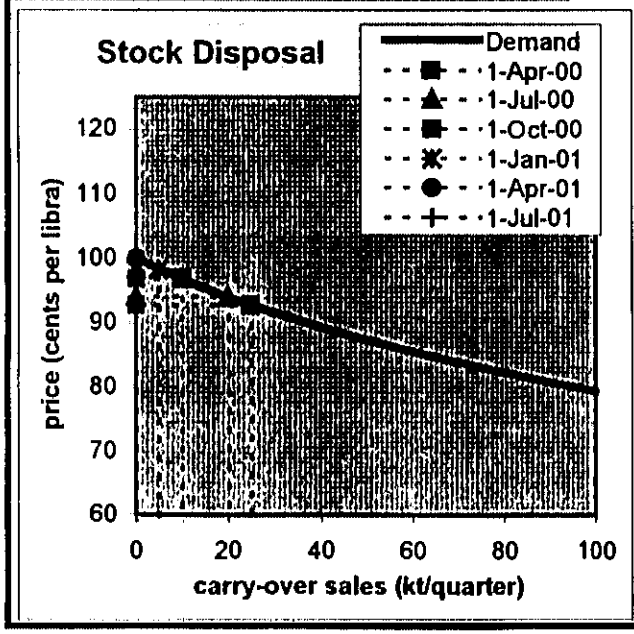


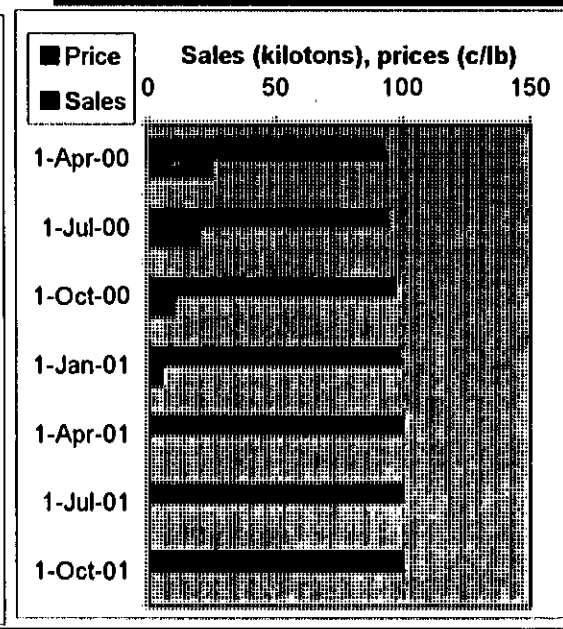
Table 5.3. Cotton Carry-Over Stock Disposal. Commercial Rate of Interest (15%)

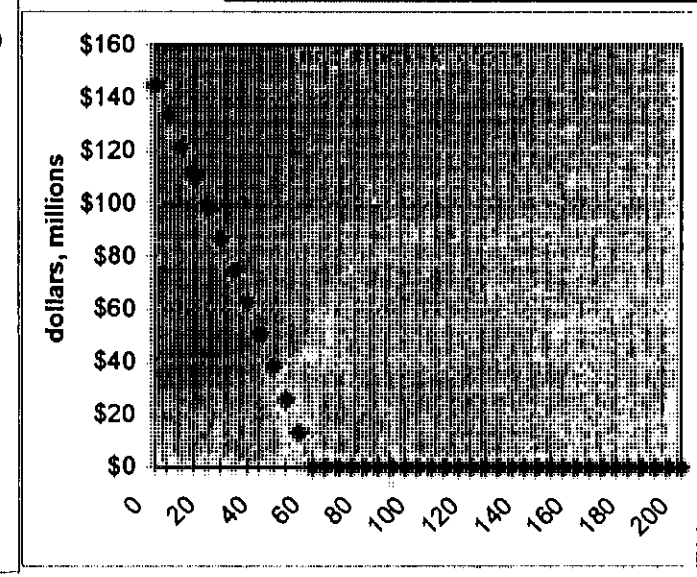
Stock	Cost,$m	Quarter
60	0	1-Apr-00
0	0	1-Oct-00
0.0	Carrying cost, c/lb/qtr	
15.0%	Interest rate	
0	End stock Sep 30, 01	
-3	Demand Elasticity	

Quarter	Price	Sales	Stock
1-Apr-00	93	25	60
1-Jul-00	94	20	35
1-Oct-00	97	10	15
1-Jan-01	98	5	5
1-Apr-01	100	0	0
1-Jul-01	100	0	0
1-Oct-01	100	0	0
		60	

