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# COTTON IN GREECE



# COTTON AREAS OF GREECE



## FOREWORD

At a time when the United States is exporting considerably less cotton than in many former years, exports from Greece are at a record level. Greece has been particularly successful in developing a market for its cotton in Eastern Europe, selling these countries twice as much as the United States has in the last two seasons.

This report is another in a series on developments in the cotton economies of countries that are important competitors of the United States. Its purpose is to inform U.S. interests of developments affecting the export market for U.S. cotton.

The authors express their appreciation to all who contributed information and comments for the study, including officials of the Ministry of Agriculture and the Hellenic Cotton Board, both in Athens and in the cotton-growing areas, the staff of the Cotton Research Institute at Sindos, and cotton merchants and spinners.

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# Cotton in Greece

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## SUMMARY AND CONCLUSIONS

Greece is one of a number of relatively small cotton producing countries whose exports have increased greatly in the last two decades. Shipments from Greece rose from an average of 30,000 bales in 1950-54 to an average of 239,000 bales in 1965-69 and an expected total of 305,000 bales in August 1970-July 1971. While the latter quantity is small compared to the 3.7 million bales exported from the United States in 1970-71, it still is a very substantial export for a mountainous country with less land in farms than Louisiana. Raw cotton is Greece's fifth most valuable export, earning \$31.2 million in 1970.

Greece's exports of raw cotton in the last few years have been mostly under bilateral trade agreements to the Communist countries in Eastern Europe. Next-door Yugoslavia usually has been the largest buyer but in 1969-70 the USSR temporarily was the most important. Greece's exports to Eastern Europe and the USSR totaled 240,000 bales in 1969-70 against 103,000 bales shipped to these countries from the United States. In 1970-71, Greece's exports to Eastern Europe and the USSR totaled 131,000 bales (through June) against 59,000 bales from the United States (through July). Greece usually exports relatively small quantities of cotton to Italy, Spain, and other Western European countries but in 1970-71 (through June) the amount more than doubled to 88,000 bales. Japan took 23,000 bales in 1970-71 (through June), which was the first significant quantity to that country in many years.

Greece's cotton production rose rapidly from an average of 137,000 bales in 1950-54 to 448,000 bales in 1961 but did not exceed this level until 1969 when a record 513,000 bales were grown. There was a slight drop to 505,000 bales in 1970 but indications in September 1971 were that production would be around 540,000 bales in 1971.

The current high level of production has been achieved despite a much smaller cotton acreage than in former years. Greece's cotton acreage was highest, 570,000 acres, in 1963 but declined by one-third in 1964, largely as the result of a much larger wheat crop. The wheat crop, recovering from a poor wheat season the year before, was expanded because of higher support prices, and the introduction of higher yielding varieties. Since then the cotton acreage has not changed much although it has fluctuated slightly from year to year. The total acreage was 375,000 acres in 1969, 326,000 in 1970, and 325,000 (preliminary) for 1971. Greece's former substantial acreage of raingrown cotton has virtually vanished since 1963 but even the irrigated acreage, 301,000 acres in 1971, was considerably smaller than the 399,000 irrigated acres grown in 1963.

While Greece's cotton acreage has declined, the yield per acre has increased phenomenally. From an average of 386 pounds per acre in 1960-64, the yield rose to an average of 562 pounds during 1965-69 and to a record 797 pounds in 1971 (preliminary). The increased proportion of the crop under irrigation has been responsible for much of the gain but yields under irrigation also have increased greatly, from 468 pounds in 1960-64 to around 790 pounds in 1970 and to probably a still higher figure in 1971. Higher yielding, quicker maturing varieties and improved cultural practices have been the major reasons for these rises.

It is unlikely that there will be any substantial increase in Greece's cotton acreage. In fact, there could be moderate declines. Competition for Greece's limited agricultural land is increasing from such crops as sugar beets, tomatoes, other fruits and vegetables, burley tobacco, hybrid corn and alfalfa. Demand for these crops is increasing as the standard of living rises and as export markets are developed. Expansion of processing facilities in recent years also has been important.

Table 1.—Cotton: Acreage, yield, production, exports, imports, consumption, and ending stocks in Greece, averages 1920-29 - 1965-69, annual 1950-71

Year <sup>1</sup>	Acreage	Yield	Production	Exports	Imports	Consumption	Ending stocks
	<i>1,000 acres</i>	<i>Pounds per acre</i>	<i>1,000 bales<sup>2</sup></i>	<i>1,000 bales<sup>2</sup></i>	<i>1,000 bales<sup>2</sup></i>	<i>1,000 bales<sup>2</sup></i>	<i>1,000 bales<sup>2</sup></i>
Average:							
1920-29 .....	32	284	19	( <sup>3</sup> )	13	24	( <sup>3</sup> )
1930-39 .....	115	212	51	( <sup>3</sup> )	27	78	( <sup>3</sup> )
1940-44 .....	101	128	27	( <sup>3</sup> )	10	32	( <sup>3</sup> )
1945-49 .....	110	223	51	( <sup>3</sup> )	35	82	27
1950-54 .....	219	300	137	30	7	114	31
1955-59 .....	383	338	270	160	10	121	31
1960-64 .....	469	386	377	224	15	154	58
1965-69 .....	347	562	407	239	58	206	102
1950 .....	191	294	117	7	22	118	43
1951 .....	213	293	130	21	1	110	42
1952 .....	203	262	111	26	1	105	22
1953 .....	220	303	139	29	3	119	16
1954 .....	270	338	190	68	9	116	31
1955 .....	410	327	279	180	2	105	26
1956 .....	395	284	234	148	19	121	10
1957 .....	385	362	290	124	21	131	66
1958 .....	402	341	286	194	1	128	29
1959 .....	325	387	262	153	8	121	24
1960 .....	409	338	288	150	7	137	32
1961 .....	510	422	448	302	4	145	37
1962 .....	508	387	410	238	9	155	62
1963 .....	570	362	430	263	10	192	46
1964 .....	350	425	310	167	46	178	57
1965 .....	335	491	343	192	44	204	48
1966 .....	347	559	404	222	54	212	72
1967 .....	340	623	441	309	45	201	48
1968 .....	340	476	337	180	91	209	84
1969 .....	375	657	513	296	52	223	130
1970 <sup>4</sup> .....	326	744	505	305	45	240	135
1971 <sup>5</sup> .....	325	797	540	325	45	260	135

<sup>1</sup> Beginning Aug. 1.

<sup>4</sup> Preliminary.

<sup>2</sup> Bales of 478 pounds net from 1920-1946; thereafter, 480 pounds net.

<sup>5</sup> Forecast as of September 1971.

<sup>3</sup> Not available.

Increasing scarcity of labor is also affecting the cotton situation. Although mechanization of cotton from the land preparation and planting stage up to the harvest is making progress and Greece now has a number of cotton picking machines, they are little used and there has been difficulty in marketing machine-picked cotton.

Cotton yields in Greece are already among the highest in the world. In 1970 Greece was exceeded in national yields only by Israel, Nicaragua, El Salvador and the USSR. The yield in the Far Western States of the United States also was moderately higher in 1970 though not in 1971. While there still may be room for moderate further gains in Greece, it seems unlikely that there can be further increases in yields comparable to those of the last few years. Considering both acreage and yield prospects, it seems doubtful that Greek cotton production will increase much from the current level.

