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**AGRICULTURAL DEVELOPMENT SYSTEMS**  
**EGYPT PROJECT**  
**UNIVERSITY OF CALIFORNIA, DAVIS**

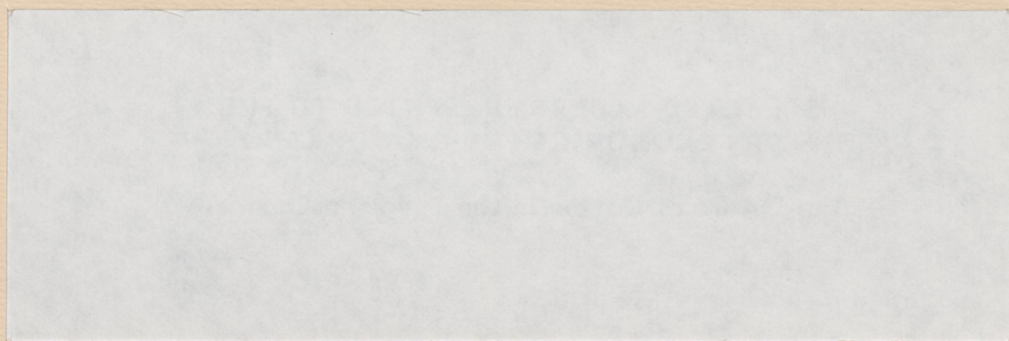
SELECTED PAPERS PRESENTED TO THE  
 SIXTH ECONOMICS POLICY WORKSHOP  
 The Future of Cotton in the Egyptian Economy

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SIXTH ECONOMICS POLICY WORKSHOP**

**The Future of Cotton in the Egyptian Economy**

Assistance from the Agricultural Development Systems Project of the University of California, Egyptian Ministry of Agriculture, and USAID, is gratefully acknowledged, but the author is solely responsible for the views expressed in this paper.

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January, 1983

Agricultural Development Systems:  
Egypt Project  
University of California  
Davis, Ca 95616



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SIXTH ECONOMICS POLICY WORKSHOP

"THE FUTURE OF COTTON IN THE EGYPTIAN ECONOMY"

December 18-19, 1982  
9:30am-3:30pm

Foreign Relations Building  
Nadi El Said Street  
Ministry of Agriculture  
Cairo, Egypt

Agricultural Development Systems Project is a joint project of the Egyptian Ministry of Agriculture and Food Security and the University of California sponsored by US AID.

ADS EGYPT-CALIFORNIA PROJECT  
SIXTH ECONOMICS POLICY WORKSHOP

"The Future of Cotton in the Egyptian Economy"

December 18-19, 1982

The ADS Egypt-California Project is a joint effort of the Egyptian Ministry of Agriculture and Food Security and the University of California promoting policy-relevant research on problems of the agricultural development of Egypt. The ADS Economics Sub-Project has organized this Sixth Economics Policy Workshop to explore the policy issues concerning the future of cotton in the Egyptian economy. Egyptian cotton production, cotton processing, and the domestic and international markets for cotton will be discussed in an effort to identify policy alternatives for decision makers.

PROGRAM

December 18 First Session Cotton in the Egyptian Economy  
9:30am-12:30pm

Moderators: Dr. Ahmed Goueli and Dr. John Rowntree

Welcome and  
Introductions: H.E. Dr. Youssef Wally, Minister of Agriculture  
Dr. Yehia Mohieldin, ADS Co-Director, Egypt  
Dr. Mohamed K. Hindy, ADS Technical Advisor  
Dr. Bruce Glassburner, ADS Co-Director, UC

Break: 10:00am-10:30am

Presentations: Dr. Ahmed Goueli, "An Overview of the Role of  
Cotton in the Egyptian Economy and the  
Objectives of This Workshop."

Dr. Helmy Abd El-Ghani, "Cotton in the Egyptian  
National Plan."

Dr. Hassan Khedr, Dr. Hanaa Khier-El-Din, and  
Dr. Eric Monke, "Economic Efficiency of  
Cotton Production in Egypt."

Dr. Aly El-Kheshen, Dr. M. Bshr, Dr. A. Abd  
El-Bary, "Cotton Production: General  
Remarks."

Discussants: Dr. Osman El-Kholei and Dr. Carl Gotsch

Lunch Break  
12:30pm-1:30pm



December 18 Second Session Cotton Production in Egypt  
1:30pm-3:30pm

Moderators: Dr. Kamel Stino and Dr. M. Kamel Hindy

Presentations: Dr. Mohamed A.H. Abdel Ghaffar, "Egypt Urgently Needs to Grow Hirsutum (Upland) cottons for Local Popular Textile Products."

Dr. Hassan Khedr, Dr. Hanaa Kheir-El-Din, and Dr. Todd Petzel, "Cotton Supply Response: A Case of a Distorted Market."

Dr. Mahmoud El-Adawy, Dr. Hassan Khedr, and Dr. Hanaa Kheir-El-Din, "Production Function Estimation."

Dr. Mohsen El-Dedi, "The Future of Alternative Cotton Varieties in Egypt."

Discussants: Dr. Saad Nassar and Dr. Dyaa Abdou

December 19 Third Session Domestic Processing and  
9:30am-12:00am Consumption of Cotton

Moderators: Dr. Mohamed Sharaf and Dr. Bruce Glassburner

Presentations: Dr. Hassan Khedr, Dr. Hanaa Kheir-El-Din, and Dr. Eric Monke, "Economic Indicators of Efficiency of the Egyptian Spinning Industry."

Dr. Omar Loutfy, "Developments in the Cotton Processing Industry."

Dr. Mohamed A.H. Ghaffar, "Cotton Cooperative Marketing in Egypt."

Discussants: Dr. Heba Handoussa and Dr. A. Basheer

Lunch Break  
12:00am-1:00pm

December 19 Fourth Session  
1:00pm-3:30pm

Domestic and International  
Markets for Cotton

Moderators: Dr. Yehia Mohieldin and Dr. Ahmed A. Goueli

Presentations: Dr. Eric Monke and Dr. Todd Petzel,  
"International Market Integration."

Dr. Eric Monke, "Market Demand for Cotton."

Dr. Don Heckerman, Dr. Hassan Khedr, and Dr.  
Hanaa Kheir-El-Din, "Stock Accumulation,  
Export Demand, and Appropriate Prices  
for Egyptian Extra Long Staple Cotton."

Dr. Bruce Glassburner, "Exchange Rate Policies  
in Egypt with Special Reference to Cotton."

Discussants: Dr. Sultan Abo-Ali and Dr. John Rowntree

Summary and  
Policy  
Implications: Dr. Hassan Khedr

Proceedings Committee:

Dr. Hassan Khedr, Chairman  
Dr. Hanaa Kheir-El-Din  
Dr. Mahmoud El-Adawy  
Dr. Mohsen El-Dedi  
Dr. John Rowntree



Papers Presented to the Sixth Economics Policy Workshop

Many of the papers presented to the workshop have been reproduced separately as ADS Economics Working Papers. Only those papers that have not been reproduced separately are included in this supplementary volume.

"Cotton in the Egyptian National Plan"

by

Dr. Helmy Abd El-Ghani

Cotton is not just a crop cultivated in Egypt but it is a crop of great importance both on the farm level and at the economy level. On the farm level cotton is considered as the main cash crop and the farmer arranges the land rotation according to it. On the macro level, certain material balances have to be carried out related to this crop as it has many interrelationships and effects on many aspects of the Egyptian economy, especially in several activities in the industrial sector, the finance sector, and the foreign trade sector. Our study is to discuss some aspects of cotton in the Egyptian economy dealing mainly with the macro level, dealing if necessary with the micro level.

Total Acreage of Cotton:

The acreage cultivated with cotton was estimated at about 1,974 thousand feddans in 1950, representing about 22% of the total cropped area. This area decreased to about 1,873 thousand feddans in 1960 and to 1,627 thousand feddans in the year 1970 and to 1,244 thousand feddans in the year 1980, representing 18%, 15%, and 11% of the total cropped area, respectively.

If we try to correlate these changes with the changes in the total area cultivated with bersim we find that the area cultivated with bersim went from 901 thousand feddans in 1950 to 1,131 thousand in 1960; to 1,735 thousand feddans to 1970; and



to 1,856 thousand feddans in 1980. We can say accordingly that there has been an increase in the area of fodder crops at the expense of the area of cotton. This happened while the economic returns from bersim were less than those derived from cotton or wheat. This may be due to the higher return the farmer gets from the final product, and this reflects a benefit contradiction between the return to the farmer and the benefit return to the economy as a whole.

#### Total Cotton Production

While the area of cotton increased to about 1,974 thousand feddan in 1950, total cotton production amounted to about 6,997 thousand metric kantars while the area cultivated with cotton in 1970 was about 1,627 thousand feddans, cotton production amounted to about 8,914 thousand metric kantar. The respective figures in 1980 are 1,244 thousand feddans and 8,941 thousand metric kantars.

These figures indicate that we have achieved in the more output from less acreage and this is due to the new agricultural policy which succeeded in allocating cotton growing and its varieties in the most promising lands and prohibiting cotton cultivation on marginal and submarginal lands.

#### Cotton Acreage and Cereal Crops

In our study we noticed that when the acreage of cotton decreases the acreage of cereal crops increases. In 1950,

acreage of cotton was 1,974 thousand feddans; total acreage of cereal crops was 3,916 thousand feddan. In 1960, these figures were 1,873 for cotton against 4,436 for cereals; in 1970, 1,627 for cotton against 4,630 for cereals; in 1980, 1,244 for cotton against 4,855 for cereals. As our home production from cereal crops (excluding rice) is not sufficient for the domestic consumption, we have to use a part of foreign currency the country can get from exporting cotton both raw and manufactured to import the needs from cereal crops. This was true until the year 1977, as the country's import from cereal crops represent about 70% of the total value of cotton exports. But in the year 1980 the value of exports from cotton (449.6 L.E) was not sufficient to cover the value of imported cereal crops (564.1 L.E).

From the previous studies, it is important to choose one of the following policies:

1) Devote more land to be cultivated with cereals and this will be at the expense of the area devoted to cotton. In this direction we can realize means and goals of the existing agricultural policy.

2) Devote more land to cultivate cotton at the expense of the area devoted to cereal crops, and exchange cotton through international trade to get out needs from cereal crops.

Each of the two direction is discussed in detail in our study and many other economic studies will tackle the net return from the alternative crops using both local and world market price.

But in our view the optimum production from cotton needs more careful study of the level of world prices and the degree of upgrading of the marginal and submarginal land and the capacity of world cotton market and the need of the budget to increase its economic surplus, and the ability of our local resources to produce a higher degree of food security.

As prices play a significant role in determining the profitability of crops competitive to cotton world economic changes call for continuous studies to follow the effect of these change upon our policy towards getting the most benefit from our comparative advantage.



Interrelationships of Cotton  
in the Next Five Year Plan

GINNED COTTON, thousand metric kantars

Year	Local	Imports	Total	Intermediate consumption	Export
1981/82	10012	--	10012	6408	3604
1986/87	9114	850	9964	7700	2264

## COTTON SEED

	Prod.	Seeds	Losses	Intermediate Consumption
1981/82	660	87	6	567
1986/87	609	87	6	516

## COTTON SEED OIL

	Resources			Utilization			
	Prod.	Import	Total	Final	Interm.	Stock	Total
1981/82	102	265	367	246	117	4	367
1986/87	93	358	451	278	167	6	451

## COTTON CAKE

1981/82	465	-	465	465
1986/87	423	157	580	580

## ANIMAL FEED

1981/82	1432	100	1532	1532
1986/87	2000	---	2000	2000

THE FUTURE OF COTTON PRODUCTION IN EGYPT

By

Prof. Ali A. El-Khishen

Fac. of Agric. Univ. of Alexandria

Cotton is by far the most important fiber and oil crop not only in Egypt but also in the world. Anywhere it is grown it constitutes a very important source of income both for individual farmers and for the national economy.

Cotton started to be a major crop in Egypt in the middle of the last century when it was grown to provide the raw material for the textile industry being established then during the Mohamed Ali era. Later in the nineteenth century the textile industry in Egypt vanished but the cotton crop remained and even increased to provide the British textile industry with its needs of raw cotton.

Ever since, cotton has played a very important role in the Egyptian agriculture economy, and a big industry was established as a result, including production, transportation, ginning, textile manufacture and trade including export business. So cotton became the major source of living for the millions of farmers and for those connected with the above mentioned processes of handling.

Until the end of the sixties, about 1.7 - 1.8 million feddans of cotton were grown in Egypt. That was according to the best and most convenient crop rotation followed by the Egyptian farmer. However, the cotton area started to decrease

quickly during the seventies until it reached about 1.1 million feddans now. The reasons for that decrease are not fully known or understood and whatever they are I believe that they are not accepted. The total production, however, has remained almost the same every year, amounting to about 7-8 million kentars. This is due to the scientific efforts of the cotton breeders in the Ministry of Agriculture who produced tens of high yielding, high quality varieties of cotton. Scientific research has also helped the cotton growers to increase the yield per feddan by adding more fertilizers and controlling weeds and pests. So the per feddan yield has jumped from about five kentars in the sixties to about 8 kentars now.

By decreasing cotton area we lose about 6-7 hundred thousand feddans of cotton each year. Accordingly the Egyptian economy loses about 4.8 million quintar annually since the average yield per faddan now is about eight kentars. These 4.8 million kentars produce about 480 thousand tons of seed with about 20% of edible oil, which amounts to 96 thousand tons of oil.

Cotton should be considered as a food crop as well as a fiber crop. Two thirds of each quintar (about 100 kilograms) are seed which play a very important role in both human food and animal feed (cotton seed cake). When the cotton area was decreased an edible oil crisis took place, and the Ministry of Supply had financial difficulties in importing oil for human consumption. No other oil crop could replace this loss--not even soybean. The Egyptian government tries very hard to

encourage farmers to grow soybeans for the benefit of poultry production by increasing the price of the ton to about 260 L.E. but the area grown has reached only a little more than one hundred thousand feddans. It is of questionable value to grow an area

of soybeans and other oil crops to replace the area lost from cotton in the rotation. So the question may be raised: Could the soybean oil substitute for the cotton seed oil either in quantity or in quality as human food in Egypt. The answer is definitely no for the following reasons:

1. The crop rotation cannot afford to give soybeans more area than it gets now.
2. If we compare one feddan of cotton with one of soybeans we find that both crops produce an average of about 800 kilograms of seed per feddan, but the percent of oil is higher in cotton (20-25%) than in soybeans (17-18%). So each feddan could produce about 200 kilos of cotton seed oil as compared with about 180 kilos of soybean oil.
3. Cotton produces valuable fiber besides the good edible oil.
4. Cotton mechanization is also going to reduce the cost of production by 50%. So if cotton was grown only for seed, it would be better than growing soybean or any other oil crop in Egypt.