0	Stock 9/30/01
$145	Bank Balance, $m
$116	Net Income, PV, $m
88	Revenue/lb, cents
0	Stock 9/30/01
$145	Bank Balance, $m
$116	Net Income, PV, $m
60	Stock 9/30/01
$0	Bank Balance, $m
$0	Net Income, PV, $m







Carrying Costs beyond Interest. There are other costs besides interest, associated with keeping a large stock of cotton. Storage and insurance charges are the most obvious. But there are also the physical weight loss and quality deterioration that occur over long-term storage periods. Table 5.4 shows how the sale strategy adjusts when carrying costs are 1 cent/libra per quarter and the interest rate is 15 percent. The best strategy then is to sell 30 kilotons in the 1st quarter, 20 kilotons in the 2nd, and 10 kilotons in the 3rd. ELS prices then drop to 92 c/lb in the 1st quarter, to 94 c/lb in the 2nd, and 97 c/lb in the third. Afterwards, average ELS prices restore to their normal level of 100 c/lb. The net present value of this sale strategy is $115 million, equivalent to 87 cent/libra of cotton in stock.

Irrelevance of Initial Cost. Table 5.5 is nearly identical to the previous situation depicted on Table 5.4, the only difference being that Government initially owes the bank $100 million for the purchase of the cotton in stock. The best-sales strategy generated by the spreadsheet program *is not affected* at all by this change. It still recommends to sell 30 kilotons in the 1st quarter, at an expected average price of 92 cents/libra. Of course, at the end of the analysis period in September 30, 2001, the Government balance with the banks is only $19 million, after paying up the debt, interest, and carrying charges. The average price received for the stock is still 87 cent/libra (discounted to April 1st, 2002 at 15 percent).

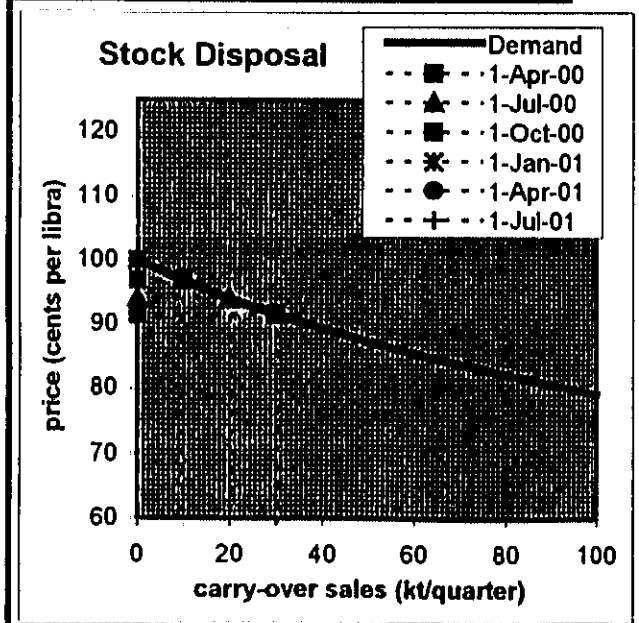
Several basic principles are illustrated in these simulation exercises. First, Government gets the most value out of the stock by selling quickly at first and diminishing quantities later on. Higher interest and carrying costs lead to higher sales at the beginning and shorter disposal periods. It makes no difference how much Government paid initially for the cotton or how much it has paid since then. The best strategy only depends on expected future interest charges and other carrying costs.

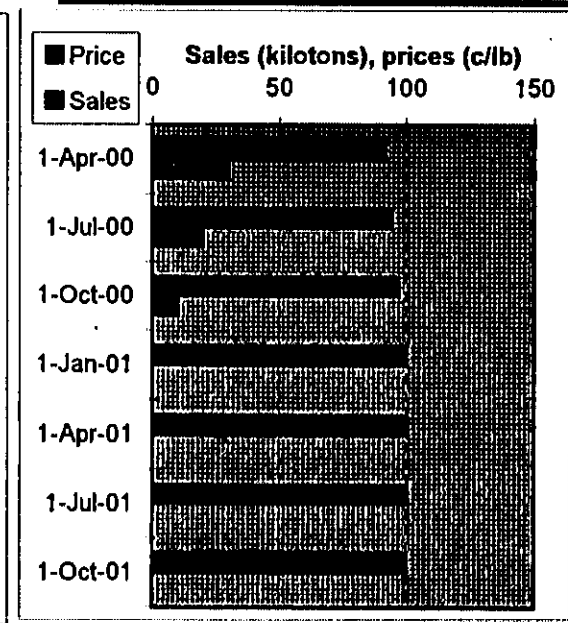
Table 5.4. Cotton Carry-Over Stock Disposal. Carrying Costs Other than Interest