Cotton in Greece benefits from a government subsidy equal to 6.0 cents per pound of lint (9.4 cents if mechanically picked), but Greece has no support or reserve price and its cotton sells freely on world markets. The net cost of growing lint cotton is reduced by the fact that cottonseed sells at a much higher price in Greece than in the United States. According to a study in 1968, lint cotton costs from 18 to 24 cents per pound to produce. While costs per acre probably have risen since 1968, the increase may have been offset by higher yields. Greek cotton



acreage per farm is among the lowest in the world, averaging only 4.5 acres divided into several parcels. Some 98 percent of Greece's agricultural holdings are owner-operated.

Before 1956 Greek cotton was mostly 31/32" or shorter in staple length according to the classification by the Hellenic Cotton Board but now 97 percent is 1-3/32". This would be roughly comparable to much of the Upland cotton grown in Mississippi or California and at the upper limit of the 1-1/32" - 1-3/32" group into which two-thirds of the world's cotton production falls. More than three-fourths of Greek cotton is classed in Greece as Strict Middling or Strict Middling/Middling White grades.

Mill consumption of cotton in Greece has risen from a little over 100,000 bales annually in the early 1950's to an average in excess of 200,000 bales each year since 1965-66, and to a record 240,000 bales in 1970-71. Between a fourth and a third of the cotton consumed is imported, mostly lower grades from Turkey and longer staple cotton from the UAR. The rest is of Greek origin. In 1970-71, the local cotton mills took one-third of the crop.

Greece's population growth is almost at a standstill but the market for cotton goods in Greece has been rising at a rate of 3.5 percent annually, compared to 5.4 percent for all textiles. The per capita consumption of cotton goods is now equivalent to 10 pounds per year, about the same as the average for Western Europe. The mill consumption of manmade fibers other than rayon has been gaining but cotton still has over 60 percent of the market for textile fibers at the mill door. Exports of cotton yarn, largely to Western Europe, have increased rapidly in recent years and now equal 20 percent of the production. The cotton textile industry is being expanded and consumption of cotton in Greece undoubtedly will continue to rise.

Greece, like the United States, is a member of the International Institute for Cotton, which promotes the use of cotton in Western Europe and Japan, and of the International Cotton Advisory Committee, which acts as a world forum on cotton.

### **General cotton situation**

Greece on a worldwide basis is not a very important cotton producing country, but with a production of over half a million bales in 1969, 1970 and 1971 it is easily the most important cotton producing country on the continent of Europe. Cotton is the principal source of income for 80,000 farm families in Greece, and in 1969 and 1970 lint production alone was worth upwards of \$65 million. Most Greek cotton is exported and raw cotton is the fifth most valuable Greek export product, providing 5 percent of the total value of all exports in 1970, compared with 17 percent from tobacco, 7 percent from nickel, 7 percent from aluminum, and 6 percent from textiles.

Greece's territorial area of 29.2 million acres is largely mountainous or semimountainous. Only 7.9 million acres are under cultivation, divided into nearly 1.2 million farms, averaging only about 6.8 acres. Nearly half of the acreage is in cereals, mostly wheat. Fruit, nut and olive trees occupy another 18 percent of the crop land, fodder crops, 11 percent, and grapes, 6 percent. The cotton area is only 325,000 acres or 4 percent of the cultivated land. Other crops, with less acreage than cotton, include vegetables, tobacco, pulses, potatoes, fodder seed, melons and sugar beets.

Greece's cotton production is largely concentrated on the main plains which, in aggregate, comprise only a small part of the total land area. Some 85 percent of the cotton is grown on "level" land, 12 percent in semimountainous villages and 3 percent in mountainous villages.

Cotton is a summer crop while wheat and some of the other Greek crops grow through the winter. Rainfall in the principal cotton growing areas of Greece averages only around 16 to 25 inches a year although considerably more falls in the mountains. (Table 2). From about May through September, there is a period of summer dryness. Rainfall in Athens from June through August averages only 0.7 inch and in Thessaloniki, 2.6 inches. Thus, the development of a viable cotton economy has been largely dependent upon providing irrigation to carry the cotton crop through the summer months.

Ninety-three percent of Greece's cotton acreage is now irrigated and cotton is planted on 20 percent of Greece's irrigated land. A number of the plains which are now important irrigation zones were at one time marshes, swamps, or lakes. Consequently, their agricultural development has included drainage and flood protection as well as irrigation. In a number of cases, irrigation trailed drainage and flood control by many years, even centuries.



Table 2.—Weather in or near cotton growing areas in Greece<sup>1</sup>

Month	Thessaloniki			Larisa			Athens		
	Temperature		Rainfall	Temperature		Rainfall	Temperature		Rainfall
	Average Max.	Daily Min.		Average Max.	Daily Min.		Average Max.	Daily Min.	
	°F.	°F.	Inches	°F.	°F.	Inches	°F.	°F.	Inches
January . . . . .	49	37	1.6	50	33	2.0	54	43	2.6
February . . . . .	52	37	1.2	54	35	1.6			1.1
March . . . . .	59	43	1.3	62	40	1.9			1.3
April . . . . .	66	49	1.4	71	47	1.4	67	49	1.1
May . . . . .	75	58	1.7	80	55	1.8			1.1
June . . . . .	84	65	1.2	86	63	1.2			.3
July . . . . .	90	70	.7	93	67	.6	90	72	.1
August . . . . .	89	69	.7	93	66	.5			.3
September . . . . .	82	63	1.2	85	61	1.2			.5
October . . . . .	73	56	2.5	73	53	3.5	74	60	2.8
November . . . . .	61	48	2.4	60	44	2.5			2.6
December . . . . .	52	40	2.0	53	37	2.4			2.1
Total . . . . .	17.9			20.6			15.9		
Annual . . . . .	<i>Frost days</i> 19			<i>Frost days</i> 34			<i>Frost days</i> 3		

<sup>1</sup> Based on averages of from 9 to 30 years.

Source: Compiled from reports of U. K. Meteorological Office, "Statistical Yearbook of Greece", 1969, and "An Outline of the Climate of Greece", by E. G. Mariopoloulos, Athens.

The total irrigated area in 1970 has been officially estimated at 1.6 million acres or about 18 percent of the total available land. It was 3 percent above 1969 and 8 percent above 1968. Estimates show that about one-third of the available land in Greece could be irrigated with present and potential water supplies, but it will take a number of years to reach this goal.

Heavy rains in the spring can interfere with planting the cotton crop while heavy rains toward picking time can reduce yields and ruin the quality. Protracted drought can, of course, interfere with the supply of irrigation water. Cotton growing areas of Greece have few days during the year when temperatures fall below freezing, but the limited number of days between the time when soils become warm enough for planting in the spring and when fall rains begin, has made the development of early maturing varieties highly important.

### Government cotton policy

The Government of Greece has, for years, been concerned with the contribution of cotton to the total economy of the country. Cotton is looked upon as an important and dependable source of income for farm families, a source of raw material for both the cotton textile industry and the oilseed crushing industry, a needed source of employment for many rural people, and an important earner of foreign exchange.

To help cotton perform all these functions, Greek policy has pointed toward expanded production. This has been pursued through such general agricultural improvement channels as land development by means of drainage, flood control and irrigation, and land consolidation to overcome some of the obstacles resulting from fragmentation of holdings. In addition there are programs aimed specifically at improving cotton yields, quality, marketing, and returns. Loans are made to cotton groups at subsidized interest rates, planting seed is subsidized, assistance is given to buy machinery, and finally, incentive payments are made to cotton farmers.