For all these reasons I recommend that the area of cotton should go back to the 1.7-1.8 million feddans as it was before the 1960's. This would definitely help the national economy and the food security efforts and also help to increase animal feed to a great extent.



## 2-COTTON SEED AS FOOD AND FEED

By

Dr. Mohamed Ali Bishr

Crop Science Dept., College of Agriculture,  
Alexandria University, Alexandria Egypt

---

Cotton seed constitutes  $\frac{2}{3}$  two thirds of the seed cotton yield. It is now gaining an important role in the human diet either directly or indirectly. Directly because of its edible oil and indirectly for the protein rich-cake that is used extensively in animal feeding.

In Egypt more than 90 % of the edible oil produced in the country is from cotton seed. A successful cotton crop of ten million kantars ( 1 kantar = 157.5Kg of seed cotton) as in 1980/81 ( 5 ) simply means the production of one million ton of cotton seed. This in turn supplies us with about 130,000 tons of edible oil. In 1980 Egypt has imported 268,000 tons of plant oil. Some people thought that the problem could be solved by growing new oil crops such as sunflower or soybean. Cotton seed contains about 20 % oil compared with 18 % in soybean seed. A good cotton yield of ten kantars per acre means the production of one ton of cotton seeds. Since the cultivated area in Egypt is limited, one should think twice before growing any new crop in the Egyptian crop rotation . Cotton plant is not an ordinary crop, since it supplies us with the valuable fiber, the edible oil and the rich cake. Not only that, but there is a new important product making its way to the human diet from cotton seed. Cotton seed contains about 20 % protein of high

value. After dehulling the seed, extracting the oil and drying the rest of the kernel the protein percentage jumps to about 50 %. The only thing that hindered the use of cotton seed protein is the presence of a small percentage (1-2 %) of the polyphenolic compound called "gossypol". Fortunately the gossypol could be eliminated either through mill processing or genetically by the cotton breeders. In Egypt through radiation with  $p^{32}$  a free gossypol cotton strain named Bahtim 110 was developed (1).

Later on this character was introduced by hybridization and a new glandless free gossypol strain by the name Alexandria 4 was developed (3). The flour of these free gossypol strains was studied thoroughly by the Crop Science Dept., Alexandria University (4), Tables 1 & 2. Bread and Biscuits were made by adding certain percentage of the high protein cotton seed flour to the wheat flour (Figs. 1, 2, & 3). Also the fresh cheese, macaroni and Sour milk (Zabadi milk) were enriched by such cotton seed flour.

From the above summary one could realize the great role of cotton plant on the Egyptian economy. It is a plant of multiple products i.e. the superior fibers, the edible oil, the rich cake and the high protein flour. No wonder it is named the crop of the future (2) it takes approximately 5 times as much energy to produce a pound of synthetic fiber as it takes to produce a pound of cotton fiber plus two pounds of seeds a bonus which many people overlook (2).

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Table (17) Amino acid Composition of different Cotton and  
Wheat flour<sup>‡</sup>

Amino acid	Cotton seed flour			Wheat flour		
	Glanded	Glandless	Autoclaved HAW	Soft	Hard	
Lysine	3.88	3.52	2.90	2.90	1.36	1.66
Histidine	3.06	3.19	2.50	2.18	1.65	1.69
Arginine	8.77	9.52	8.22	8.25	1.92	2.74
Aspartic	10.20	9.47	9.67	9.71	3.01	3.41
Serine	3.31	3.18	3.77	3.29	2.92	3.88
Glycine	5.10	5.63	4.48	4.42	2.94	2.64
Glutamic	14.48	14.30	11.54	11.12	27.19	29.61
Threonine	3.67	3.33	3.40	3.44	2.67	2.61
Alanine	4.01	3.74	3.29	2.85	1.53	2.76
Tyrosine	2.48	2.42	2.13	2.01	2.35	2.59
Methionine	3.35	3.58	3.08	3.35	0.61	1.66
Valine	4.22	3.99	3.28	3.54	3.05	4.66
Phenylalanine	4.55	4.51	4.26	3.99	4.57	7.28
Leucine + Isoleucine	6.40	10.19	5.39	7.68	6.86	7.19

‡ Determined by paper chromatography

Table (9A) Proximate Analysis of Balady Breads made from mixtures of Hard wheat and cotton flours.

Cotton flours in mixtures %	Protein %	Ash %	Crude Fat %	Crude Fiber %	Nitrogen free extract %	Minerals			
						Ca	Fe.	Zu	P.
						mg/100g			
0	16.29	1.54	1.23	0.41	80.53	22.0	4.5	9	280
5	17.50	2.24	1.37	0.43	78.46	28.0	5.0	13	360
10	18.86	2.74	1.59	0.55	76.26	33.2	6.0	15	450
15	20.16	2.94	1.76	0.54	74.60	38.7	6.5	16	500

The results recorded are average of triplicate determinations on dry weight basis.

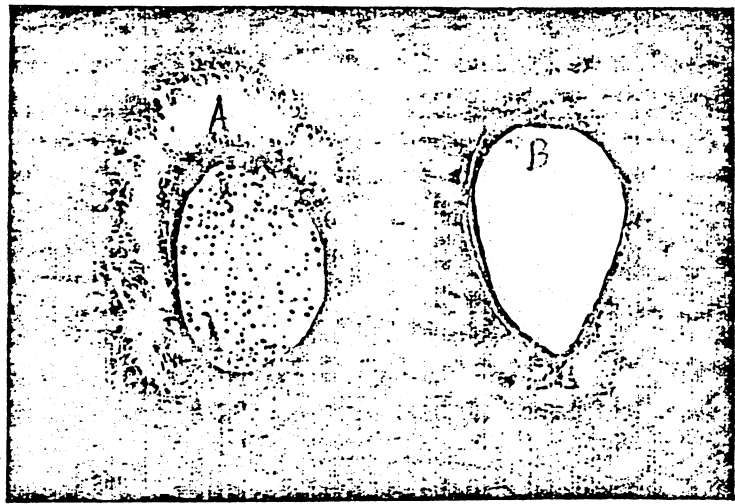


Fig (12) A, Glanded Cotton Seed - B, Glandless C. Seed

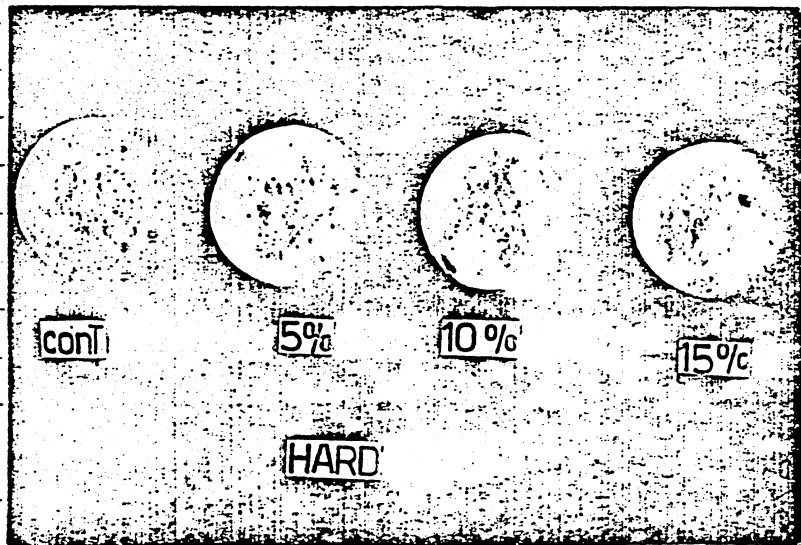
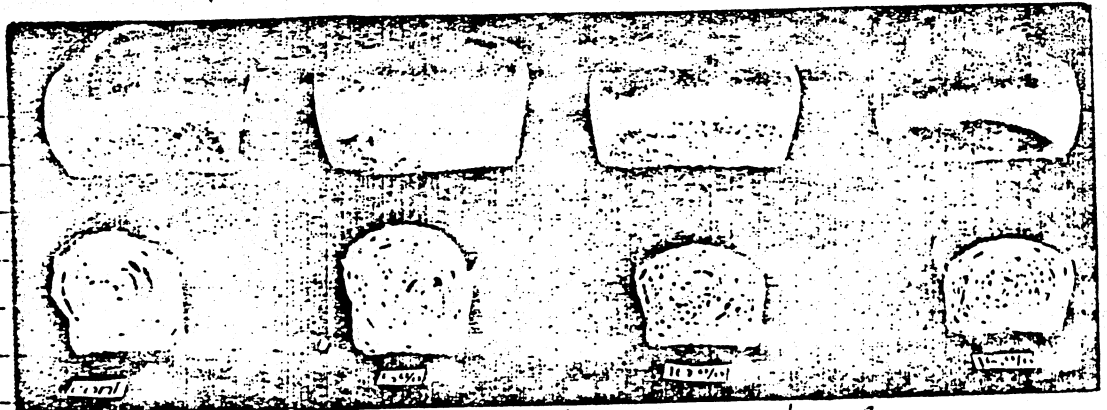


Fig (23) Baladi Bread enriched with Cotton Seed Flour %



cont 5% 10% 15%

Table (2-B) Proximate Analysis of Biscuit prepared from mixtures  
of Soft flour and Cotton seed flour

Cotton flour in mixtures %	Protein %	Ash %	Crude Fat %	Crude Fiber %	Nitrogen free ext- ract %	Minerals			
						Ca	Fe	Zu	P
						mg / 100 g			
0	6.92	1.02	16.59	0.11	75.36	40.0	3.50	4.0	190
5	8.04	1.12	17.32	0.18	73.34	42.70	3.89	4.5	240
10	8.88	1.19	17.51	0.31	72.11	44.0	4.20	5.9	280
15	9.64	1.29	17.91	0.39	70.77	45.60	4.80	6.7	320

The results recorded are average of triplicate determinations on  
dry weight basis.



- 3 -

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## الملخص العربى

ج - بذرة القطن كمحصول غذائى

للدكتور / محمد على بشر استاذ المحاصيل بكلية الزراعة

جامعة الاسكندرية

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ان بذرة القطن تكون ثلثى محصول القطن الزهره ، وبذرة القطن حاليا لها قيمتها الصناعيه فهى تمدنا بزيت الطعام للانسان والكسب للحيوان ، وفى مصر تلعب بذرة القطن دورا هاما فى الاقتصاد القومى فانتاج محصول قطن جيد من عشرة مليون قنطار كما حدث فى ١٩٨٠/١٩٨١ معنى ذلك ببساطه انتاج مليون طن بذرة وهذه بدورها تمدنا بما يزيد عن ١٣٠ ألف طن زيت - لقد استوردت مصر ٢٦٨ ألف طن من الزيوت النباتيه عام ١٩٨٥ ومنتظر أن تصل هذه الكميه الى ٥٠٠ ألف طن عام ١٩٨٥ فمن أين لنا بسد هذا النقص ؟ لقد فكر البعض بادخال زراعة بعض المحاصيل الزيتيه كعباد الشمس أو فول الصويا ولكن هذا لا يجوز التفكير فيه بهذه البساطه فمساحة الارض بمصر محدوده وأى مساحه تزرع بمحصول جديد انما تستقطع من المساحه المخصصه للمحاصيل القائمه كما أن بذرة القطن فى حد ذاتها غنيه بالزيت التى تصل نسبته الى ٢٠% بالمقارنه بـ ١٨% ببذور فول الصويا ، بالاضافه الى محصول الالياف الهام للكساء وكميات الكسب الهائله للحيوانات ، وليس ذلك فقط بل هناك مكن رابع هام فى طريقه الى الظهور وهو البروتين بها والتى تصل نسبته ٢٠% ، ولكن بعد تقشير البذره واستخراج الزيت والماء منها وسحقها فى صورة دقيق ترتفع نسبة البروتين الى ٥٠% الا أن وجود ماده الجوسيبول الضاره بالبذره بنسبه ١ - ٢% هو الذى أخرج الاستفاده من هذا البروتين فى تغذية الانسان ولكن لحسن الحظ أمكن التخلص من هذه الماده اما بالطرق الصناعيه الحديثه أو بانتاج سلاسل خاليه من ماده الجوسيبول وفعلا ظهرت بمصر السلالة بهتيم ١١٠ بمعاملة بذور قطن جيزه ٤٥ بالفوسفور المشع ١٩٦٠ ثم نقلت هذه الصفه بالمشتغلين بالقطن بجامعة الاسكندرية الى بعض الاقطان التجاريه المصريه ونتاجت السلالة اسكندرية ٤ سنة ١٩٨٠ وقد درست بذور هذه السلالات جيدا ثم عملت خلطات من دقيقها مع دقيق القمح لانتاج خبز وسكويت مرتفع القيمه الغذائيه وليس ذلك فقط بل ادخلت فى صناعة المكرونه والجبنه البيضاء واللين الزبادى وكانت النتائج مشجعهم

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ما سبق يتضح أن نبات القطن ليس نباتا عاديا فهو نبات متعدد النواتج :  
الالياف والزيت والكسب والبروتين • مما جعل البعض يطلق عليه نبات المستقبل  
لتعدد فوائده للانسان والحيوان •

ولقد حذر السيد الفاضل وزير الصناعة المهندس طه زكى فى ١٩٨١/١٢/٤ من  
أى مساس بمساحة القطن لخطورة ذلك على الاقتصاد القومى فانقاص المساحة بـ ١٠٠  
ألف فدان معناها استيراد زيوت وعلف بمئتين مليون دولار هذا بخلاف قيمة الالياف  
التي تقدر بمئات الملايين من الجنيهات •

## TOWARDS A SOUND EGYPTIAN COTTON POLICY

By

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This is the fifth article of a series bearing the same title. The first article appeared in the Agricultural Magazine of March, 1963. In that first article two major points were indicated. First the bad need for a sound Egyptian policy. Second how cotton growing countries plan their policies. India was a good example of developing countries. Right after partitioning the Indian cotton crop was similar in size to the Egyptian crop of about 1.7 million bales. In 1950, India started her first 5-year cotton plan. A well organized plan helped India to reach her target one year earlier, as in 1954 the crop was 4.2 m. bales. By 1960, the crop was 5.3 m. bales and yield increase was about 50 % over that of 1954.