Stock	Cost,$m	Quarter
60	0	1-Apr-00
0	0	1-Oct-00
1.0	Carrying cost, c/lb/qtr	
15.0%	Interest rate	
0	End stock Sep 30, 01	
-3	Demand Elasticity	

Quarter	Price	Sales	Stock
1-Apr-00	92	30	60
1-Jul-00	94	20	30
1-Oct-00	97	10	10
1-Jan-01	100	0	0
1-Apr-01	100	0	0
1-Jul-01	100	0	0
1-Oct-01	100	0	0
		60	

0	Stock 9/30/01
$143	Bank Balance, $m
$115	Net Income, PV, $m
87	Revenue/lb, cents
0	Stock 9/30/01
$143	Bank Balance, $m
$115	Net Income, PV, $m
60	Stock 9/30/01
($9)	Bank Balance, $m
-$7	Net Income, PV, $m





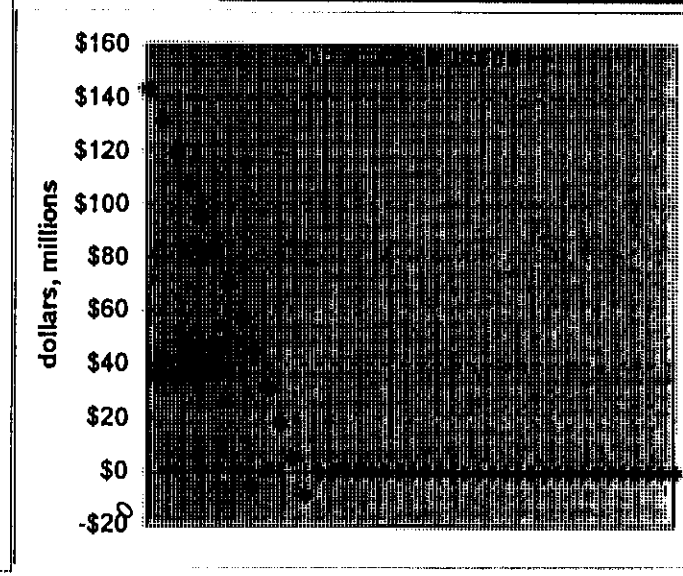
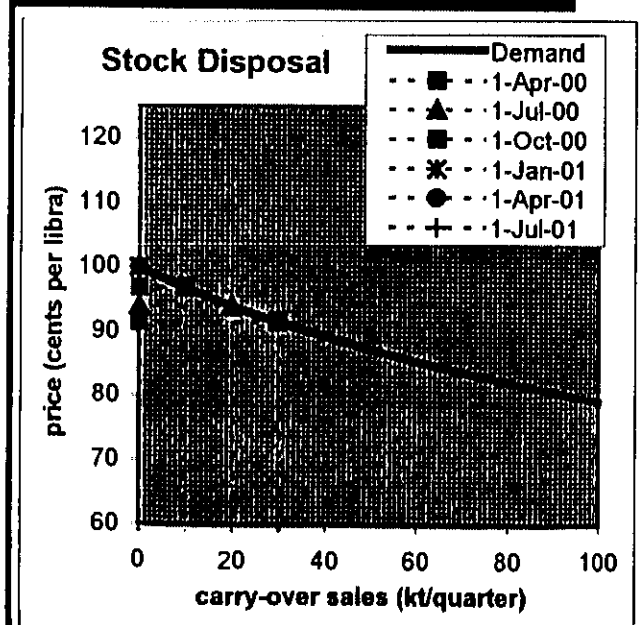


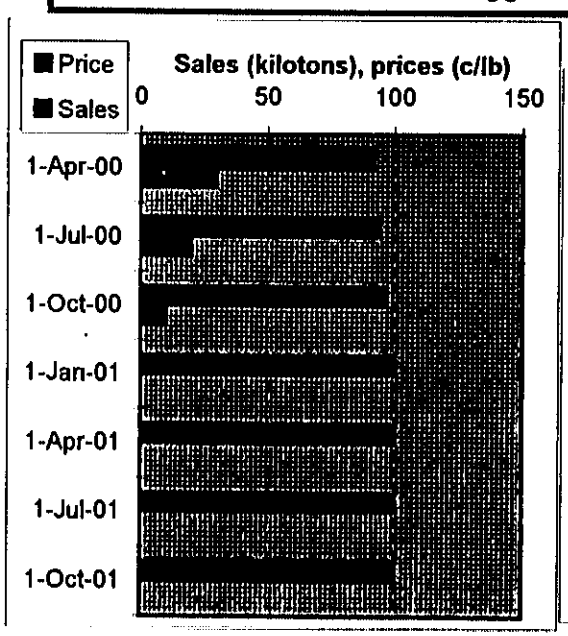
Table 5.5. Cotton Carry-Over Stock Disposal. Irrelevance of Initial Cost