The Ministry of Agriculture has principal responsibility for developing cotton policies and programs. The Cotton Research Institute of the Ministry, located at Sindos near Thessaloniki, is in charge of cotton breeding work. Otherwise, implementation of Greek government cotton policies is largely carried out by other institutions including the Agricultural Bank, the System of Farmer Cooperatives and the Hellenic Cotton Board.

The Agricultural Bank was established in 1929 to assist with the assimilation of returning population—especially from Turkey—and with the associated changes in the structure of agriculture. Its major functions are to supply credit and farm supplies, to assist cooperatives, to promote technological changes, and to provide insurance.

The Bank extends short-term loans to individual farmers to finance current production expenses and to cooperatives to help finance purchasing, processing, storing, and marketing of commodities. The Bank also makes intermediate and long-term loans ranging from 2 to 20 years. Agricultural Bank loans are made at rates of interest below comparable commercial rates.

Some of the Bank's short-term loans are in the form of credit sales of farm inputs. For example, at least in some periods of time, the Agricultural Bank had a virtual monopoly on fertilizer distribution.

The system of farmer cooperatives has worked in close cooperation with the Agricultural Bank in the economic development of Greek agriculture. At the community level, the local cooperatives conduct both their own functions and the local function of the Agricultural Bank. By handling the local distribution of seed, fertilizers, pesticides, and other items, the cooperatives have helped farmers in many communities to make the transition from a subsistence economy to a market economy. There are several thousand such community cooperatives.

The local cooperatives, which generally have no staff or facilities, work through more than 100 regional cooperatives with rather specialized functions, including maintaining the records of each individual farmer's account. Some of these regional cooperatives own and operate gins.

At the national level the Cooperative Union's Pool for Handling Home Produce (KYDEP) handles certain government purchase and sale operations. It also has responsibility for marketing operations involving commodities that have no separate central cooperative union for importing, collecting, and distributing certain kinds of seeds.

Also at the national level is the Panhellenic Confederation of Agricultural Cooperative Unions. It is the economic and political head of the farm cooperative movement in Greece and has the public responsibility for speaking nationally on behalf of agriculture.

The Hellenic Cotton Board is an independent organization closely concerned with fostering improvements throughout the industry. The Chairman is the Director General of the Ministry of Agriculture. There are also ex-officio directors from the division concerned with cotton in the Ministry of Agriculture, from the Export Division of the Ministry of Commerce, and the Division concerned with textiles in the Ministry of Industry. In addition there are three directors appointed by the Minister of Agriculture from nominees put forward by the textile manufacturers, the cotton trade, and the cotton farmers.

The Hellenic Cotton Board has 107 permanent and about 30 temporary employees and operates on a budget of around \$365,000 a year. The Board compiles many of the key statistical series on the cotton industry, develops the standards for Greek cotton and operates the cotton classification service. It also helps represent Greece at international forums.

Greece is a member of the International Cotton Advisory Committee, which is the intergovernmental organization that brings together statistics and other information on a worldwide basis and which acts as the world forum on cotton. Greece is also a member of the International Institute for Cotton, to which members contribute one dollar per bale on exports to Western Europe and Japan to help promote the use of cotton in these markets.

The national goal is for 350,000 metric tons of seed cotton (about 570,000 bales) to be produced by 1972. With 1971 production at 540,000 bales there is a good possibility that this goal will be realized. If Greek farmers fail to meet the goal for cotton production, any short-fall will probably be attributable to a combination of factors. For example, while Greek policy is designed to help cotton, it also is designed to help other competitive commodities. Also, it seems that it was more difficult than Greek leaders had expected to mechanize the very small farms in Greece and to give them the level of efficiency in cotton production that was hoped for, especially when farmers and farm people generally found that they had alternatives that were relatively attractive.



## Trends in acreage, yield, and production

Cotton was produced on a relatively small scale in Greece until after World War II, with an average of 77,000 bales during 1935-39 and 51,000 bales during 1945-49. Most of the cotton acreage was unirrigated and cultural methods left much to be desired. It was not unusual for cotton to be planted broadcast rather than in rows. Yields averaged only around 220 pounds per acre.

Thereafter, cotton production gained rapidly as part of an agricultural development program that included increased irrigation, improved varieties, and rapidly increasing supplies of fertilizer and credit. Commercialization rapidly replaced subsistence farming on Greece's almost universally small, owner-operated farms. It was recognized that cotton was a crop that could make a major contribution to the economic development of the country.

Greek farming villages had many people who were either unemployed or at least underemployed. A labor intensive crop such as cotton provided the small Greek farmer with a means of absorbing much of the available labor in the production of a crop with a high value per acre. From the national standpoint, the lint would provide raw material for an expanding manufacturing industry while any surplus to domestic needs could be exported and earn foreign exchange. In addition, the oil and protein from the seed would provide needed food and feed.

Greek cotton production exceeded 100,000 bales for the first time in 1950 and Greece became a net exporter of cotton in 1951. Production exceeded 200,000 bales in 1955 and reached 448,000 bales in 1961 (Table 1). Thereafter, production fell off somewhat but in 1969 it rose again attaining an alltime high of over half a million bales, continuing at this level in 1970, and reaching 540,000 bales (preliminary) in 1971.

Expansion in Greek cotton production involved a five-fold increase in cotton acreage from 1945-49 to an alltime peak of 571,000 acres in 1963. At the same time, the irrigated portion of this acreage rose from 48,000 acres to 399,000 acres, or from 44 to 72 percent of the total.

In 1964, Greece's cotton acreage dropped drastically to 347,000 acres with a one-third decline in irrigated acreage and nearly a 60 percent decline in nonirrigated acreage. Some of the decline was because of a return to wheat from acreage that had been planted to cotton following the failure of the wheat crop the year before. Some was owing to the introduction of higher-yielding wheat varieties and higher prices for wheat. On the other hand, a shortage of farm labor had developed and costs for producing cotton had risen.

Since 1964, Greece's cotton acreage has fluctuated from year to year but the 1970 and 1971 acreage of around 325,000 acres is the smallest since 1959. At the same time, there have been further reductions in Greece's nonirrigated acreage and since 1968, 90 percent or more of the cotton acreage has been irrigated.

Greece's cotton production has continued to rise because of a phenomenal increase in yields. The average yield in 1970 and 1971 of well over 700 pounds per acre was more than double the 1963 average. Rising yields can be credited first to increased irrigation, but also to use of higher yielding varieties, improved cultural practices, and better control of pests and diseases.

## Production areas

Practically all of Greece's cotton is produced in three regions, Macedonia, Thessaly, and Central Greece, though smaller amounts are grown elsewhere.

*Macedonia*, along the northern border of Greece, has a number of important plains and is Greece's most important cotton growing region. In 1970, it claimed 40 percent of Greece's cotton acreage and 37 percent of production. Acreage and production vary from year to year but in the last few years, acreage, particularly nonirrigated acreage, has been much lower than in the early 1960's and production no larger. More than 90 percent of the cotton acreage in Macedonia now is irrigated, compared with 58 percent in 1960.

Grain, mostly wheat, occupies 60 percent of Macedonia's crop land; hay, 8 percent; and cotton and tobacco, 6 percent each. This part of Greece accounts for 70 percent of the national peach production and provides substantial quantities of grapes, apples, pears, and cherries. Sugar beets are an important annual crop and, at present, production is fully up to processing capacity. Sorghum, olives, potatoes, melons, pulses, rice, tomatoes, and other vegetables are also important.