The well planned Indian policy led to the increase of the crop together with the improvement of the quality. By the sixties India was able to be self sufficient in medium quality cotton (1 - 1  $\frac{1}{8}$ " ). The target of the third phase of the Indian cotton policy starting 1961 aimed at self satisfaction of long staple cotton (1  $\frac{1}{4}$  - 1  $\frac{1}{2}$ " ). Since 1963, I expected that we will loose the Indian market with regard to both long and extra long cottons. India now produces a crop of 6.2 m. bales.

The crop includes 5.3 m. bales of medium and long staple cottons and 0.7 m. bales of extra long staple cotton (about 25% larger than Egyptian extra long crop), and we lost both markets.

Moreover, India is exporting extra long staple cottons during the last few years.

China was the second example I cited in 1963 since the Chinese crop was just about our crop in Egypt 1.6 m. bales in 1949, with an average staple length of  $\frac{7}{8}$ ". The Chinese cotton policy succeeded in boosting the crop to 5.8 m. bales by 1959. The average staple length was elevated to  $1\frac{1}{16}$ . By 1981 China's crop reached the level of 13.5 m. bales. Average yield per acre moved from 520 Kg/ha in 1973 up to 570 Kg/ha. in 1981.

Egypt failed to plan a sound cotton policy up to now. For the last sixty years, the crop varied between 7.5 m. Cantars and 9.0 m. Cantars with exceptional years of about 10 million Cantars. There has been a considerable increase in productivity during recent years, mostly due to good crop protection and varietal improvement. The average yield/acre during the sixties was 5.5 Cantars. During the seventies the yield increased to 6.7 Cantars/acre. Starting the eighties the yield improved to 8 Cantars per acre.

The present 1982 Egyptian crop is estimated as 9.0 m.c. In 1981, the crop was 9.967 m.c. and in 1980 the crop was 10.574 C. In other words there is a tendency towards the decrease of the crop size to the level of 9.0 m.c. This is the same crop Egypt produced more than forty years ago in 1940. However, the area that year was 1.68 m. acres while the area in 1982 was 1.1 m. acres only. The average yield in 1940 was 5.34 c./acre compared with 8.4 c./acre in 1982. Yield improve-

ment may be <sup>due</sup> to several factors, mainly good insect and disease control together with varietal improvement.

A sound cotton policy in Egypt must be based on the following major bases.

1. Requirement of the local industry :

The textile industry is perhaps the largest industry in Egypt with regard to capital investment and labour force. The industry started soon after the flourish of the crop early in the present century. The industry grew fast during the last thirty years. During the first forty years of the present century cotton consumption in Egypt increased from 8 thousand centars in 1900 to 654 thousand in 1940. The following table shows the evolution of cotton consumption in Egypt.

Evolution of local cotton consumption in Egypt.

Year	1950	1960	1970	1980	1990 <sup>⌘</sup>	2000 <sup>⌘</sup>
tons 1000	1,171	2,699	3,823	6,523	9,200	11,900

⌘ Estimated assuming minimum previous rate of the 70's.

Realizing that Egypt's recent crop is about 9.0 m.c. it seems that before the end of the present decade, Egypt will have to import cotton to satisfy her textile industry. This is assuming that the growth of the industry will increase at the same rate. However, there is a great pressure on the industry to accelerate its progress to satisfy the local market. The government decided recently to stop importing ready made textiles. This



should even put a heavier pressure on the textile industry to satisfy the increasing local consumption. A sound cotton policy should consider the requirements of the well established industry.

2. Keep Pace With World Progress :

We have seen how developing countries such as India and China were able to improve both the productivity and quality of their crops. The total world cotton crop increased at a steady rate from 30 million bales in 1935 to 50 million in 1960 and over 70 million bales in 1980. In 1973 world production was 63.6 m. bales in 1981 it reached 71 m. bales with almost an annual increase of one million bale. The following table compares the Egyptian and other crop evolution.

Evolution of cotton production during last decade in million tons.

Country	USSR	U.S.A.	China	India	Pakistan	Egypt	Total world
1969/71	2.10	2.23	1.96	1.09	0.59	0.52	12.08
1980	3.20	3.20 (1979)	2.71	1.40	0.70	0.53	14.40

The table shows that Egypt could not keep pace with world cotton increase.

3. Maintain our Quality :

Egyptian cotton was famous for its high quality. Egypt's crop value goes back to its quality since it accounts only for about 3 % of the world crop. Egypt was distinguished by her long and extra long cottons. However, during the last ten years Egypt lost her position as the leading country in producing the high quality cotton.

Production of Long and Extra long Cottons

Year	World m. bales	U.S.A.	USSR	Egypt	India
Long cotton					
1972	5.45	0.997	1.43	1.49	
1979	8.50	3.100	1.80	1.45	
Extra long					
1973	2.64	.78	350	.815	.305
1981	3.25	.90	1325	.585	.700

The table shows that Egypt now ranks third after Russia and India with regard to E.L. cottons while it was leading up to 1973. As for long staple cottons Egypt also ranks third after USA and USSR while it was leading up to 1972. This explains the difficulty now Egypt faces in selling her long and extra long cottons at a reasonable price.

4. Cotton Production at a Competitive Price :

A sound cotton policy should concentrate on lowering production cost so that industry can be provided with the same material at a reasonable price and the exported part can compete with other cottons. At the present time production costs of cotton are increasing at high rate while the government is almost fixing the price. Now farmers are leaving cotton to other profitable crops and that is why the cotton area is decreasing consistently from an area of 1.986 m./faddan in 1961 to 1.1 million faddans in 1981.

Research to decrease production cost is gaining support

all over the world. The ICAC devoted a special session last year on production of low cost cottons.

5. Efficient Use of Cotton :

The Egyptian cotton crop includes three categories, the medium, long and extra long staple groups. Within each category several cultivars are grown. A sound policy should decide the size of each category according to both local and foreign needs. In Egypt, however, the productivity of the variety decides its expansion and there is no clear cut policy in crop distribution among the three categories. During the sixties for instance 52 % of the crop was of the extra long group. At the present time 63 % of crop is of the long staple group, and 30 % of the Extra long. This distribution leaves only 6 % of the crop to medium staple category which used to occupy 43 % during the fifties.

The bulk of the local industry in Egypt requires the medium staple cottons suitable for coarse and medium counts (between 10 - 30). Now with the disappearance of that medium staple the local mills are spinning the long and extra long cottons at a low efficiency level, actually the local industry is misusing the high quality cottons in products which can be produced from shorter cottons.

6. Integrated Cotton Policy :

At the present time, cotton is torn among three different ministries. The Ministry of Agriculture is supposed to plan

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for production. The ministry of economics is responsible for marketing and export while the ministry of industry plans for utilization. Although there is the so called "High Cotton Council", which is supposed to be a coordinate body, yet each ministry acts independently. Besides, the farmer who is the original producer has no say.

The cotton industry is an integrated process which starts with the farmer and ends with the consumer. A sound policy should recognize the interest of the farmer first together of others involved.

Recently, the low government price forced some farmers to smuggle their crops to non-textile industries paying higher prices. This led to the development of cotton black market, private gins and seed going to animal feed and escaping heat treatment for insect control.

#### 7. Cotton Seed Value :

The cotton seed constitute two thirds of the cotton crop. Assuming that a good cotton crop will yield about 10 centars/ faddan or 1.5 tons, that means one ton of cotton seed and 0.5 ton of lint. In Egypt very little attention was given to the seed. However, in U.S.A., cotton seed provides the farmer with about 30 % of his income from cotton. Our work during the last 10 years in Alexandria indicated the great possibility of improving our seed quality with regard to kernel ratio, oil content, protein content and protein quality. A sound cotton policy should not ignore such valuable component especially in

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a country suffering of food shortage.

#### 8. Plant Characters :

Again among the neglected areas of breeding objectives is plant characters. We concentrated during whole century on yield and lint. Plant characters such early maturity, insect resistance and salt tolerance should be given dew emphasis . Early maturity is considered now to be the most effective approach to lower production cost since we use less time, water, insecticides and other inputs. Insect resistance may be the only way out of the hazards of costly insecticides.

#### 9. Lint Quality :

During the last eighty years we have been concentrating on lint length, strength and fineness as major quality components. The tremendous advance in spinning and processing technology call for considering other quality components. Any sound cotton policy now should realize that cotton is mostly now blended with other fibers such as polyester, flax, wool or other fibers. The response to blending differ from one cultivar to another. We should provide each industry with the most suitable type of cotton. Besides varieties differ also in their response to mercerization as well other chemical treatments. These considerations must attract the breeder's attention also.

Although this is no trial to outline a cotton policy for Egypt, it is a brief idea of the major features which should be considered in planning such policy. I certainly believe that

we should restore the cotton area in Egypt to the level of 1.5 m./faddan. About one third of that area (0.5 m.F.) must be devoted to short season, high yielding cottons. Our work in Alexandria University indicated that we can get an average of 20 C. per faddan in 5 months. Such crop should satisfy the local industry approaching the nine million centars level by the end of the present decade. The same area will give a winter cereal, legume or forage. Fortunately the quality of these short season high yielding cottons are not much inferior than our medium cottons.

The remaining million faddans can be shared by the long and extra long groups. We should plan for an extensive textile industry to utilize efficiently our high quality cotton. This will be the real challenge to the industry. The conditions in Egypt allow the success of such industry. This is the most suitable industry for developing countries and the experience gained in Egypt throughout a whole century should contribute to the success of industry. Our present textile export is about 60 thousand tons at a value of more than 200 million L.E. There is no doubt that quata imposed by the Int. Text. Trade will slow the growth of export, however, a well planned policy will coordinate the growth of the industry with the growth of the market.

Such policy should allow Egypt to double her cotton crop. This should also provide Egypt with twice as much cottonseed as the present crop. This may help solve the oil shortage problem and the feed problem now facing Egypt. At the same time, the area increase of about 0.5 m. faddans will not affect food production. Again this is just a simple idea for discussion rather than a solid fact.

EGYPT URGENTLY NEEDS TO GROW  
HIRSUTUM ( UPLAND ) COTTONS  
FOR LOCAL POPULAR TEXTILE PRODUCTS

Dr. M. A. Abd El-Ghaffar

In the last three decades, Egyptian Cotton has been exposed to many local and world changes regarding its interesting position in the agricultural structure, its utilization by the local spinning industry, and its exportation.

It was at a time the main cash crop and the most interesting crop to growers. By now it is not drawing the growers interest, consequently does not have enough agricultural care, being a less remunerative crop than others. Its area has decreased from 1.8 million Fed. to less than 1.1 million. The governmental authorities do their best every year to compel growers to grow cotton up to an area that should be grown to face the local industrial and exportation demand. On the other hand growers intelligently trying to increase their income per unit area by planting cotton very late beyond the optimum date after a winter crop in one year. It is a kind of a struggle between the two parts, the governmental authorities and the growers. Planting Egyptian cotton beyond optimum date ( Feb. - March ) affects its yield very much ; a decrease of not less than 30 % , or more.

The recovery from such an inevitable condition could be through planting cottons of remarkably shorter growing duration and of much higher yielding than that grown in Egypt. Such characteristics may be found in the Hirsutum species ( the Upland ) . Experiments carried all over the country for three successive years have proved that some Hirsutum ( Upland ) varieties



are more than two months earlier maturing than Egyptian cottons ( 4-5 months against 7-8 months ) . A very highly important point of view is that the Upland have actually grown successfully when planted late after wheat in between 15<sup>th</sup> of May and early in June, giving a remarkably high yield, significantly higher than the Egyptian Barbadosense. Their excess in yield over the Egyptian cotton ranged from 35.6 % to 143 % in different localities ( see attached results ) . In the experiments, picking was during October , neglecting any expected crop that could be picked after the end of October to permit for planting a following winter crop in optimum time. In the experiments Egyptian cotton yield was drastically affected by late sowing.

Cost of crop production in Upland cotton has proved to be much less than the Egyptian, because of its shorter growth duration which permits to save waterings, insecticides, etc.

The remarkably high yielding of Upland, the availing of a winter crop grown before it in the same year, and being less costly in production will lead to much more remuneration per unit area. This will stimulate the grower's care to the crop ; and will retrieve his interest so that there will be no difficulty in attaining the area which the country plans for facing the demand for local consumption and export.

It is estimated that Egypt will be in need of about 10 million Cantars ( all its existing annual crop ) for local consumption in the year 2000. About 800 thousand to one million Fed. could be reasonably estimated to be grown with Upland to produce the needed raw material with a quality adequate for popular textile purposes ; otherwise Egypt will

shortly become a cotton importing country.

A very important point should be mentioned as a consequence to that conception, that is, that such a ready fertile area ( 800 thousand - one million Fed. ) Could be grown with a winter food crop, especially wheat, in the same year with a granted high cotton yield. The production of the winter food crop expected from that area will share much in overcoming the problem of cereal shortage.

From the exportation and national spinning point of view, Egypt has become a cotton industrial country instead of being at a time the leading exporting country of extra long and long staple cottons. Local consumption has tremendously increased from 2.442 000 Cantars in 1959/1960 to about six million cantars in the eighties, mostly ( more than 5 million ) are of med/long and med/staple cottons used for the production of popular local textiles. About 60 % is spun at counts less than 24 and 34 % at counts over 24 - 50. The Country has planned to develop the number of spindles at the rate of 4 % per annum to reach 4 million in the year 2000. In December 1981 The Cabinet of Ministers took the decision of manufacturing locally all the Egyptian cotton crop by 1990. It has clearly proved that utilization of Egyptian cotton for coarse products is ineconomic, being of too high price to be spun at the previously mentioned low counts. The Upland cotton could be available at cheaper prices being of higher yield and less costly in production. Its lower price will contribute in avoiding the price raising trend in the popular textile products. The country is subsidizing popular textile products with about 100 million pounds, besides other subsidises, the country

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bears for the national spinning industry.