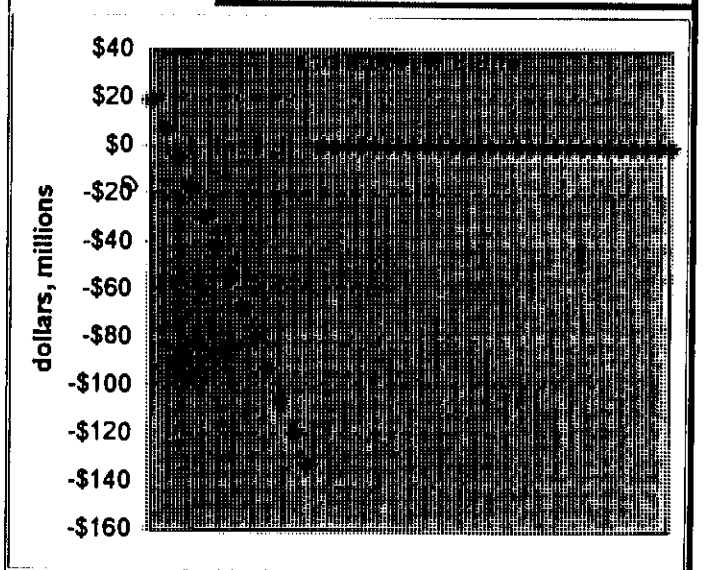
Stock	Cost,$m	Quarter
60	100	1-Apr-00
0	0	1-Oct-00
1.0	Carrying cost, c/lb/qtr	
15.0%	Interest rate	
0	End stock Sep 30, 01	
-3	Demand Elasticity	

Quarter	Price	Sales	Stock
1-Apr-00	92	30	60
1-Jul-00	94	20	30
1-Oct-00	97	10	10
1-Jan-01	100	0	0
1-Apr-01	100	0	0
1-Jul-01	100	0	0
1-Oct-01	100	0	0
		60	

0	Stock 9/30/01
$19	Bank Balance, $m
$115	Net Income, PV, $m
87	Revenue/lb, cents
0	Stock 9/30/01
$19	Bank Balance, $m
$115	Net Income, PV, $m
60	Stock 9/30/01
($133)	Bank Balance, $m
-$7	Net Income, PV, $m







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ANNEX I

ANNEX I. LIST OF PERSONS INTERVIEWED

Abd El Migid Asal, Chairman, Delta Spinning & Weaving Co. in Tanta
Adel M. Leheta, Chairman and Managing Director of Alexandria Commercial Co.
Bahaa El Sheriff, Chairman of El Wadi Trading and Ginning Co.
Fawzy Abd El Holein Emara, Gen. Mgr., Arabia Gin # 3 in Damanour
Hamid Mohammed Abd El Mageed, Gen. Mgr., El Wadi gin in Damanour
Mamdouh Sayed Abdel Sattar, Chairman and Managing director, Eastern Cotton Co.
Mohammed Aragawey Alame, Gen. Mgr., Delta gin at Damanour
Nabil El-Marsafawy, Chairman CIT-HC
Osman Hassan El Kady. Gen. Mgr., El Nil gin at Etay El Baroud
Ramadan Abou Ghoneima, Gen. Mgr., Delta gin at Kafr Dawar,
Said Mahmoud Haggag, Managing Director Alcotan and President of ALCOTEXA
Said Refai, Chairman, Egyptian Pressing Company
Said Erfan, Chairman, Adel Ibrahim Asaad, GM of Information center,
M. Saif El Islam, GM of ICTC, CATGO
Sayed Nasr, Chairman and Managing Director, Al Kahira Cotton Co.
Shafik Gomaa, President, and Farouk Ebaid, Comm. Dir., Societi Misr Pour L'Exportation du Coton
Sobri A.Mashaal, Deputy Executive director, ALCOTEXA
Mrs. Souad Sobhi, Head of the Fire and Theft Dept, and Mrs Wadid Zaaloul, Head of Cotton Dept. at El Ahliya (a public insurance company)
Wagdy Hendy, Chairman and Managing Director, Port Said Cotton Export Co.