The most important cotton growing center in Macedonia is the Department of Imathia, located a short distance west of the city of Thessaloniki which also ranks first among all Greek departments in cotton acreage.



Second in cotton acreage is the Department of Thessaloniki which ranks fifth nationally. Third is Sérrai, which is northeast of the city of Thessaloniki and fourth is Pélla, located northwest of Thessaloniki.

In the Véroia area of Imathia, cotton occupies about half of the present irrigated area—the largest proportion in any major zone in Greece. Over the next few years there will be an increase of as much as 15 percent of the land under irrigation. Much of this increase will be based on well water.

The city of Thessaloniki is the major commercial center of northern Greece. It is a center for cotton production and ginning and about 60 percent of the cotton exported from Greece moves through it. Some 90 percent of the cotton in the area around this city is irrigated. From a profitability standpoint, cotton appears to enjoy an edge over wheat except possibly where labor costs are a major factor. Cotton also competes about evenly with high-yielding corn. Sugar beets and alfalfa are not considered competitive. In small areas, burley tobacco or vegetables give cotton some competition but they are not major competitors at this time.

Although a wide range of crops is grown in the Sérrai area, cotton appears to be in a rather strong competitive position. The main deterrent to cotton claiming a substantial share of the additional acreage being brought under irrigation in the years ahead, may well be the availability of labor. If labor is available, cotton might continue to expand because returns are attractive to farmers at present prices.

Some villages traditionally grow other crops and are not interested in cotton. One of the older and larger irrigated zones in the Sérrai area was laid out in such a way as to discourage cotton production—only rice and alfalfa are major crops. In contrast, other villages have traditionally raised cotton and parts of the area have some of the highest cotton yields in Greece. Sérrai has a lake bed with an area of 35,000 acres of which about one-fourth is in cotton. Half of the latter is irrigated with yields as high as 5,000 pounds of seed cotton per acre and average yield above 3,000 pounds.

The average size of land holding in the Sérrai area is 6.5 acres, and in the lake bed, 3.7 acres. However, there are a few farmers with 25 acres or more of cotton. The larger farmers face a major labor problem at picking time and are not expected to expand cotton acreage even though some find cotton to be a very profitable crop.

About 90 percent of the cotton is produced by owners in the Sérrai area. For those who rent the land they operate, irrigated land rents for \$65 to \$95 per acre, and unirrigated land rents for \$25 to \$40 per acre. About 60 percent of the farmers hire no help, and those who do employ some help, still do half of the work themselves.

*Thessaly*, which is located on the east side of Greece roughly 125 miles north of Athens, is the only region of Greece in which there has been an expansion in cotton production in recent years. Cotton production rose from 78,000 bales or 9 percent of the national total in 1955 to around 460,000 bales in 1969. Output rose again in 1970, to a third or more of the national total. Half of the cotton acreage in Thessaly is in the Department of Larisa, one-third in Kardhítsa and the remainder largely in Tríkala.

Cotton accounts for 8 percent of the agricultural acreage of Thessaly compared with 63 percent in grain, mostly wheat, 9 percent in hay, 8 percent in olives and other tree crops, and the remainder in a variety of other crops including grapes, corn, melons, vegetables, dry beans, peas, lentils, and tobacco. Sugar beets, especially around Larisa, are perhaps the most profitable crop, but the acreage, which is contracted, is relatively small, limited by milling capacity.

Over 95 percent of the cotton area in Thessaly is irrigated. The area had 18,000 irrigation pumps and 8,500 sprinklers in 1969. Sprinkler systems are expensive but yields are high and they are well suited to the Thessaly plain. In 1969, Thessaly had a total irrigated area of 320,000 acres and the goal is to enlarge irrigation coverage to 825,000 acres before the middle of the 1970s. About half of this would be from dams and the rest from underground water.

Present irrigation is mostly by individual, farmer-financed farm systems. Most of the water used thus far has been from wells—about 30 percent, artesian and the remaining 70 percent pump-type. Over one-third of the pumps were operated electrically.

Originally, about 300,000 acres of the land in Thessaly needed better drainage. About half of area has now had drainage improved and work is continuing. In 1969, public funds allocated for drainage work in Thessaly totaled over \$800,000.

Thessaly has the largest acreage of cotton per farm of any region of Greece. In 1968, it was 5.5 acres. The region also has more farms with 25 or more acres of cotton than any other region. They total 192, or 37 percent of all such farms in Greece.



Table 3.—Acreage and production of cotton, irrigated and nonirrigated, by regions, in Greece, selected averages, annual 1962-70

Area and year	Acreage			Production		
	Irrigated	Nonirrigated	Total	Irrigated	Nonirrigated	Total
<b>Peloponnesus:</b>						
Average:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Bales<sup>1</sup></i>	<i>Bales<sup>1</sup></i>	<i>Bales<sup>1</sup></i>
1935-38 .....	7,467	6,778	14,245	--	--	--
1947-49 .....	4,654	3,280	7,934	(2)	(2)	5,256
1950-54 .....	4,175	3,747	7,922	2,961	1,812	4,773
1955-59 .....	9,884	4,349	14,233	7,876	1,919	9,795
1960-64 .....	14,849	1,683	16,532	13,721	589	14,310
1965-69 .....	8,888	402	9,290	10,468	132	10,600
<b>Annual:</b>						
1962 .....	17,954	1,878	19,832	18,391	567	18,958
1963 .....	19,650	2,216	21,866	14,082	630	14,712
1964 .....	12,019	887	12,906	11,734	267	12,001
1965 .....	12,165	736	12,901	14,661	266	14,927
1966 .....	10,158	581	10,739	12,893	206	13,099
1967 .....	9,884	494	10,378	8,904	83	8,987
1968 .....	5,372	94	5,466	6,833	45	6,878
1969 .....	6,861	104	6,965	9,051	57	9,108
1970 <sup>2</sup> .....	4,967	106	5,073	6,324	64	6,388
<b>Central Greece:</b>						
Average:						
1935-38 .....	46,252	42,602	88,854	--	--	--
1947-49 .....	37,978	21,596	59,574	(2)	(2)	26,693
1950-54 .....	54,520	29,760	84,280	40,788	9,300	50,088
1955-59 .....	70,636	29,776	100,412	6,211	9,786	71,897
1960-64 .....	96,931	34,099	131,030	91,784	10,846	102,630
1965-69 .....	76,928	17,605	94,533	87,719	6,267	93,986
<b>Annual:</b>						
1962 .....	105,121	38,770	143,891	96,299	12,267	108,566
1963 .....	111,904	49,030	160,934	103,469	14,551	118,020
1964 .....	84,866	20,729	105,595	83,339	6,333	89,672
1965 .....	87,627	26,220	113,847	94,087	9,138	103,225
1966 .....	84,492	20,442	104,934	103,148	8,767	111,915
1967 .....	76,601	19,768	96,369	87,297	4,745	92,042
1968 .....	66,240	9,323	75,563	63,829	3,569	67,398
1969 .....	69,679	12,275	81,954	90,235	5,117	95,352
1970 <sup>2</sup> .....	53,257	7,203	60,460	70,764	3,568	74,332
<b>Epirus:</b>						
Average:						
1935-38 .....	--	--	--	--	--	--
1947-49 .....	--	--	--	--	--	--
1950-54 .....	598	212	810	294	59	353
1955-59 .....	9,207	2,560	11,767	6,125	1,166	7,291
1960-64 .....	14,543	2,454	16,997	13,360	1,706	15,066
1965-69 .....	15,038	1,050	16,088	18,598	1,006	19,604
<b>Annual:</b>						
1962 .....	17,611	2,530	20,141	15,005	1,636	16,641
1963 .....	16,118	2,777	18,895	15,682	2,102	17,784
1964 .....	13,398	2,397	15,795	15,834	2,500	18,334
1965 .....	16,190	1,362	17,552	19,239	1,426	20,665
1966 .....	13,698	1,290	14,988	18,051	1,891	19,942
1967 .....	14,332	1,483	15,815	19,210	835	20,045
1968 .....	15,132	571	15,703	16,792	335	17,127
1969 .....	15,839	544	16,383	19,696	544	20,240
1970 <sup>2</sup> .....	12,186	482	12,668	16,813	532	17,345