On the other hand, exportation has declined from 8.497 000 Cantars in 1959 / 1960 to 2-3 million Cantars in the eighties. It seems that there is no promising chances to recreate more quantities for exportation. Primarily because of the big cotton quantities Egypt needs to develop for its local consumption. Secondly because of the revolutionary changes which have been occurring in the world cotton production and trade. many of the importing countries have become self or about selfsatisfied. For example, the U S A , the USSR and India have expanded much in developing the Extra long staple types ( E.L.S. ). Up to 1971/ 1972 India was not producing any quantity, whereas since 1978/ 1979, <sup>its</sup> production from that type has become equal to that of the Egystian. Besides, India exported that type of cotton for the first time in quantities of 250 thousand bales in 1978/ 1979 and 400 thousand bales in 1979/1980 . The USSR has expanded the area of the long and med/long staple cottons to supply or support the Eastern European countries. The Western European Countries are extensively practising the technique of blending cotton with synthetic fibres; as a result , the exportation of Egyptian cottons to that part of Europe has declined to about one half in between 1971/72 and 1978/ 1979. On the other hand the recently technical development of the spinning and textile industry has enabled spinners to disregard in many cases the extensive utilization of expensive extra long super high quality cottons , and give prime importance to the cotton price.

Anyhow, Egyptian high quality long staple cottons could be maintainably grown in northern Delta in a diffinable area that could give the possibly exportable quantities suggested by the authorities.

M. A. GHAFAR

Date of Planting 15/1/1982.

Yield in Linear Ginned Cotton, Per Seedan in Different Locations -

Date of Picking *	Variety	Alex.	Moubaria	Shalakan	Zagazig	A. R. C.	G. U.	Assiut	Sohag
						GIZA	GIZA		
	No. nair 235	16.7	12.0	9.9	10.1	11.95	6.1	9.9	12.74
	No. nair 220	14.6	11.5	8.8	10.6	11.47	4.8	9.4	12.62
	Tamcot 37 H	13.4	10.1	7.9	9.6	10.14	5.8	6.9	10.44
	Tamcot CAND-E	12.3	10.9	8.80	8.1	10.88	5.1	8.0	9.92
	Dandara	10.3	7.80	7.30	6.6	7.80	3.0	4.1	5.6
	Ashmouni	8.1	—	—	6.7	—	3.0	3.4	4.4
					(GIZA 80)		(GIZA 80)		
Increase in Yield of Variety									
	No. nair 235 Comparing to Dandara	62.1 %	53 %	35.60 %	53.3 %	53.2 %	103.3 %	141.5 %	127.5 %
Date of Planting 1/6/1982.									
	No. nair 235	11.1	11.0	7.5	9.7	10.98	9.0	9.7	14.62
	No. nair 220	11.2	10.9	6.9	10.8	10.86	10.3	9.4	13.0
	Tamcot 37 H	10.0	9.4	7.2	8.4	9.43	9.7	6.6	10.1
	Tamcot CAND-E	9.6	9.4	7.8	7.9	9.44	9.45	7.5	10.3
	Dandara	6.4	6.7	4.8	4.5	6.74	4.4	5.0	2.6
	Ashmouni	4.5	—	—	3.6	—	3.8	1.6	1.8
					(GIZABO)		(GIZA 80)		(GI
Increase in yield of variety									
	No. nair 235 Comparing to Dandara.	73.4 %	63 %	56.2 %	115.6 %	62.9 %	104.5 %	94 %	400 %

\* The shown data are only of Cottons picked before October 31, to permit for planting the following winter crop.

**THE EGYPTIAN COTTON CROP**

1950 — 1980

By

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**Agricultural Research Center**

**GIZA / EGYPT,**

Never in the history of any other country has a single crop influenced the lives of the people that cotton has had on the Egyptians since 1820 when the first crop of long staple cotton yielded 944 cantars. Its impact can be seen most easily in the agricultural sector, where during the course of the 19th century, it was mainly responsible for the transformation of the system practised throughout Lower Egypt. Systems of drainage and irrigation were developed, and the old Aswan Dam was constructed in 1902. From that date onward, the crop increased tremendously, and for Egyptian farmers, as for the Government, cotton has been the main cash crop.

On the other hand, local cotton textile industry was the only one in the world except after World War II, even though, prior to 1958 the only African country to possess a cotton textile industry of significant size was Egypt.

However, in recent years the relative importance of cotton in the national economy has not been as great as it used to be. But, cotton is still the most important single crop in Egyptian agriculture representing 22.5 percent of the value of all field crops. Cotton represents 14.5 percent of the value of plant production (field crops, vegetables and fruits). In the 1980/81 season, the value of exports of raw cotton, cotton yarn and cotton textiles represented 22.7 percent of the value of all Egyptian exports.

Local spinning mills consume at present about 6.5 million metric cantars of cotton, or about 62 percent of the crop, compared with only 17 percent in the 1950/51 season.

In addition, the annual production of some 127 thousand metric tons of cottonseed oil, and about 699 thousand tons of cottonseed cake, makes cotton the principal oil and feed crop of the country as well.

In this article are presented some of the many changes which have occurred in the Egyptian crop during the past thirty years. In the first portion of the account a brief survey is made of the recent technical, control, and regulatory measures taken by the Ministry of Agriculture to improve and maintain Egyptian cotton varieties, and of the changes in Egyptian cotton production. This section is intended to serve as an introduction to the second part in which the characteristics of the present and new cottons are reviewed.

Some idea of the extent and nature of changes in the Egyptian cotton crop in the last thirty years may be obtained by reference to Table I.

Back in the 1950/51 season, the area of the extra-long staple (over 1.3/8") covered 38 percent of the total, and was still composed largely of Karnak, but with an appreciable acreage of original Menoufi. The only long staple variety in the 1.1/4 — 1.3/8 category was Giza 30 which formed about 19 percent of the total area. The area of the 1.1/8 — 1.1/4" staple category still consisted of Ashmouni, amounting to 43 percent, somewhat less than half the total.

Ten seasons later, the average areas occupied by the three cotton categories, relative to the total cotton area, were 52 percent for the over 1.3/8" category, 22 percent for the over 1.1/4" category and 26 percent for the over 1/8" category. Hence, by 1960/61 season, Karnak and Giza 30 has passed its heyday, and their areas fell to 17, and 7 percent of the total, respectively. Ashmouni's area decreased to 26 percent of the total cotton area, and original Menoufi disappeared to be replaced by Improved Menoufi. Four new varieties appeared on the list of Egyptian cotton varieties, i.e., Giza 45 in the extra-long staple category, and Giza 47, Dendera, and Bahtim 185 in the long staple category of over 1.1/4".

With the coming of the seventies, the area of the extra-long staple category still amounted to 44 percent of the total area, followed by the area of the over 1.1/4" staple category (29 percent), and the over 1.1/8" staple category (27 percent) in the third place. Between 1960/61 and 1970/71, the area of Giza 45 was increased to 7 percent of the total area. Besides Giza 45, the extra-long staple group has become largely composed of Improved Menoufi, and Giza 68. In the over 1.1/4" staple group, Giza 30 was replaced by Giza 47 which in turn was replaced by the higher yielding varieties Giza 67 and Giza 69. Giza 66 and Ashmouni shared the over 1.1/8" staple group.

By 1980/81 season, the fiber-length composition of the Egyptian

cotton was permitted to handle any cotton except the variety assigned to it.

In the meantime, the Ministry of Agriculture expanded the area of propagation fields for registered and certified seed. In the 1964/65 season, certified seed available for distribution was enough to cover for the first time the entire cotton acreage. Since then, all of the cotton acreage in Egypt is planted annually with certified seed produced from fresh waves of registered seed released from foundation seed originally grown on the Ministry's seed farms. The production of registered and certified seed is carried out by contract with the farmers, agrarian reform, and agricultural cooperatives under the supervision of the Ministry's Seed Department. Premiums are paid to the contract farmers who produce acceptable planting seeds through the Egyptian Cotton Improvement Fund established within the Ministry of Agriculture in 1959.

Apart from incentives in the form of increased prices and reduced insecticide costs, the Government is providing the farmers with adequate credit in cash during the cotton growing season, at harvesting and marketing, to be paid back by the farmers after marketing their crops. Cotton is marketed cooperatively.

Beside the previous technical, control, and regulatory measures taken since 1958, the Cotton Research Institute began to gather momentum, and new high-yielding varieties were released to replace the earlier commercial, but deteriorating varieties which had to be discontinued. Dendera was launched first in 1951, followed by Improved Menoufi in 1954, and Giza 45 in 1957. Five seasons later, Giza 66 was grown commercially, and in the following season, that was in 1963, Giza 67 and Giza 68 were propagated. In 1966, Giza 69 made its appearance, followed in 1971

by Isis (Giza 70), and in 1975 by Lotus (Giza 75). These releases are Giza 77 in 1980 and Giza 80 in 1981. This long series of varietal successes is still incomplete. Three new varieties, Giza 76, Giza 79 and Giza 81, are already under propagation on the Ministry's seed farms.

Through the above efforts put forth by the Ministry of Agriculture, in addition to the steady improvement in yield and quality shown by the new cotton varieties, cotton yields gradually started to improve during the 1950 — 1980 period, except for the relapse in the crop of 1961/62 season as a result of an unprecedented cotton leafworm attack which caused the severe loss of one third of the crop.

In six of the intervening years, i.e. 1969, 1971-1972, and 1978-1980, Egypt witnessed the best yields in its history, with 1980 having the highest yield of 8.50 metric cantars of lint per feddan. Incidentally, lint yield per feddan for 1981, i.e. 8.47 metric cantars, came close to the record yield of 1980.

These encouraging cotton yields realized in recent years in Egypt did not help in the expansion of cotton acreage. On the contrary, it is on the decline. Harvested area has generally dwindled from a post World War II peak of 1,986,252 feddans in 1961/62 to around 1,200,000 feddans in 1978/79 through 1981/82. The pressure of an increasing population on a strictly limited land area finally obliged Egypt to decrease the cultivated area for cotton to have larger areas for the cultivation of food crops.

Cotton production averaged 7.4 million cantars during 1950/51 — 1954/55, and had arisen to 8.9 million cantars by 1960/61 — 1964/65, and to 9.8 million cantars by 1970/71 — 1974/75. Production declined during 1975/76 — 1979/80 when it averaged 8.4 million cantars. Although the average was down, the two seasons 1978/79, 1979/80 showed rising yield as harvested area

declined. Production in the last two seasons 1980/81, 1981/82 totaled 10.6, 10.0 million cantars, respectively.

Now, it is appropriate to give a brief account of the Egyptian cotton varieties in the three categories of staple length which have appeared and flourished during the past thirty years.

In the extra-long staple category ( over 1 3/8" ), top quality is now represented by Giza 45, a cross between Giza 28 and Giza 7. Giza 45 competes excellently with the best of the Sea Island cottons, and is still unchallenged as the leading superquality cotton of the world. Prematurely released in the 1951/52 season, Giza 45 was withdrawn in the following season, and was put again on the market in the 1957/58 season. Giza 45 rose quickly to a maximum acreage of 155,031 feddans in the 1966/67 season, yet its acreage was reduced to 77,233 feddans in 1973/74 and again to 38,619 feddans in 1975/76. Since then Giza 45 acreage averaged 24,000—28,000 feddans annually.

Karnak, a cross between Maarad and Sakha 3, was launched on the market in the 1939/40 season, and is principally memorable for being the first modern extra-long staple variety to retain the merit of increased yield over old Sakel variety, which fell out of cultivation since 1943/44, with no counter balancing loss of quality. Karnak in its heyday had been a real boon, and a blessing to cotton spinners all over the world. It was able to dominate the Delta for almost fifteen years, with a peak in the 1952/53 season, when its acreage amounted to 993,551 feddans.

Later on, Karnak lost ground to Improved Menoufi, another extra-long staple variety which is a hybrid of Wafeer and Sakha 3. Improved Menoufi was raised in the 1954/55 season, and gradually dominated the extra-long staple category, reaching its peak acreage of 741, 111 feddans in the 1965/66 season. Comparing

Improved Menoufi with Karnak, it has about the same spinning quality of Karnak coupled with high yield and earliness.

Giza 68, a cross between Menoufi and Giza 56, was released for growing commercially in the 1963/64 season, the season in which the last crop of Karnak was grown. Compared with Improved Menoufi, Giza 68 is lighter in color, slightly shorter and finer in staple, but higher in spinning value. Also, Giza 68 is appreciably higher in yield. Giza 68 rose steadily in importance to a maximum acreage of 273,994 feddans in the 1973/74 season, but its acreage in the following three seasons dropped to 107,231 feddans, almost the same area to which Improved Menoufi had at that time fallen, and 139,277 feddans less than the acreage of Giza 70, a new extra long staple variety first introduced in the 1971/72 season. Ultimately, Improved Menoufi and Giza 68 fell to Giza 70, and the last commercial crops of Improved Menoufi and Giza 68 were grown in 1976/77, 1979/80 seasons respectively.

Isis ( Giza 70 ), is a cross between Giza 59 A and Giza 51 B. It has the same fiber length as Improved Menoufi, and is a substantial improvement in both quality and yield over Improved Menoufi and Giza 68. Moreover, Isis enjoys a high gin turnout normally associated with much lower qualities. Consequently, Isis acreage rose quickly to dominance in the Delta exceeding that of competitive varieties, reaching its zenith in the 1979/80 season. In the last season, 1981/82, Isis was grown in 239,138 feddans.

The newest extra long staple on the market is Giza 77, a hybrid of Isis and Giza 68. It inherits the high micronaire reading of Isis, but approaches Giza 45 in spinning quality. Giza 77 is expected to make full Giza 68 replacement with higher yield and better gin turnout.



In the 1.1/4—1.3/8" staple category Giza 30, a cross between Giza 7 and Sakha 11, was launched in 1945/46, and soon became the leading variety in that category until the mid-1950's. Giza 30 was welcomed by both growers and spinners since its yield and gin turnout were very high and the crop ran at a high grade. It was reputed for its fiber maturity considered the best recorded in Egyptian cottons. The area under cultivation of Giza 30 reached a peak of 442, 843 feddans in the 1954/55 season, and lingered on until the 1963/64 season when it was replaced by Giza 47.

Then Dendera, a selection from Giza 3, was launched in the 1951/52 season, and reached its maximum area of 207, 701 feddans in the 1962/63 season. It gives an outstandingly high yield in the southern districts of Upper Egypt, where this heat resistant variety outyields any other cotton so far tried.