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Table 3.—Continued

Area and year	Acreage			Production		
	Irrigated	Nonirrigated	Total	Irrigated	Nonirrigated	Total
<b>Thessaly:</b>						
Average:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Bales<sup>1</sup></i>	<i>Bales<sup>1</sup></i>	<i>Bales<sup>1</sup></i>
1935-38 .....	1,216	20,613	21,829	--	--	--
1947-49 .....	400	2,972	3,372	(2)	(2)	1,307
1950-54 .....	2,669	12,772	15,441	2,059	4,326	6,385
1955-59 .....	37,767	27,398	65,165	30,726	8,709	39,435
1960-64 .....	50,879	17,777	68,656	47,842	6,075	53,917
1965-69 .....	75,913	5,189	81,102	105,737	2,403	108,140
<b>Annual:</b>						
1962 .....	52,642	15,390	68,032	49,098	4,375	53,473
1963 .....	74,380	41,587	115,967	67,093	13,742	80,835
1964 .....	42,731	6,239	48,970	45,503	2,833	48,336
1965 .....	50,561	7,201	57,762	64,400	3,598	67,998
1966 .....	66,975	5,946	72,921	91,853	2,751	94,604
1967 .....	80,308	6,178	86,486	125,283	2,506	127,789
1968 .....	86,680	3,565	90,245	85,094	1,388	86,482
1969 .....	95,042	3,052	98,094	162,057	1,768	163,825
1970 <sup>3</sup> .....	97,108	2,135	99,243	157,784	1,652	159,436
<b>Macedonia:</b>						
Average:						
1935-38 .....	6,015	37,831	43,846	--	--	--
1947-49 .....	5,651	34,978	40,629	(2)	(2)	24,435
1950-54 .....	15,451	83,119	98,570	15,922	55,786	71,708
1955-59 .....	64,824	105,517	170,341	72,439	59,421	131,860
1960-64 .....	146,335	65,605	211,940	149,539	30,530	180,069
1965-69 .....	119,336	16,808	136,144	156,580	7,901	164,481
<b>Annual:</b>						
1962 .....	164,665	67,530	232,195	167,531	31,776	199,307
1963 .....	169,355	52,736	222,091	165,341	21,389	186,730
1964 .....	114,864	31,246	146,110	117,341	15,001	132,342
1965 .....	94,797	20,201	114,998	114,602	10,449	125,051
1966 .....	107,755	19,616	127,371	146,418	9,129	155,547
1967 .....	123,550	19,768	143,318	173,693	8,385	182,078
1968 .....	133,800	11,347	145,147	144,321	4,899	149,220
1969 .....	136,781	13,107	149,888	203,866	6,641	210,507
1970 <sup>3</sup> .....	118,409	12,066	130,475	155,077	7,783	162,860
<b>Thrace:</b>						
Average:						
1935-38 .....	--	4,258	4,258	--	--	--
1947-49 .....	--	2,697	2,697	(2)	(2)	968
1950-54 .....	32	5,159	5,191	21	1,246	1,267
1955-59 .....	469	10,794	11,263	431	3,662	4,093
1960-64 .....	1,031	12,193	13,224	810	4,240	5,050
1965-69 .....	1,094	6,853	7,947	1,243	3,149	4,392
<b>Annual:</b>						
1962 .....	1,008	10,420	11,428	891	3,646	4,537
1963 .....	1,160	17,117	18,277	776	4,882	5,658
1964 .....	596	7,826	8,422	583	3,017	3,600
1965 .....	630	6,457	7,087	556	1,965	2,521
1966 .....	694	7,309	8,003	722	2,751	3,473
1967 .....	740	7,907	8,647	869	4,142	5,011
1968 .....	1,018	4,490	5,508	1,181	2,330	3,511
1969 .....	2,387	8,103	10,490	2,888	4,558	7,446
1970 <sup>3</sup> .....	4,877	10,383	15,260	5,881	6,010	11,891

-Continued

Table 3.—Continued

Area and year	Acreage			Production		
	Irrigated	Nonirrigated	Total	Irrigated	Nonirrigated	Total
<b>Islands:</b>						
<b>Average:</b>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Bales</i> <sup>1</sup>	<i>Bales</i> <sup>1</sup>	<i>Bales</i> <sup>1</sup>
1935-38 .....	84	1,510	1,594	--	--	--
1947-49 .....	49	3,800	3,849	(2)	(2)	1,006
1950-54 .....	896	6,651	7,547	998	1,840	2,838
1955-59 .....	5,416	4,977	10,393	4,603	1,214	5,817
1960-64 .....	5,790	5,769	11,559	5,169	986	6,155
1965-69 .....	4,641	2,450	7,091	4,515	286	4,801
<b>Annual:</b>						
1962 .....	6,196	6,570	12,766	6,352	2,122	8,474
1963 .....	6,746	6,519	13,265	5,400	905	6,305
1964 .....	5,056	3,827	8,883	5,400	334	5,734
1965 .....	5,817	4,990	10,807	5,083	523	5,606
1966 .....	5,127	2,629	7,756	5,123	292	5,415
1967 .....	5,189	2,718	7,907	4,694	351	5,045
1968 .....	3,845	1,322	5,167	4,210	186	4,396
1969 .....	3,230	590	3,820	3,463	84	3,547
1970 <sup>3</sup> .....	2,488	628	3,116	2,642	129	2,771
<b>Total:</b>						
<b>Average:</b>						
1935-38 .....	61,034	113,592	174,626	--	--	--
1947-49 .....	47,853	70,464	118,317	(2)	(2)	59,665
1950-54 .....	78,340	141,422	219,762	63,043	74,369	137,412
1955-59 .....	198,204	185,369	383,573	184,311	85,877	270,188
1960-64 .....	330,358	139,579	469,937	322,225	54,972	377,197
1965-69 .....	301,839	50,356	352,196	384,860	21,144	406,004
<b>Annual:</b>						
1962 .....	365,197	143,088	508,285	353,567	56,389	409,956
1963 .....	399,314	171,981	571,295	371,843	58,201	430,044
1964 .....	273,530	73,151	346,681	279,734	30,285	310,019
1965 .....	267,787	67,167	334,954	312,628	27,365	339,993
1966 .....	288,899	57,813	346,212	378,208	25,787	403,995
1967 .....	310,605	58,315	368,920	419,950	21,047	440,997
1968 .....	312,087	30,712	342,799	322,260	12,752	335,012
1969 .....	329,819	37,775	367,594	491,256	18,769	510,025
1970 .....	293,292	33,003	326,295	--	--	<sup>4</sup> 505,000
1971 <sup>3</sup> .....	301,000	23,500	324,500	--	--	542,000

<sup>1</sup> Bales of 480 pounds net. Converted from original data for unginned cotton on basis of average ginning percentages each year for entire country. This may introduce a small degree of error in figures for specific regions.

<sup>2</sup> Breakdown not available.

<sup>3</sup> Preliminary.

<sup>4</sup> Final production total. This figure is considerably larger than the sum of preliminary regional production figures for 1970.

Source: Compiled from reports of Hellenic Cotton Board.

Farming is probably more highly mechanized in Thessaly than in any other part of Greece. This also is true of cotton production. In fact, cotton production is now fully mechanized up to picking. The combination of larger-than-average farms and higher-than-average yields have contributed to the need to mechanize, and farmers have the management ability and financial means to do it successfully.

There were 42 mechanical cotton pickers in the region in 1969, but virtually none were used in 1969 or 1970 as the marketing situation made machine-picked cotton less profitable to the farmer than hand-picked cotton. In western Thessaly, cotton is largely picked by the owner's family but in eastern Thessaly it is necessary to hire labor.



*Central Greece*, which extends from the Aegean to the Adriatic Seas in a tier west-northwestward from Athens, was the leader in cotton acreage a generation ago, accounting for half of the acreage just before World War II. Cotton acreage in this region followed an upward trend until 1963, but since then has declined by 62 percent, with a fifty percent drop in irrigated, and an almost complete phasing out of nonirrigated acreage. In 1970, only 12 percent of Central Greece's acreage was nonirrigated compared to 30 percent in 1963. The region now accounts for only 19 percent of Greece's cotton acreage and 17 percent of the production.

By and large, trends in cotton acreage in Central Greece are similar to the national trends during the past two decades. Occasional sharp changes in cotton area from year to year reflect weather conditions. For example, a few years ago, unfavorable weather prevented planting of the usual acreage of wheat so cotton acreage was increased accordingly. Also, in some recent years, the low level of water in the reservoir, which also provides the city of Athens with an important part of its water supply, precluded the usual allocation for irrigation and this was reflected in lower cotton acreage. The development of a new source of water for Athens is now well advanced and in a few years it is expected that former supplies of irrigation water will once again be available.

Cotton currently accounts for only 5 percent of the acreage in crops in Central Greece compared to 44 percent in grain, mostly wheat, 16 percent in olives, 10 percent in hay, 6 percent in grapes, and the remainder largely in tobacco, corn, dry beans, peas, lentils, and other vegetables. Most of the cotton acreage is in and around Lake Kopais, near Levadhia, about 66 miles west-northwest of Athens. The Lake area comprises 50,000 acres of which 6,000 are privately owned and 44,000 are under project management.

Some of the small farms not in the Kopais Lake Project irrigate with small wells, but for the most part, farms in the project utilize a system of subsurface irrigation whereby the water level in the soil is raised sufficiently to restore the desired level of moisture to the root zone. This system, though inexpensive, is considered wasteful of water. For example, it is reported that it takes about 43,000 cubic feet of water to irrigate one acre with subsurface irrigation, while only 11,000 to 14,000 cubic feet would be required if applied with sprinklers. Subsurface irrigation is beginning to be replaced with sprinkler irrigation, which is higher in cost. It is not expected that the change will be a major factor during the next few years.

The soil is so rich and climate so generally favorable in the Lake Kopais area that many crops are considered. Choices tend to reflect the farmer's own labor supply which may, in turn, influence him to shift to more or less labor-intensive crops. Choices also reflect income and expense relationships. In recent years, winter grains—especially barley—have trended upward, and even more recently, corn, alfalfa (for seed) and tobacco have become crops of some importance, while cotton has declined to little more than half the extraordinarily high acreage of 1963.

Two new tomato paste factories and a frozen vegetable factory have opened opportunities for farmers in this area to market more vegetables.

*Other regions.*—Around 100,000 bales of cotton currently are grown elsewhere in Greece each year, including about 50,000 bales in the region of Epirus, along the northwestern coast; around 35,000 bales in Thrace, in the extreme northeast corner of Greece, 15,000 to 20,000 bales in the Peloponnesus Peninsula, southwest of Athens, and less than 10,000 bales on the Greek islands, very largely on the island of Lemnos near the Turkish mainland. Both irrigated and rain-grown acreage have declined substantially in these areas, collectively, since the early 1960's but yields have risen keeping production up.

In Epirus almost all of the cotton is grown on the plains around Prevéza and Árta, and is almost entirely under irrigation. In Thrace, the rain-grown acreage has been four times larger than the irrigated acreage in the past but the development of irrigation along the Néstos River near Xánthi is bringing additional land under irrigation. The irrigated cotton acreage rose from 740 acres in 1967 to 4,900 in 1970 and total production in Thrace was a record 11,891 bales in 1970 compared to 3511 bales in 1968.

The climate in Thrace is not very favorable for cotton production and the Cotton Breeding Institute is attempting to develop a quicker maturing variety that gives the farmer a bit more flexibility in both the spring and the fall. Over the next several years, moderate progress can be expected for cotton in Thrace, but the impact of developments in this area on the total cotton economy of Greece is not expected to be large.

Two of the plains in the Peloponnesus are devoted in part to cotton growing. One is in the South near Skála where 2,700 acres of cotton were grown in 1969, and the other is in the Northwest near Pírgos where 4,000 acres were grown in 1969. Neither of these is a large cotton zone and both are growing less cotton. Vegetable crops, tomatoes especially, are proving more profitable—particularly for farmers who would have to hire considerable labor



to produce cotton successfully. Tomatoes require more labor than cotton, but the profit margin is sufficiently high to encourage farmers to move in that direction. The expansion of the western irrigated zone will materially increase the irrigated area, and cotton may claim some of the additional irrigated acreage but, vegetable crops are expected to gain more acreage here as elsewhere in Peloponnesus.

### Number, size, and ownership of cotton farms

The number of cotton farms in Greece declined drastically from 142,505 in 1961 to 80,867 in 1964 and since then has fluctuated between 80,000 and 86,000. The average farmer today has only 4.5 acres of cotton—an acre more than in 1961, but probably among the smallest cotton holdings in the world. More than 80 percent of the cotton growers have only 7.4 acres or less with an average of less than 3. (Table 4).

Farms in Greece characteristically are made up of several noncontiguous tracts or "parcels." As recently as 1961, over 95 percent of the farms consisted of two or more parcels with an average of more more than 7.<sup>1</sup> This coupled with the small size of farms means that many plots are extremely small. The Greek civil code permits any form of division in inheritance, and heirs tend to want to share in all grades of land. The dowry, universal in rural Greece, is usually several plots of land, representing the diverse holdings of the donor. As a result there is a "division of land holdings into a great many awkwardly shaped plots which serve few if any considerations of agricultural efficiency or commerce."<sup>2</sup>

Fragmentation involves much unproductive time for moving from field to field and impedes mechanization and adoption of other modern technology with any degree of efficiency. Consequently, consolidation of fragmented holdings has become a matter of Government concern. In cases where farmers in a potential drainage and/or irrigation scheme seek public support for the project, it is required that farmers accept land consolidation and redistribution. The program was voluntary from 1953 to 1958 but since has been mandatory. During 1970, about 133,000 acres of land were consolidated under the government sponsored program making a total since 1953 of

Table 4.—Number of cotton growers in Greece, by acreage in cotton, total cotton acreage, and average cotton acreage per farmer, 1961, 1965-69

Item	1961	1965	1966	1967	1968	1969
<b>Farmers with:</b>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Under 7.4 acres . . . . .	126,469	73,948	75,253	73,616	68,510	69,275
7.4 to 14.8 acres . . . . .	12,137	7,655	8,891	9,407	9,459	11,169
14.8 to 19.8 acres . . . . .	1,886	923	1,087	1,353	1,230	1,608
19.8 to 24.7 acres . . . . .	906	424	464	546	487	663
24.7 and over acres . . . . .	1,107	455	494	538	521	573
<b>Total . . . . .</b>	<b>142,505</b>	<b>83,405</b>	<b>86,189</b>	<b>85,460</b>	<b>80,207</b>	<b>83,288</b>
<b>Cotton acreage:</b>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
<b>Total . . . . .</b>	<b>510</b>	<b>335</b>	<b>347</b>	<b>340</b>	<b>340</b>	<b>375</b>
<b>Average acres per farmer . . . . .</b>	<b>3.57</b>	<b>4.01</b>	<b>4.02</b>	<b>3.97</b>	<b>4.23</b>	<b>4.50</b>

Source: Hellenic Cotton Board.