Giza 47, a selection from Ashmouni, made its appearance in the 1954/55 season, and rose gradually to a maximum area of 248,081 feddans in the 1964/65 season causing the death of Giza 30. Yet the fall of Giza 47 was rapid, and the last commercial crop was grown in the 1966/67 season, for the simple reason that two new better varieties, Giza 67 and Giza 69, had been developed.

Giza 67, A hybrid of Giza 53 B and Giza 30, was released for growing commercially in the 1963/64 season. Giza 67 has desirable fiber characteristics, being of higher yarn strength than expected from its fiber coarseness. The high yield of Giza 67 helped in the rapid expansion of its area to 246,390 feddans in the 1967/68 season, three seasons after propagation. Giza 67 did not stay long as the main Delta variety in the over 1.1/4" staple category because of competition with Giza 69 and Lotus ( Giza 75 ). two new varieties also stapled at 1.1, 4" — 1.3, 8". Giza 69

was introduced first in 1966/67, three seasons after Giza 67 had been released. Lotus variety was commercially grown in the 1975/76 season, and after five seasons was able to take place in Delta districts customarily occupied by Giza 67. Consequently, Giza 67 moved to Fayoum province in Middle Egypt but the 1981/82 season saw the last crop of Giza 67.

Giza 69, a hybrid of Giza 51A and Giza 30, has almost the same staple length as Giza 67, but Giza 69 lint is white, finer in staple, and stronger in yarn. Besides, Giza 69 enjoys the highest gin turnout among all Egyptian varieties. The peak year of Giza 69 was 1974/75 when its acreage amounted to 160,706 feddans. At present, Giza 69 is confined to Sharkya province where it was grown in 101,855 feddans in 1981/82 season.

From crosses between Giza 67 and Giza 69, a variety carrying the name of Lotus was developed which showed to be higher in yield and quality than both parents. It inherits the big boll size of Giza 67 and high gin turnout of Giza 69. The success of the new variety was phenomenal. In 1975/76 season, an area of 2,214 feddans was devoted to Lotus. Six seasons later, the area grown with Lotus reached a peak of 529,320 feddans, almost 45 percent of the total Egyptian cotton acreage. At present, Lotus variety is grown in Delta districts formerly occupied by Giza 67 and has encroached on Beni-Suef, Fayoum, and Minya provinces in Middle Egypt.

In the 1.1/8" — 1.1/4" staple category, the Ashmouni variety which persisted in Egyptian agriculture since its introduction in 1960, was finally discontinued in 1978/79 and replaced by Giza 66.

Giza 66, a hybrid of Giza 46A and Giza 47, is similar to Ashmouni in lint characteristics but better in yarn strength. Also, it exceeds Ashmouni in both yield and gin turnout. In the 1969/70

season, seven years after its introduction, Giza 66 acreage exceeded that of Ashmouni for the first time. In the following five seasons, 1970/71 — 1973/74 Giza 66 was still grown in more than 270,000 feddans in Middle Egypt. But with the advent of Lotus variety an its success in Middle Egypt Giza 66 area was reduced and the last commercial crop was grown in 1980/81 season.

Giza 72 a cross between Giza 61A and Giza 47, was propagated in 1971/72 season as a new variety in the over 1.1/8" staple category slightly longer and finer in staple, and spins stronger than Ashmouni. But Giza 72 did not fulfill expectations and the 1975/76 season saw the last commercial crop, despite the fact that it is earlier, higher in gin turnout, and better in yield than Giza 66.

The cotton Research Institute is always keen about developing new varieties which give better yield and have better qualities than the present ones. However, the commercial story of any still newer varieties is more a matter of prophecy than of history, but the compared and recorded merits of the newest types now being propagated may be claimed as already history, and reference is made to two new varieties, Giza 76 and Giza 80, which seem likely to be important varieties of the future :

**Giza 76 :** An extra-long staple variety resulting from the cross between Menoufi and American Pima S-2. The results achieved already indicate that Giza 76 is destined to be the leading high quality cotton among Egyptian cotton varieties, since it gives stronger yarn than Giza 45. Giza 76 was propagated in 1981/82 season in an area of 3,604 feddans.

**Giza 80 :** a long staple cotton in the over 1.1/4" category it is a cross between Giza 66 and Giza 73, and is expected to make full replacement of the former Giza 66 in Middle Egypt. Giza 80 was propagated in 1981/82 in an area of 1278 feddans.

**TABLE I**  
Acreage of Egyptian Cotton by Percentage of Varieties

Variety	1950/51	1960/61	1970/71	1980/81
<b>Over 1.3/8"</b>				
Giza 45	—	3	7	2
Giza 76	—	—	—	(+)
Isis (Giza 70)	—	—	—	25
Karnak	35	17	—	—
Menoufi	3	—	—	—
Improved Menoufi	—	32	23	—
Giza 68	—	—	14	3
Giza 77	—	—	—	(++)
<b>Over 1.1/4"</b>				
Lotus (Giza 75)	—	—	—	32
Giza 69	—	—	9	10
Giza 47	—	5	—	—
Giza 30	19	7	—	—
Giza 67	—	—	12	7
Dendera	—	9	8	14
Bahtim 185	—	1	—	—
Giza 82	—	—	—	(+++)
<b>Over 1.1/8"</b>				
Giza 66	—	—	16	6
Giza 72	—	—	—	—
Ashmouni	43	26	11	—
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Acreage (feddans)</b>	<b>1,974,559</b>	<b>1,872,973</b>	<b>1,627,427</b>	<b>1,244,526</b>

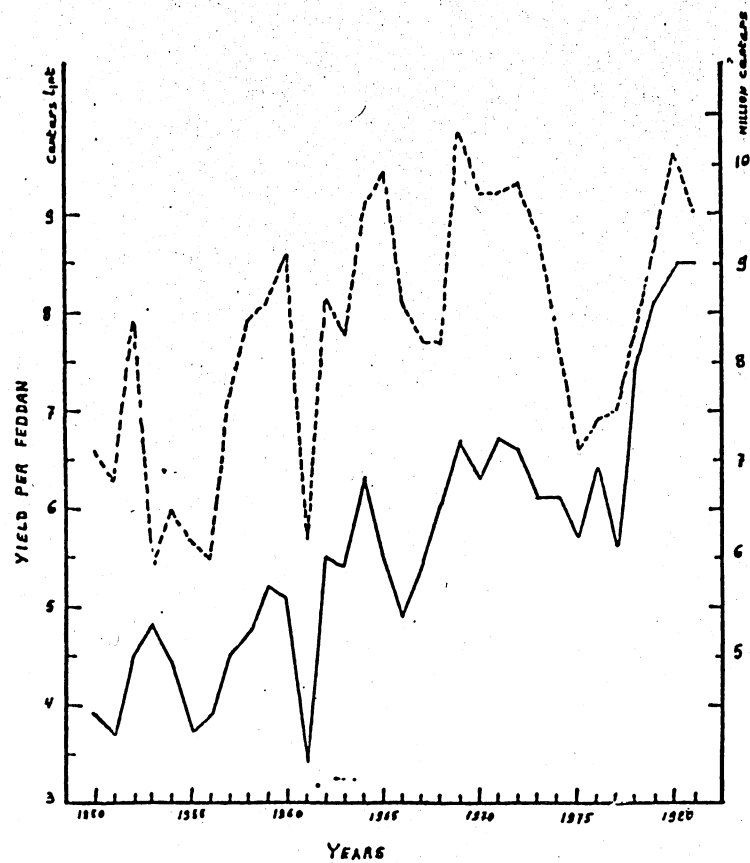


TABLE II  
Fiber Yarn Characteristics of the Present Commercial Egyptian Crop.

Testing Period	Staple Length 1/32" mm	Hair Weight per cm.	Micro- naire reading	Fiber Strength Zero gauge	Yarn Strength		Grade		
					Carded 60's	Combed 120's			
s.w.r.									
<b>Over 1 3/8"</b>									
Giza 45	1972-1980	51	40.5	116	3.3	11.0	3205	2720	FG
Isis	1973-1980	49	39.0	141	4.2	11.4	3065	2415	FG
Giza 77	1979-1980	46	36.5	131	3.9	10.7	2980	2140	Good
Giza 76	1979-1980	47	37.5	125	3.5	10.6	3065	2290	Good
<b>Over 1 1/4"</b>									
Lotus	1977-1980	44	35.0	156	4.8	10.2	2415	—	FG
Giza 69	1972-1980	45	36.0	150	4.3	9.8	2320	—	FG
Dendera	1972-1980	43	34.0	143	3.8	9.3	2060	—	Good
Giza 80	1979-1980	43	34.0	159	4.3	9.3	2060	—	Good

**SPINNING TEST REPORT ON THE EGYPTIAN COTTON CROP  
OF 1950**

*(1949 crop testings in brackets)*

	Colour	Yarn Strength		Staple Length		Hair Weight per cm.
		60s Carded		Inch	mm.	
<b>Karnak (Giza 29) :</b>						
FG .....	Dark to medium	2840 (2780)	1 19/32	40.8		140
Good .....		2590 (2560)	1 18/32	40.0		140
<b>Menoufi (Giza 36) :</b>						
FG .....	Dark	2410 (2350)	1 16/32	38.4		145
Good .....		2290 (2165)	1 15/32	37.6		144
<b>Giza 30 :</b>						
FG .....	White and lustrous	2200 (2140)	1 12/32	35.2		146
Good .....		2075 (2000)	1 12/32	35.2		142
<b>Uppers Ashmouni :</b>						
FG .....	Brown	1785 (1755)	1 9/32	32.8		177
Good .....		1650 (1535)	1 9/32	32.8		167
<b>Zagora :</b>						
FG .....	Dark	1560 (1420)	1 9/32	32.8		185
Good .....		1470 (1465)	1 9/32	32.8		184
<b>New Varieties on Trial :</b>						
Giza 45 FG .....	White	3295	1 18/32	40.0		125
Giza 47 FG .....	Dark to	2260	1 13/32	36.0		153
Giza 31 G-FG .....	medium	2115	1 13/32	36.0		155

The 1950 crop in all varieties is of better spinning quality than the 1949 crop. Amoun has practically disappeared from cultivation, its place being taken by Giza 45, which is very similar in staple and spinning performance to Amoun. There is a small but important market for this class of staple, especially for embroidery thread. Giza 45 is sown on about 1,200 acres in 1951 mainly on Government farms.

Of the other new varieties on trial, Giza 47, which is still on test in Fayoum district ( Upper Egypt ), is grown on 350 acres in 1951. We had favourable spinning test results for this variety from spinners who tested it in England and the Continent. Giza

31 has been well received by growers in the southern zone of Upper Egypt, and is covering about 2,000 acres. Comments on the spinning performance of this variety from spinners who have tested it will be highly appreciated.

**NOTES ON THE TESTS**

All the samples for tests were drawn from commercial deliveries as supplied by the courtesy of about 31 exporters. The yarn strength quoted is the product of Lea Strength in pounds  $\times$  the yarn counts ( 60s carded ring twist ). Yarn strengths for the 1949 crop, shown in brackets, are based on re-spinnings carried out at the same time as the 1950 crop spinnings. Staple lengths are from the Balls Sorter Diagram. Hairweights are in milligrams per centimetre of hair, 00 omitted.

**SPINNING TEST REPORT ON THE EGYPTIAN COTTON CROP OF 1960.**  
(1959 Crop Testings in Brackets)

	Colour	Yarn Strength		Staple Length		Hair Weight per cm.	Micro-naire Value
		60* Carded		Inches	m-m.		
Giza 45	FG White	3130	(3260)	1.16/32	38.5	111	3.2
	Good	2905	(—)	1.15/32	37.5	108	2.8
Karnak	Dark	2575	(2530)	1.15/32	37.5	132	3.7
	Good Medium	2325	(2245)	1.14/32	36.5	124	3.1
Menoufi	FG Dark	2555	(2600)	1.15/32	37.5	139	3.4
	Good	2315	(2335)	1.14/32	36.5	128	3.1
Giza 47	Dark	2070	(2125)	1.11/32	34.5	163	4.2
	Good Medium	1920	(1945)	1.10/32	33.5	154	3.8
Giza 30	White	1910	(1935)	1.10/32	33.5	146	3.8
	FG and Good Lustrous	1695	(1715)	1. 9/32	32.5	140	3.5
Dandara	Dark	2020	(1985)	1.11/32	34.5	145	3.7
	Good Medium	1765	(1850)	1. 9/32	32.5	134	3.2
Bahtim 185	Dark	1875	(1925)	1.10/32	33.5	170	4.4
	Good Medium	1840	(1845)	1. 9/32	32.5	166	4.0
Ashmouni	FG Brown	1690	(1605)	1. 8/32	32.0	181	4.7
	Good	1580	(1560)	1. 7/32	31.0	174	4.4

Karnak and Ashmouni show a gradual increase in their spinning quality in this season and the previous one. Although the spinning quality of Giza 45 is slightly less compared with the corresponding quality of last years crop, yet similar yarn strengths were quoted in some previous seasons. With the exception of Menoufi which shows a slight drop in its quality compared with previous seasons, all other varieties are nearly of the same spinning quality as the 1959 crop.

**NOTES ON THE TESTS**

All the samples for tests were drawn from commercial deliveries as supplied by the courtesy of about 30 exporters. The yarn strength quoted is the product of lea strength in pounds X yarn counts ( 60s carded ring twist ). Yarn strength for 1959 crop, shown in brackets, are based on re-spinning carried out at the same time as 1960 crop spinings.

Staple lengths are from the Balls Sorter Diagram.

Hair weights are in milligrams per centimetre of hair, .00 omitted.

Micronaire values are fineness and maturity in combination using the Upland curvilinear scale .