<sup>1</sup>D. C. Myrick and Lawrence A. Witucki "How Greece Developed Its Agriculture, 1947-67," p. 28. U.S. Dept. of Agriculture, Washington.

<sup>2</sup>Ibid, p. 28.



909,000 acres. Cost of consolidation, which averaged \$20 per acre and \$32 if access roads were constructed, were borne by the Government.

As for land tenure, 98 percent of agricultural holdings are reported to be owner-operated. Ownership is generally without encumbrance, farms are not taxed and tenure is freely transferred by inheritance, gift, or sale. Few sales, however, occur.

### **Insect control**

Insect problems in Greece are less severe than in some of the other cotton growing countries. Major insects are cutworm, cotton aphid, wireworm, red spider, pink bollworm, and the bollworm.

The bollworm caused severe damage in Macedonia in 1967 and in all regions in 1968, but in 1969, 1970, and most other years, it was not a major problem. During 1971, there were local attacks by the pink bollworm, cotton bollworm, aphids, and the red spider but they were effectively controlled. Use of insecticides to control insects is more or less universal, but the number of applications required for effective control is small compared with high rainfall areas such as Central America. Typically, two or three applications appear to be dominant practice, but as many as six or eight applications have been reported.

The Government of Greece, acting through the Agricultural Bank, grants subsidies on machines for applying insecticides. The subsidy rate is 50 percent of the cost up to a maximum of \$50. While a subsidy of this size may not be great in terms of dollars, it is recognized as a major inducement for small farmers to buy suitable machines for insecticide application.

### **Plant diseases**

Plant diseases are not a major obstacle to cotton production in Greece. There is some restricted damage by bacterial blight and verticillium wilt. No Fusarium wilt has been reported in Greece.

### **Cost of production**

Basic costs of producing cotton are higher in Greece than in some other countries. Net costs before rent in 1968 (Table 5) ranged from 18 to 24 cents per pound. Costs after rent were still higher but few Greek farmers pay rent.

Two factors help make cotton an economic crop in Greece. One is that cottonseed receives a good price. In 1968, cottonseed was supported at \$106 to \$113 per U.S. short ton and in 1971, prices were also at about this level. In contrast, in the United States cottonseed sold for \$48 to \$60 per ton in the 1970-71 season. In calculating the cost of producing lint cotton the value of cottonseed is deducted from the gross cost.

The other factor is the subsidy paid on seed cotton, which was 2.4 cents per pound in 1968 and 2.1 cents per pound if hand picked and 3.3 cents if machine picked in 1969 and 1970. On a lint cotton basis the 1969-70 rates were equal to 6.0 cents and 9.4 cents per pound, respectively.

Preharvest labor costs ranged from \$65 per acre in Thessaly to over \$95 in Lakonia in 1968. Shortages of labor and rising labor costs are of considerable consequence to the future of the cotton industry in Greece. The amount of farm labor per acre of cotton has been reduced from about 40 man days to approximately 28 man days by means of mechanization. It is hoped that this figure will be reduced still further to as low as 12 to 16.

Direct costs other than labor ranged in 1968 from under \$40 per acre in Central Greece to over \$60 in Thessaly and Lakonia. Total costs after adjusting for the value of cottonseed, ranged from under \$110 per acre in Central Greece to nearly \$160 in Lakonia.

In 1968, the Lakonia area had the highest yields of any area covered in the cost study and the Acala 4-42 cotton grown there sold at a premium price. Net income was highest in Lakonia. Even so, this is one of the areas in which cotton receives keen competition from other crops, especially tomatoes for paste.

In normal years, the subsidy rate has allowed a reasonably efficient producer who achieves average or higher yields to make a good profit on his cotton. Even in 1968 when yields were lower than in 1967 or 1969, the cost study made by the Hellenic Cotton Board showed costs before rent fully covered in all areas.

Table 5.—Costs and returns per acre and per pound of producing cotton in selected irrigated areas in Greece, 1968

Item	Macedonia		Thessaly	Central Greece		Peloponnesus
	Thessaloniki	Imathia		Beotia	Aetolia-Akarnanias	Lakonia
Per Acre:	<i>Pounds per acre</i>	<i>Pounds per acre</i>	<i>Pounds per acre</i>	<i>Pounds per acre</i>	<i>Pounds per acre</i>	<i>Pounds per acre</i>
Yield:						
Lint .....	594	616	536	564	602	688
Cottonseed <sup>1</sup> .....	1,056	1,095	952	1,000	1,070	1,222
Seed cotton .....	1,650	1,711	1,488	1,564	1,672	1,910
Direct costs:	<i>Dollars per acre</i>	<i>Dollars per acre</i>	<i>Dollars per acre</i>	<i>Dollars per acre</i>	<i>Dollars per acre</i>	<i>Dollars per acre</i>
Preharvest labor .....	71.39	86.58	65.00	69.66	72.54	96.41
Harvest labor <sup>2</sup> .....	41.19	42.72	37.16	39.09	41.75	47.69
Other direct costs .....	61.95	45.29	68.06	38.36	43.20	69.99
Ginning .....	7.49	7.81	6.76	7.11	7.59	8.67
Land rent .....	47.23	74.79	74.36	66.24	47.23	41.10
Total cost. ....	229.25	257.19	251.34	220.46	212.31	263.86
Less value of seed <sup>3</sup> .....	55.92	58.00	50.45	53.07	56.68	64.74
Adjusted cost:						
Before rent .....	126.10	124.40	126.53	101.15	108.40	158.02
After rent .....	173.33	199.19	200.89	167.39	155.63	199.12
Gross Income:						
From sale of crop .....	199.73	206.38	188.45	192.75	215.36	260.17
Government payments .....	39.95	41.43	35.95	37.91	40.48	46.24
Total .....	239.68	247.81	224.50	230.86	255.85	306.41
Net income:						
Before paying rent .....	113.58	123.41	97.95	129.70	147.45	148.39
After paying rent .....	66.35	48.62	23.59	63.46	100.22	107.29
Per Pound of Cotton Lint:	<i>Cents per lb.</i>	<i>Cents per lb.</i>	<i>Cents per lb.</i>	<i>Cents per lb.</i>	<i>Cents per lb.</i>	<i>Cents per lb.</i>
Receipts from sales .....	24.2	24.1	25.7	24.8	26.3	28.4
Government payments .....	6.7	6.7	6.7	6.7	6.7	6.7
Total .....	30.9	30.8	32.4	31.5	33.0	35.1
Adjusted cost:						
Before rent .....	21.2	20.2	23.6	17.9	18.0	23.0
After rent .....	29.2	32.3	37.5	29.7	25.8	29.0

<sup>1</sup> Assumed to be 64 percent of weight of seed cotton.