SPINNING TEST REPORT ON THE EGYPTIAN COTTON CROP OF 1980

Variety and Grade	Colour	Yarn Strength			Fibre Strength		Elongation	Staple Length		Hair Weight	Micronaire reading	
		Carded		Combed	Zero gauge	1/8" gauge		%	inch			mm
		60's	60's									
Giza 45 FG Good	White	3210 (3260)	3400	2635	10.4	40.23	8.18	1 18/32	39.5	124	3.2	
		3120 (3150)	3260	2600	10.3	40.00	7.92	1 17/32	39.0	120	3.0	
Isis (Giza 70) FG Good	White	3125 (3145)	3235	2375	11.1	41.03	6.07	1 19/32	39.0	144	4.2	
		3050 (3090)	3115	2250	10.8	40.60	6.09	1 16/32	38.0	142	4.2	
Giza 77 Good	Light creamy	3010 (2955)	3040	2115	10.8	39.50	6.40	1 14/32	36.5	132	4.0	
Giza 68 FG Good	Light creamy	2700 (2850)	2870	2180	10.1	37.47	8.38	1 14/32	36.5	130	3.8	
		2600 (2735)	2780	1990	9.8	36.64	7.79	1 13/32	35.5	132	3.8	
Lotus (Giza 75) FG Good	White	2405 (2420)	—	—	10.1	34.74	6.07	1 12/32	35.0	163	4.8	
		2320 (2345)	—	—	9.6	34.83	6.38	1 12/32	35.0	158	4.6	
Giza 67 FG Good	White	2245 (2300)	—	—	9.4	33.14	6.81	1 12/32	35.0	154	4.2	
		2100 (2135)	—	—	9.1	32.04	6.68	1 12/32	35.0	151	4.2	
Giza 67 FG Good	Light creamy	2130 (2210)	—	—	9.3	33.88	8.12	1 11/32	34.0	160	4.8	
		2110 (2130)	—	—	9.2	32.22	7.85	1 11/32	34.0	159	4.6	
Giza 82 Good	White	2255 (2305)	—	—	9.5	35.30	6.27	1 11/32	34.0	155	3.7	
Dendera Good	Dark creamy	2055 (2070)	—	—	9.3	31.12	8.51	1 11/32	34.0	141	4.0	
Giza 66 Good	Dark	1960 (1935)	—	—	8.8	28.08	8.12	1 10/32	33.0	178	4.7	
Varieties on Trial:												
Giza 76 Good	White	3000 (3070)	3185	2285	10.8	39.31	6.74	1 14/32	36.5	121	3.4	
Giza 79 Good	Dark creamy	2110 (2120)	—	—	9.4	30.66	7.79	1 2/32	35.0	158	4.4	
Giza 80 Good	Dark	2020 (2050)	—	—	9.2	31.02	8.24	1 11/32	34.0	159	4.3	
Giza 81 Good	Light creamy	2350 (2390)	—	—	10.1	34.52	7.20	1 10/32	33.0	152	4.4	

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All varieties maintained the same quality as last year's crop.

Giza 77, the new extra-long variety proved to make full Giza 68 replacement in quality with higher yield. Giza 77 is a cross between Isis (Giza 70) and Giza 68, and its present crop amounts to 219,000 cantars (50 kgs. each).

The newest extra-long staple on the market is Giza 76, a cross between Menoufi and American Pima S-2. Giza 76 enjoys the same yarn strength of Isis with fibre fineness approaching Giza 45. Its present crop amounts to 28,000 cantars.

Lotus (Giza 75), the principal long staple variety, after achieving complete dominance over Giza 67 in the Delta, has encroached on Fayoum Province where Giza 67 was still grown. Ultimately, the 1981-82 season saw the last crop of Giza 67.

The newest long staple cottons are Giza 79 and Giza 80 for upper Egypt, and Giza 81 for the Delta. Giza 79 is a cross between Giza 66 and Dendera, while Giza 80 is a cross between Giza 66 and Giza 73. Both varieties are of comparable quality although Giza 80 is slightly shorter.

Giza 81 is a cross between Giza 67 and H 876-63 (Giza 44 × Giza 58A). It represents further improvement over Giza 69 in yarn strength.

The yarn strength quoted is the product of "lea strength in pounds × yarn count (60's carded, 60's and 120's combed, and twist multiplier 3.6)" Yarn strengths for 1980 crop, shown in brackets, are based on respinnings carried out at the same time as the 1981 crop spinnings. Fibre strength measurements are determined by the Pressley Flat Bundle Strength Tester (Zero gauge) expressed in terms of strength-weight ratio (s.w.r.), and on the Stelometer (1/8 inch gauge) expressed in terms of grams per tex. Fibre elongation measurements are obtained from the Stelometer (1/8 inch gauge). Staple length is measured by the Balls' Sledge Sorter. Hair weight is in terms of millitex (10/8 gr.-cm.). The Micronaire reading (on curvilinear scale) is a combined measure of both fineness and maturity.

THE TEXTILE INDUSTRY  
IN EGYPT.

BACKGROUND AND CAPACITIES  
THE PUBLIC SECTOR COMPANIES

By

Dr. Omar Loutfy

THE TECHNICAL SECRETARIAT OF  
SPINNING, WEAVING, AND GARMENTS

## THE TEXTILE INDUSTRY

### IN EGYPT.

The textile industry is the most ancient industry in Egypt. The Egyptian weavers used their primitive tools in manufacturing their clothes and furniture from linen 7000 years ago. A visit to the National Museum in Cairo reveals the precision and capability of the Egyptian weavers and dyers in manufacturing textiles.

The promising potential of the Egyptian market, and the availability of the Egyptian cotton as the main raw material as well as the manpower had encouraged the British and Colonial investors to build textile factories in Egypt.

The first textile equipments were introduced to the Egyptian mills in the year of 1898 after the announcement of the English Spinning and Weaving Company in Cairo. Second hand equipment were imported from England. In 1912, and after a successful performance, this same company which was relocated in Alexandria, was expanded. The Egyptian investors were permitted to participate in its capital. The name of the company was altered to "The National Spinning Co."

The progress of the National Spinning Co. has encouraged other investors build more weaving sheds. Second hand mechanical looms and most of the needed yarn were imported from the European Countries. These weaving units used to supply the local market with a considerable percentage of its fabric requirement.



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In the year of 1927, Misr Bank has announced the formation of Misr Spinning & Weaving Co. at Mehalla El-Kubra.

The wonderful performance of Misr Mehalla Co., has encouraged Misr Bank to install more textile mills. Misr Fine Spinning & Weaving Co. and Misr El Beida Co. were originated in 1938, and Misr Rayon Company in 1946. The three companies were built at Kafr El Dawar near Alexandria.

The success of Misr Bank Companies has led to the following:

- Encouraging individual investors to build their own mills.
- Reducing imports from textiles.
- Availability of skilled labor in textile manufacturing and machine maintenance.
- Increasing GNP as well as the per capita consumption from textiles.

After 1952, the Egyptian Textile Industry has entered a new pace.

With the large and medium sized enterprises coming into the public ownership in 1961, the Government of Egypt has committed itself to increase both GNP and the national income from the foreign currency.

- 3 -

Specialized General Organizations, as holding bodies for the public sector companies, were established. The Textile Organization supervised and was solely responsible for controlling the 30 textile companies from 1962 till 1975.

The October 1973 War can be seen as part of Egypt's attempt to modernize the economy. After this war, liberalization speeded up with Law No. 43 of 1974 aiming at encouraging the inflow of Investment from abroad. The Textile Organization, among the other specialized organizations, was disbanded in December 1975.

Since January 1st, 1976 the public sector companies have become directly responsible to the Minister for Industry, reporting through the Technical Secretariat which has assumed the executive duties of the disbanded organization. In addition, a high council for textiles has been formed to be responsible for general policy directions. Moreover, a consulting committee advises the Minister for Industry on the problems facing the sector.

#### The Importance of the Textile Industry in Egypt:

To day, Textile Industry Constitutes one of the most important sources of employment, Cash income and foreign exchange earnings in Egypt.

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Following are the statistical data of the year ending June 30, 1981.

-	Total production value	1220 Million L.E.
-	Total Exports value	215 Million L.E.
-	<u>Manpower:</u>	
	Total labour force	300,000 Workers
	Annual wages & Salaries	300 Million L.E.
-	Total assets	2056 Million L.E.

The Textile Industry has met the Local Requirement of the population and has found important outlets in foreign markets.

Thus, this major industry has played an important role in achieving the objectives of the Egyptian Government, which aims at:

1. Increasing the income of foreign currency.
2. Increasing employment in the country.
3. Raising standard of living of the population.

Raw materials:

Cotton has been and will continue to be the main raw material used in textile industry. This industry is consuming increasingly quantities of the Egyptian cotton crop, as follows:

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- 210,000 tons representing 44% of cotton production in 1973.
- 290,000 tons representing 58% of cotton production in 1981.

Wool, jute linen are also used but with considerably low rates of Consumption.

Production of artificial fibres started in Egypt in 1950, and its total production amounts now about 20,000 tons per year.

Development of the Textile Industry:

The Public Sector owns about 80% of the productive capacity of the industry, and is composed of 30 companies.

The following table, illustrates the extent of this development in the public sector:

ITEM	Decem. 31/1974	Decem 31/1980	Increase	Average Increase Per annum %
Total assets Millions L.E.	514	2056	1542	26
Sales Million L.E.	385	911	526	15.5
Labour Force (Persons)	266,000	300,000	34,000	2.5

Also, the following table, shows the growth in the main machinery of this sector from 1975, up to 1980.

	1975	1976	1977	1978	1979	1980
1, Cotton Spindles	2032592	2076551	2260775	2414629	2432444	2509243
2, Cotton Looms	23581	23695	24224	24999	25815	26536
3, Wool type Spindles	75,541	79237	79116	74403	79012	78640
4, Wool type Looms	947	969	989	947	1003	913

The development of the Egyptian textile product is given in the following table:

		YEAR					
		1975	1976	1977	1978	1979	1980
Cotton Yarn	Ton	181,274	193,065	210,400	212,934	226,000	238,868
Cotton Fabric	M.Meter	538.8	563.3	595.0	606.0	647.0	687.222
Wool Yarns	Ton	10,418	11,165	11,500	10,262	11,818	12,184
Wool Fabric	M.Meter	9,500	11,500	9,770	9,650	10,605	10,769
Man-made Fibre and filaments	Ton	6,285	5,842	6,625	3,233	4,392	12,652
Blanket	H.Blanket	1,053	1,713	2.0	1,400	1,620	1,791

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Polyester staple fibre:

In 1980, we have produce polyester staple fibre at the rate of 26,000 tons as full capacity.

The Future of the Egyptian Textile Industry:

The textile industry had long exported large quantities of products to the eastern bloc, under the terms of trading arrangements. The trade protocols with these countries have been reduced. Most of the textile plants have already been regarding for western markets, and additional investement in plant and machinery are under execution to bring this industry up to full capacity.

The five year plan 1982/86 in the textile sector has the following aims:

- I. Maintaining the present capacity of the existing mills and introducing modifications to eliminate present bottle-necks with developed procedures in production.
- II. Rehabilitation of six big mills in accordance with what has been revealed by sectorial studies. These mills are Misr/Helwan, En Nasr Company for spinning & weaving and Knitting, Modern Textile Co., National Spinning and weaving, ESCO Company and Misr Rayon Kafr El-Dawar.

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- III. Completion of all units which began erection before 1-7-1982, and including the necessary investments in the plan in order that most of them can start production before the end of the plan in 1986.
- IV. Introducing some new projects which aim mainly to balance the production in the various branches of the textile industry, besides raising the surplus available for export.
- V. The plan is interested in the joint venture projects with Arab and Foreign Shares in capital.
- VI. The plan is interested also in the ready made garment and Blanket projects.

To achieve these objectives, a total amount of 1335 Million L.E. of investments is required in the five year plan 82/83 - 86/87, distributed as mentioned below:

No.	Projects	Total	Local	Foreign
1	Renewals and modifications	645.3	170.4	475.9
2	New projects	236.2	71.6	164.6
3	Projects under execution (Including rehabilitation Projects).	382.9	128.5	254.4
4	Ready made garment project	50.5	20.7	29.8
5	Blanket projects	19.3	8.0	11.3
	TOTAL	1335.2	399.2	936.0



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It is expected that these investments will attain the following aims in 1987.

- Increase in production value by an annual amount of L.E. 1221 Million.
- Increase in exports by an annual amount of L.E. 181 Million.
- Providing working opportunities for 58,000 new workers.

SIXTH ECONOMICS POLICY WORKSHOP  
"The Future of Cotton in the Egyptian Economy"  
December 18-19, 1982

Cotton Cooperative Marketing  
in Egypt  
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By

Mohamed A.H. Abdel Gaffar

Secretary General of the Cotton Marketing High Commette  
Ministry of Agriculture

Vice Chairman of the General Cotton Cooperative Society  
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It is well known that free marketing of cotton in Egypt had been stopped since June 22, 1963, when the Governement of Egypt decided to close The Alexandria Cotton Extchange and nationalised the cotton Export companies, ginning and pressing companies. The ownership of these companies was transfered to the public sector. In the same time the governement decided to receive the cotton crop on a base of limited prices.

Prices of different cotton varieties, and different grades, are set by the governement, although the pricing system of cotton is based on a guarantee fair return to farmers on their investement of land, equipment, fertelizers, labours... ect, but it is obvious now that prices of raw cotton in Egypt are not remunerative prices, and does not cover in most cotton varieties the cost of production, especially those varieties grown in Upper Egypt, because of the law productivity of cotton. Under this condition I believe that prices have to be revised and raised before starting the next cotton season 1983.

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The pricing system of cotton in Egypt based on the isolation between local prices and Export prices. We have in Egypt two prices the first is the price set to receive cotton from farmers (local price), for different varieties and different grades. This system prevent - to some extend - farmers against the fluctuations of cotton prices through the world markets, this price is fixed on the base of cotton lint per Kentor (50. K.g).

The second price is the export price which is subjected to the international influences, which is usually beyond control, it is not fixed allover the cotton season, so it is revised every week during the season to be sure that they are in step with international price level for similar cottons.

The problem now is that, the export sales prices are now very near to the levels of purchasing prices from farmers, therefore no profit for governement budget in contrarily this situation will lead to more losses. This is a big problem facing now the governement - in addition, of the domestic sales of cotton for local consuming which reach about 65 % of the whole crop. The weaving & textile factories buy their needs of cotton on the same prices of purchasing cotton of the farmers. On the other hand the local textile industry complaint against the continuous increase in cotton prices, they say that this situation will lead to more losses, especially in some sorts of fabries which the governement fixed their prices for so many years.

The regulations of local cotton marketing in Egypt is set by the minister of Agriculture which usually declared at the beginning of the season September/October organizing the steps of marketing, such as, receiving cotton in collecting centres which spread through the cotton belt and reach

a number of 2400 center and the way of weighing cotton. (Cotton is handled in Egypt as seed cotton per Kentar ( $157\frac{1}{2}$  K.g) in sacs of approximately  $1\frac{1}{4}$  Kentar, organizing also the system of paying a part of the price on delivery (about 50 % of the whole price) which ought to be payed during 24 hours of delivery.

The most important step is the evaluation of seed cotton, as we know that the price is based on lint per Kentar (50 K.g). The price of seed cotton is based on lint percent and grade. The way to evaluate seed cotton is to take samples of certain grades from every center at the first of the season to determine the lint percentage.

Samples are drawn and ginned by a committee, representing both sides, farmers, purchasing companies and a neutral representative (classer) on behalf of The Cotton Arbitration and Testing General Organization. This committee fixes the lint percentage for the whole season for the area assigned to every Center.

After delivering the seed cotton to the centers, the classer grade's each sac, and from a table of prices (including lint percentage and grade), the classer fixes the price of the whole quantity of cotton delivered by every farmer.

The regulations give the right to farmers to complaint and make objection against the classer decision. The arbitration on the grade is performed by a committee of senior classers.

Through 10 days the companies have to pay the rest of the price through the Country Bank, after making the discounts such as loans of The Agricultural developing & credit Bank as a cost of seeds, fertilizers, insecticides, wages of ploughing.....

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Some mistakes happens in calculating loans and costs and some delay in payments make troubles and uncertainty in the system of local marketing.

The prencipal role in that system is undertaken by the Country Banks of Agricultural Credit in the provinces.

The whole local cotton marketing is supervised by a high commettee of the ministry of agriculture representing all sides, the commettee is held weekly allover the cotton season to revise the situation of delivering cotton, classing payment, transportation to generies and to discuss any dispute or problems arised by any side buyers or sellers.

This system is called the cooperative cotton, in spite the cooperative societies have'nt an important role till now in marketing, from my point of view it is a governemental system of purchasing cotton of producers.

During the three or five last years some central agricultural cooperative societies tried to move and undertake the role of the country banks, they succeed in bearing this role. We hope that in near future the system of marketing will be develloped and turned to an actual cooperative system, especially after the law No. 122/1981 of the agricultural cooperation which establish a cooperative marketing societies and a general cooperative societies for every crop.

#### Concolusion

- 1 - The farmers must have the right to market their cotton through their cooperative marketing societies and the governement should back them to undertake that job.
- 2 - Prices of purchasing cotton from farmers are not remunerative and should be raised, because the increase in cost of production including farm production and harvesting costs, has generally been greater than any

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increase in cotton prices had been done.

- 3 - We appreciate the famous job done by Egyptian Cotton breeders and scientists but we still in lack to concentrate on producing higher productivity new cotton varieties especially varieties adopted for Upper Egypt and conduct a scheme of researchs toward expanding the use of machines in cotton production to face the continuous increase in labours wayes.
- 4 - The cost of production of the Textile Industry in Egypt is going up especially on the basis of cotton prices now so the governement should give the right to the spinning and weaving factories to move the price of cotton fabrics according to the cost of production with reasonable marge of interst.

Exchange Rate Policy in Egypt Since 1975,  
and its Significance for Cotton<sup>1</sup>

By

Dr. Bruce Glassburner

It would seem easy to dismiss the exchange rate in Egypt as irrelevant for agricultural development, because domestic prices of agricultural exports and imports are largely insulated from the effects of exchange rate policy changes. But there are reasons for examining the pattern of exchange rate policy as part of the general pattern of agricultural policy despite the general truth of the statement above. First, and most obviously, insulation of the bulk of the agriculture sector from the exchange rate regime is, in itself, a part of the broader policy of agricultural repression from which the country suffers. Hence some effort to evaluate the implications of that insulation would appear to be justified. Beyond that, the pricing of tradeable goods outside the agricultural sector is less effectively insulated from the impact of the rate of exchange; and hence, the intersectoral terms of trade (between the agricultural and the non-agricultural sector) are to some degree affected by exchange rate policy.

This paper will begin with a description of the exchange rate regime of the Government of Egypt (GOE) since 1973, will proceed to a summary discussion of the basic economics of "exchange rate protection", then discuss the matter of insulation of agricultural tradeable goods in general, and cotton in particular, from the effects of the rate of exchange.

The date 1973 is frequently chosen as a benchmark or turning point for discussion of international trade and macroeconomic policy in Egypt, because it was the year of adoption of the "El Infitah", or "The Opening" of economic policy by the government under the leadership of President Anwar El Sadat. Since that date Egypt's growth performance has been strikingly good in broad macroeconomic terms. This success is partially

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<sup>1</sup> Prepared for the Sixth Economic Policy Workshop of the Agricultural Development Systems Project, "The Future of Cotton in the Egyptian Economy", held December 18-19, 1982, Cairo. The author is Co-Director of that Project for the University of California, and is Professor of Economics at the University of California, Davis.

attributable to the liberalization of the control system on international trade and international finance that has taken place since that time. This liberalization has included various moves to simplify and relax control on foreign exchange markets.

Throughout the period under consideration (1973 - present), Egypt has maintained a multiple exchange rate system. A special exchange regime had been established for "non-traditional exports" and for a limited range of imports, as early as September, 1973. This entailed the establishment of the so-called parallel market -- which allowed exporters of included commodities a 50 percent premium over the official rate (the official rate was 39 piasters/[pt]/per US dollar/[USD], while the parallel rate was established at 58 pt per USD). Cotton, of course, was excluded.<sup>1</sup> The parallel rate was allowed to move upward, (in 1976) in successive steps until it reached 70 pt per USD.<sup>2</sup> Also, the list of traded goods excluded from the parallel market was reduced. By early 1977, only seven basic imported commodities were excluded, while on the export side, only raw cotton, rice and petroleum were excluded.

A major step in the direction of exchange liberalization was taken in August, 1976, when residents of Egypt were allowed to own and trade foreign exchange legally, provided transactions were undertaken through the banking system. The market thus created has been designated as the "own exchange", market, and the rate at which transactions have taken place has floated freely, leading to a triple-tiered market.

Temporarily, the number of tiers was reduced to two, when, in 1979, the official rate and the parallel rate were unified at 70 pt/USD, a 44 percent devaluation of the official rate. But an intermediate tier was reestablished in August, 1981 with the introduction of the "official incentive rate" of 84 pt per USD. The 70 pt rate was retained for government accounting purposes and for its transactions with the Central Bank, but the new rate was authorized for use by the commercial banks for both

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<sup>1</sup> The excluded exports list: Cotton, rice, onions, potatoes, garlic, cotton yarn, textiles, crude petroleum, petroleum products, and official receipts. On the import side, the included list involved largely services and some categories of intermediate goods. The parallel market involved about 45 percent of convertible exchange exports and 9 percent of imports in 1975. Source: World Bank Report 1978, p. 52. One hundred piasters = One Egyptian Pound (LE).

<sup>2</sup> Parallel rate changes, as follows: February, 1976, 64 pt; May 21, 1976, 68 pt; December 1, 1976, 70 pt.



official and private sector purposes. The stated intention was for this rate to approximate the market equilibrium rate, but the free market rate deviated rather quickly from it, and in March 1982, the own exchange market fed by the inflow of remittances from expatriated workers re-established itself, and has been subjected to only moderate regulation. Approximately 20 percent of imports are currently financed through the "own exchange" market. The rate of exchange on this market is, at the time of this writing (December, 1982) approximately 112 pt per USD, suggesting a 38% overvaluation of the Pound at the official rate, and a 25 percent overvaluation at the official incentive rate.<sup>1</sup>

#### Exchange Rate Protection

Egypt has a surprisingly open economy, in the sense that a very large proportion of GNP is involved in international trade. In 1979-80, the ratio of exports to GNP was 43.8 percent, and imports 53 percent. Moreover, this openness has increased dramatically in recent years: both of those percentages have virtually tripled since the early 1970's. Petroleum and petroleum products dominate the export bill, reaching an estimated 73% of export proceeds in 1981-82, and 35% of all foreign exchange earnings. It is important to bear in mind in what follows that the petroleum sector is largely divorced from the foreign exchange regime because both the imports and exports of the petroleum sector are for the most part denominated exclusively in USD terms.

With this important real world qualification in mind, it is useful to look at the exchange rate as an instrument for influencing the production of tradeable goods and patterns of trade. Most simply put, the rate of exchange, if it overvalues the domestic currency -- as is most often the case in regulated systems -- encourages the importing of tradeable goods and discourages exporting of tradeables. In the usual case, governments with overvalued currencies respond to this by raising tariff and non-tariff barriers against imports in order to protect producers of import-competing goods.

<sup>1</sup> However, the own exchange market is not an adequate indicator of the true equilibrium exchange rate, as will be explained below. Valuation changes in this paper are calculated as  $(r_1 / r_2) - 1$ , where  $r_1$  is the initial rate and  $r_2$  is the rate after the change. Thus, the 44 percent devaluation of the official rate in 1979 is calculated  $(39/70) - 1 = -0.44$ . Negative value indicates depreciation, and positive value indicates appreciation.

They rarely intervene on the export side in order to create comparable production and trading incentives in any systematic way. In a great many instances exports are actively inhibited by quotas and export taxation.

An alternative to this "inward-looking" exchange rate strategy is the maintenance of an exchange rate which leads to the domestic pricing of tradeable goods at or near world market real values, or even deliberately undervaluing the domestic currency as a means of discouraging imports generally and encouraging exports generally. Increasingly in recent years the advantages of the latter strategy over the former have come to be recognized. The most basic advantage is that a low valuation of the domestic currency provides general protection for tradeables, as opposed to the selective and often quite capricious protection given under most overvalued exchange regimes. Discretion in trade policy is not completely eliminated by such a strategy, although it is clear that it is more suited to a "pro-trade" policy than to a trade-restricting policy.

Needless to say there are many arguments, both economic and political, against adoption of exchange rate protection, otherwise the more inward-looking pattern of policy would not be so widespread among the nations of the world. The most basic of these is the general pessimism about prospects for expanded exports in the international economy, and a fear of expanded dependence on foreign markets. While these arguments have been effectively met in a vast amount of literature on international trade and development, they remain very influential among policy makers in less developed countries generally.<sup>1</sup> I believe that the policy of overvaluation of the Egyptian Pound has hurt Egypt's balance of payments and has contributed to lack of balance in her growth pattern. I would also argue that, despite the country's laudable movements in the general direction of exchange liberalization since 1974, further openness would serve the people of Egypt still more favorably.

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<sup>1</sup> In the atmosphere of world economic stagnation of 1982, these antitrade arguments find the ears of policy makers in the industrialized nations also, sorry to say.

### The Real Rate of Exchange:

The changes that have taken place in Egypt's nominal exchange rates since 1973 are substantial. Between 1973 and 1979, when the official rate was unified with the parallel rate at 70 pt per USD, the nominal devaluation of the official rate was 44 percent. But in order to gauge the degree to which the nominal rate measures international purchasing power of the Egyptian currency, and to make some reasonable estimate of the appropriate or "shadow" rate of exchange which should be used in assessing social values involved in international trade, it is desirable to attempt to measure the "real rate of exchange". Such an attempt is shown in table 1.

These calculations are based on the assumption, first, that the parallel rate established in December, 1976, following a series of increases in that rate, approximated the real international purchasing power of the Egyptian Pound. Whatever the validity of that assumption, I have chosen to use that rate as a benchmark from which to make assessments of movements in the value of the Pound, in purchasing power terms, for the period 1973-1982. The domestic purchasing power of the Pound is measured for these purposes by the Egyptian Wholesale Price Index. This index is then related to purchasing power among Egypt's principal trading partners, which we have chosen to represent by the IMF index of export unit values for Industrial Countries. The ratio of Egypt's price index to the Industrial Countries is then used to construct an index of relative purchasing power of the Pound, and that index, in turn, is applied to our bench mark exchange rate of 70.

The purchasing power index (column 5) indicates that Egypt's currency has been losing purchasing power relative to the industrial nations at about 5.8 percent per year over the period covered. Hence, the "real" exchange rate has changed at approximately that rate. This calculation then gives us a basis for assessing the degree to which the various rates of exchange used in Egypt are overvalued or undervalued. We have calculated overvaluation only for the official accounting rate. It is interesting, however, to make comparisons between the other rates in the exchange system with these "real rates". The parallel rate, when established in 1973, was very close to the real rate (58.5 vs. 58.9), but it was kept constant throughout 1974 and 1975. It remained at 70 from 1976 until 1979, when it was

Table 1

Real Rates of Exchange, based on the Parallel Rate of December, 1976  
as a Benchmark.

Year	Pd <sup>a</sup>	Pf <sup>b</sup>	Pd/Pf	Index of Pd/Pf 1976=100	R	ro <sup>f</sup>	Overvaluation(%)
1973	na	na	.893 <sup>d</sup>	84.0	58.9	39	33.8
1974	na	na	.945 <sup>d</sup>	88.8	62	39	37.1
1975	100	100	1.00	94.0	66	39	40.9
1976	107.8	104.5 <sup>c</sup>	1.032	100.0	70 <sup>e</sup>	39	44.3
1977	117.8	109	1.081	104.7	73.3	39	46.8
1978	135.2	123	1.099	106.5	74.6	39	47.7
1979	148.4	142	1.045	101.2	70.8	70	1.1
1980	180.6	160	1.06	102.7	71.9	70	2.7
1981	195	154	1.26	122.1	85.5	70	18.1
1982	213.6	148	1.44	139.5	97.6	70	28.3

a Egypt - wholesale pure index

b IMF index of export unit values for industrial countries

c Interpolated at 1977 - 82 rate of change

d Extrapolated at 1975 - 82 rate of change

e Parallel rate, established Dec, 1976

f Official rate for government accounting

Key to symbols:

Pd = Domestic Price Index (wholesale prices)

Pf = Foreign Price Index (IMF index of export unit values for industrial countries).

R = Real rate of exchange

ro = Official rate of exchange

unified with the official rate, and abolished. Thus the parallel rate was never very badly overvalued. It appears to have been about 11 percent overvalued in 1975, but that was largely corrected in the series of devaluations of 1976. At the time of unification in 1979, the unified rate was only a 1.1 percent overvaluation of the Pound, by our estimating procedure.

The "official incentive rate", when it was established in 1981 appears to have been very close to a measure of the real rate, as we have measured it, but as we near the end of 1981, it is overvalued by 14 percent. No official data are available on the movements of the own rate, but it is known to have floated at rates significantly above the real rate as calculated here. In mid-December, 1982, it has attained a reported level of 112 pt per USD, nearly 15 percent above our estimated real rate -- although it was at 106 just six weeks previously.

It is not surprising to find a free sector in a multi-tiered system running at rates above the equilibrium or purchasing power parity rate for the market as a whole. It is a relatively thin market, utilized by merchants dealing in commodities of high value, such as luxury food imports and high quality textiles; and it is also particularly sensitive to changes in supply. Thus the decline in remittances from Egyptian "guest workers" abroad has put upward pressure on the own rate. The kerb rate and the own rate move very closely together, with only a two or three point spread most of the time, indicating that the risk premium for operating illegally in foreign exchange in Egypt is not high.

Before leaving the matter of the real rate, it is necessary to offer two qualifications. The use of price indexes for deflation of currency values is a crude procedure, and particularly so in dealing with Egypt, where prices are controlled. There is surely some gap between the measured and the true rate of inflation. In addition, because the exchange rate is expressed in terms of the US Dollar, and the index number chosen to deflate foreign currency is that for a weighted average of industrial countries, particularly in the late 1970's, as indicated by the fact that the rate of the Dollar against the SDR has risen by 11 percent since 1973. The Pound has, thereby, been implicitly appreciated on that account. Hence our real exchange rates are conservative, in the sense that they probably understate the degree to which the Pound is overvalued.

The rate of Exchange and Agricultural Incentives in Egypt:

The agriculture sector of Egypt is dwindling in relative importance. However, it is normal for this process to take place in a developing nation. A shift of resources out of an over-manned sector into non-agricultural forms of employment of generally higher per capita productivity is central to a healthy pattern of growth, but all too often it happens that economic policy is geared to force this pattern of transformation, thereby reinforcing agricultural decline, and leading to an unbalanced growth pattern. This forced decline of the agriculture sector will be referred to here as "agricultural repression".

Agricultural repression has a variety of dimensions in the typical case. Basic to it is a policy of low prices for agricultural commodities, often defended as being in the interest of consumers generally, thereby protecting the interests of the poor and encouraging non-agricultural development by keeping money wages low. Beyond that, governments concentrate investment in non-agricultural areas, neglect the development of rural financial institutions, import large quantities of competing agricultural products at concessional prices, and adopt policies which discourage agricultural exports.

Broadly this describes agricultural policy in Egypt in the 1970's and 1980's to date. Not surprisingly, the Egyptian agricultural sector has not performed well, increasing output at a rate below the rate of population growth. This is well below the potential of Egyptian agriculture, and failure to approximate that potential has deprived nearly 30 percent of the Egyptian population of the benefits of rising real per capita incomes, and has accelerated rural to urban, as well as international migration. It has also contributed to the emergence of an alarming and rapidly growing food gap and balance of payments gap.

The role of the exchange rate is marginal in this general picture, although it has the potential to contribute a great deal as a policy tool. The exchange rate regime affects farmgate and consumer prices of the most important traded agricultural goods only in a nominal way. Wheat is by far the most important imported agricultural commodity, constituting 66 percent of primary imports in the first half of 1980 (IMF, 1981, table 57). All wheat is imported on government account, and is therefore accounted at the

70 pt per USD rate. This is merely an accounting rate to be sure, but it understates the market value of the foreign exchange expended by 33 percent. It also allows the size of the subsidy to wheat consumers to be comparably understated. Thus the real cost of this importation and subsidy policy is hidden from view, and probably contributes to its perpetuation despite high social cost. To some extent this effect is mitigated by the availability of concessional food loans which lower the cost of foreign exchange to Egypt because of the large grant element in such loans. Only 20 percent of wheat imports are financed by US food aid (P.L. 480), however, and a much smaller proportion from other concessional sources.

There is a fair amount of symmetry to the analysis of exchange rate effects on agricultural exports as compared with those on the import side. The most important commodity involved is cotton. Cotton prices at the farm gate are determined annually by the Ministry of Agriculture based, as in the case of wheat, on estimated domestic costs of production. Again, it is basically an average cost formula<sup>1</sup> and cotton farmers have no alternative to the government controlled market. Sales of the cotton to foreign buyers are entirely undertaken by government, and accounted at the official rate of exchange. Thus the margin earned by the government agencies involved as dealers in cotton is the difference between the administered prices paid to farmers, which understate social marginal cost of production, and the revenue from foreign sales, evaluated at 70 pt per dollar, which is also understated relative to social benefit. This margin is narrowed by costs associated with the marketing process, and with storage costs of unsold surpluses.

Domestic sales of raw cotton are made at subsidized prices to domestic cotton mills -- whose selling prices for processed goods are, of course, kept at a level which subsidizes domestic consumers of textiles.

<sup>1</sup> The formula used is  $(C + 2R) / F$  divided by  $O/F$ , where  $C$  is aggregate cost of production,  $R$  is nominal rents,  $F$  is area in feddans, and  $O$  is total output. This reduces to  $C/O$  plus  $2R/O$ , or average cost plus average rent. In the absence of rent control, if money rents approximated economic rents, this formula would raise the control price above marginal cost, since average cost plus rent per unit would equal marginal cost. But rent controls on agricultural land keep money rents at a small fraction of true economic rents, hence control prices fall far short of marginal costs; although they do lie above average costs by the amount  $2R/O$ , assuming the estimate of average costs is accurate.

Domestic mills are in a position virtually identical with that of domestic food processors, in having to compete with imported goods purchased by merchants buying exchange on the own exchange market, and whose imported product is evaluated at the bank rate. Here again, imported textiles are readily available on local markets, indicating that the apparent protection for local producers indicated by the exchange arrangements is being defeated by a combination of circumvention on the part of importers and the imposition of very low selling prices on domestic producers of import competing cotton goods.

Raw cotton producers are being implicitly taxed by this pricing arrangement, even though the Ministry of Economy argues that the government's market margin is too narrow to allow for farmgate price increases. The explanation for this apparent anomaly is that the government's balance sheet reflects radically understated income from foreign sales. Each dollar earned from cotton exports is undervalued by the difference between the official accounting rate of 70 pt per dollar and the "true" or "shadow" rate of exchange. As indicated in Table 1, the degree of overvaluation of the Egyptian Pound at the official rate in 1981 was approximately 18 percent, which, with the value of cotton exports (1981) approximating \$350 million implies an accounting understatement of something on the order of \$62 million, or (again roughly) LE 53 million evaluated at the 1981 shadow rate of 85.5 pt. Although this is "merely" accounting, its effect is to create resistance to needed agricultural pricing reform.

To the extent that the margin between "true market value" of the exported cotton exceeds normal marketing costs, it is an implicit tax on the cotton producer. The use of the official rate to evaluate the government's cotton sales in the international market thus understates the burden of the pricing system on the farmer. Cotton farmers, and other producers of agricultural exports are partly compensated for this "taxation" by having access to subsidized inputs, and to the extent that these inputs are imported, the use of the official rate to evaluate them in domestic currency understates the true value of the subsidy.

Cuddihy (1980) estimated that this system "transferred" LE 250 million from cotton producers in crop year 1974-75, and that the "effective protection" coefficient (EPC) in 1975 was a mere 0.44 -- which is to say that value added



in cotton production evaluated in internal prices was only 44 percent of value added calculated in international or "border" prices.

More recently, Drs. Khedr, Kheir El-Din and Monk (1982) have performed similar calculations using 1980 data for 21 cotton producing areas, attaining a median EPC of 0.426 -- remarkably close to the result for all Egypt obtained by Dr. Cuddihy using data for 1975.

In both of these studies, the evaluation of cotton and traded inputs were converted to domestic values at an official rate of exchange, rather than a shadow rate. In view of the fact that shadow prices were used to compensate for domestic price distortions in internal markets, this is rather odd methodologically. However, the results obtained in both papers were so strongly in the direction of proving the folly of repression of cotton production and export that an adjustment for overvaluation of the Egyptian Pound might have seemed like overkill to the authors at the time.

However, things have changed quite dramatically in the last two years. The price of Egyptian long staple cotton has declined on the world market by 36 percent and medium long staple by 32 percent (International Financial Statistics, October, 1982). At the same time, the degree of overvaluation of the Egyptian Pound at the official rate of exchange has manifestly increased significantly. In the meantime, domestic resource costs (i.e., the numerator of the DRC coefficient) have risen at least as rapidly as the nominal inflation rate while inflation in industrial nations has slowed down. The question must then arise as to whether or not cotton remains a socially economic crop for Egypt in 1982, if not for the longer run.

Dr. Khedr and his colleagues (KKM) have calculated cotton prices per metric ton which would, if used in calculating DRC's for their 21 cotton producing areas, have yielded DRC coefficients of 1.0 (again using 1980 data). This price is useful in that it indicates the price level below which the nation would be wasting resources to produce the cotton. I have grouped these districts into high, medium, and low cost areas and computed a "mean minimum price" for each of the groups. The high cost group average was LE 1685 per metric ton; the median group average LE 1530; and the low cost group average LE 1254.

Table 2

Exchange Rates Required to Establish "Social Break - Even" in Cotton Export of Long Staple and Medium - Long Staple Cotton at 1982 Prices Per Metric Ton, Piasters Per US Dollar<sup>a</sup>:

	Low Cost Areas	Median Cost Areas	High Cost Areas
Long Staple	73	89	98
Median-Long	76	93	103

<sup>a</sup> Based on the work of Khedr, Kheir El-Din, and Monke(1982) Table 5, p. 28. The groupings were established by dividing the range of DRC coefficients in that table into three equal ranges. The domestic cotton prices were averages for each group taken from K,K,\$M calculations of prices which would set the DRC's equal to 1.0. These were each divided by the May, 1980 US dollar prices per metric ton for the two types of cotton as given in the October, 1982 issue of International Financial Statistics. As the text indicates all of these rates are conservatively low, because of rising domestic prices of non-traded inputs between 1980, and 1982. K,K,\$M used 1980 data in their DRC calculations. These calculations are intended as illustrations.

L. S.

Low Cost

$$\frac{1254}{1719.6} = 73$$

Medium Cost

$$\frac{1530}{1719.6} = 89$$

High Cost

$$\frac{1685}{1719.6} = 98$$

M. L.

$$\frac{1254}{1640.2} = 76$$

$$\frac{1530}{1640.2} = 93.3$$

$$\frac{1685}{1640.2} = 103$$

Evaluated at the official rate of exchange of 70pt/USD, cotton prices reported in May, 1982 were too low to meet the 1980 minima of any of the three groups. But at more realistic exchange rates, most producers would lie above the minima. Table 2 indicates the exchange rates required for conversion of the 1982 dollar prices for long and medium long staple cotton in order to meet these average price minima. All of these rates are at or below reasonable shadow exchange rates at the present time, except for the high cost areas producing medium long staple cotton -- in view of our estimated real exchange rate of 97.6 for 1982 (see Table 1). And, to repeat, that real rate estimate is conservative as an indication of overvaluation. Unfortunately, however, the main elements of the DRC coefficients will have moved adversely, namely, domestic costs of production of cotton, which have risen, and the world market prices of cotton, which have fallen. The prices of imported inputs may have fallen slightly.<sup>1/</sup> It is not surprising, then, to find public officials advocating reduction in cotton quotas at present, and farmers objecting to their imposition with increasing vehemence.

Calculations of DRC coefficients and their various related ratios, such as effective protection (EPC), are sensitive to the exchange rate chosen. To illustrate this point with Cuddihy's data, we compare in Table 3 the effect on Cuddihy's DRC ratios for the years 1973-76 of using the parallel rate of 58pt/USD with his own calculations, which utilized the (then) official accounting rate of 39pt/USD.

I do not conclude from these very crude calculations that Egypt's comparative advantage has been lost in cotton in the last two years. My objective is to show that the bleak cotton market situation in the present world recession is not as bad as it looks when the official rate is used to evaluate cotton exports. If we make allowance for the radical understatement of cotton export value, cotton remains generally a socially valuable export crop. I am also attempting to make a methodological point in urging that measures of social value of traded goods should utilize a shadow rate of exchange. My intuition tells me that cotton exports ought to be socially profitable for Egypt for the foreseeable future, and that it would be a mistake to continue to discourage cotton farmers with severe farm gate price repression and to curtail exports of cotton by attempting to use monopoly power in making export pricing decisions.

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<sup>1/</sup> Export unit values for Industrial Countries actually fell, 1980-82. See IMF-IFS, October, 1982, p.54

Table 3

Sensitivity of DRC Coefficients to Choice of the Rate of Exchange:

Year	Numerator LE/Feddan	Denomenator at r=39	DRC at r=39	Denomenator at r=58	DRC at r=58	Elasticity of DRC wrt exchange rate
1973	78	166	.47	243	.32	1.5
1974	89	240	.37	361	.25	1.5
1975	75	288	.26	416	.18	1.55
1976	61	244	.25	356	.17	1.5

## Implications of a More Liberal Exchange Regime for Agriculture:

The International Monetary Fund has officially admonished Egypt that its exchange regime is inconsistent with standards applied to members. Multiple rates are officially frowned upon, and serious departures from equilibrium are likewise disapproved. Egypt is a bad actor on both counts. Quietly, pressure is mounting for exchange reform, some of it from internal sources. Unification at or near equilibrium and some form of managed float is the typically recommended recipe.

As the above discussion indicates, however, the adoption of a unified rate, and its maintenance at something like the "true" value with some sort of indexing scheme would not accomplish very much for producers of internationally traded goods, in agriculture or elsewhere, unless the pricing scheme for the nation as a whole were revamped so that most or all prices represent and reflect world market values.

Exchange reform would, of course, lead to a more accurate accounting of the costs of government selling margins in agricultural tradeables, and of the implicit taxes and subsidies involving agricultural producers. This could have a salubrious effect on the pattern of agricultural policy decision making, in the sense that more accurate information makes rationalization of policy more nearly feasible. But otherwise, the administration of agricultural prices insulates the sector's producers from the pricing impact of international markets almost completely.

However, if there were to be a general relaxation of price controls on agricultural commodities, so that international prices were allowed to reflect themselves in domestic markets directly, then the adoption of a rate which would price foreign exchange at a level close to social value could be very stimulating to agricultural production and incomes. The agriculture sector is a prime candidate for policy emphasis in improving a deteriorating balance of payments. If by "food security" is meant the ability of the nation to reduce or eliminate dependence on foreign food aid by generating export earnings sufficient to finance imports of food essentials, then it is essential to reduce the level of agricultural repression, by raising prices to domestic buyers and sellers of agricultural produce to or near social costs, which, of course, must take alternative costs in international markets into account. An essential of such a policy orientation must be that foreign exchange be evaluated in terms of its external purchasing power.