<sup>2</sup> At 2.49 cents per pound of seed cotton.

<sup>3</sup> Seed cotton

at 5.29 cents per pound (3.50 drachmas per kilo) equivalent to \$106 per short ton.

Source: Hellenic Cotton Board. All data originally in drachmae.

In 1969 and 1970 some costs were higher but so were yields and it is certain that efficient farmers again made good profits. Even so, for many farmers, another crop may yield an even larger profit with less risk. Thus, even with detailed cost figures, it is not always easy to anticipate the cropping pattern that farmers will follow.

Greek money has been quite firm in recent years and free market exchange rates have hardly ever been higher than official rates. Greek cotton hasn't enjoyed the luxury of a declining price in U.S. cents at the same time as a rising price in local money, as has happened with cotton in some of the other exporting countries.



## Competitive crops

The acreage planted to cotton is now considerably lower than it was a few years ago. On the other hand, the production of certain specialty crops that compete more or less directly with cotton for land has increased markedly. For instance, sugar beets were of little or no importance in 1961 but since then production has risen to 663,000 tons in 1968 and 1.5 million tons in 1970. Recently plans have been announced for two new sugar factories. All sugar refining plants are owned by the government and sugar beets are bought at a fixed price. Farmers are reported to be enthusiastic at returns from sugar beets and the government has imposed production quotas to keep output within refining capacity. It is reported that 27 tons of sugar beets are produced per acre with a gross value of \$400.

Tomato paste production capacity expanded by 60 percent or 130,000 tons, in 1969. Exports of tomato paste are continuing to expand.

Production of cling-type peaches is expected to increase from 1,200 metric tons in 1970 to 12,000 tons in 4 to 6 years as a result of the establishment of a foreign-owned canning plant in the producing area. Production of fruit juices, and fruit and vegetable preserves is also expanding. Trends in the production of various crops in Greece are indicated by Table 6.

Other crops competing with cotton for land include alfalfa, which is being developed as a supplemental feed crop, and hybrid corn, which receives a support price of \$93 per ton, well above world prices, and which now is being imported on a large scale. Burley tobacco production, which is said to provide the highest income-per-acre is also being expanded.

Undoubtedly such crops enjoy increasing demand because of a rising standard of living, increased tourist trade, and the development of export markets. One of the key competitive factors in competition between cotton and other crops, however, is the proximity to processing plants.

Table 6.—Acreage in various crops, Greece, 1961, 1963, 1965, and 1967-70

Crop	1961	1963	1965	1967	1968	1969 <sup>1</sup>	1970 <sup>1</sup>
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Cereals:							
Wheat . . . . .	2,898	2,664	3,109	2,597	2,712	2,496	2,273
Corn . . . . .	447	457	356	330	366	361	393
Other cereals <sup>2</sup> . . . . .	1,018	886	919	1,235	1,132	1,180	--
Total . . . . .	4,363	4,007	4,384	4,162	4,210	4,037	--
Cotton . . . . .	510	570	335	340	340	375	326
Tobacco . . . . .	258	363	327	317	278	250	262
Sugar beets . . . . .	6	23	41	42	44	54	64
Tomatoes . . . . .	91	69	66	68	72	74	--
Other vegetables . . . . .	177	197	194	222	156	181	--
Melons, watermelons, potatoes. . .	226	236	216	234	228	222	--
Edible pulses . . . . .	398	308	307	261	224	--	--
Fodder plants <sup>3</sup> and seed <sup>4</sup> . . . . .	833	1,154	1,113	1,145	1,095	--	--
Grapes. . . . .	611	591	579	572	560	553	--
Olive trees . . . . .	1,029	1,107	1,158	1,196	1,226	1,614	--
Fruit and nut trees . . . . .	192	204	208	214	222	--	--
Other crops . . . . .	469	272	178	199	220	--	--
Total cultivated area . . . . .	9,163	9,101	9,106	8,972	8,875	8,715	--

<sup>1</sup> Preliminary.   <sup>2</sup> Barley, oats, rye, millets, rice, sorghum.   <sup>3</sup> Barley, oats, vetch, corn, clovers, etc., for hay, for green feed and roots, and as grasses for grazing.   <sup>4</sup> Vetch, peas, lentils.

Source: Compiled from Statistical Yearbook of Greece and Agricultural Statistics of Greece.



*Top, seed cotton is transported to the gin by oxcart. Fragmentation of farmland has resulted in many small plots. Cotton acreage per farm is among the smallest in the world, averaging only 4.5 acres and usually divided into several "parcels." Left, cotton being fed into gin suction pipe. Greece had 69 cotton gins in 1970.*

*Right, hand-picking Greek cotton. Usually the whole family helps with the work. In most areas, labor is hired only after children leave home, and even when help is employed, farmers still do half the work.*



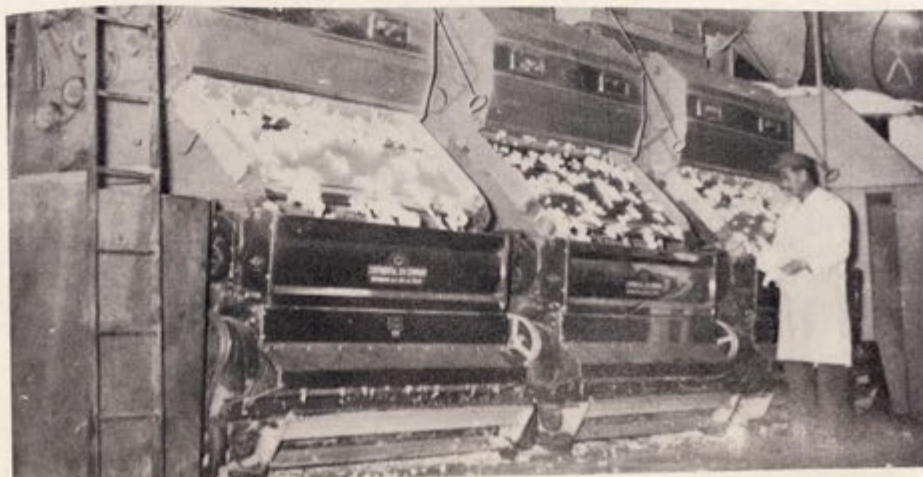




*Left, Nicholas Triantophyllides, of the U.S. Agricultural Attaché's office, Athens, discusses cotton crop with farmer at Skala. Above, bales of cotton stored at gin. Greece expects to produce 540,000 bales in 1971.*



*Above, cotton field beside irrigation canal. Most Greek cotton is grown under irrigation. Right, ginning cotton. Farmers sell about 99 percent of their crop as unginning seed cotton.*





Processing plants normally are not built until there is ample proof that the crop can be grown successfully at the price that is likely to be offered. For sugar beets, tomatoes for paste, and burley tobacco, a firm may initially contract for some farmers to grow small acreages even though the crop is not processed when ready for market. Once the plant is built, the firm will contract with farmers for the acreage that will supply its needs. The farmer, thereby, has an assured outlet at an agreed-upon price. Experience has shown that under such circumstances, cotton or other products will give way to the contract crop to the extent needed by the processing firm.

Minimum support prices provided by the Government of Greece on barley, wheat, corn, rice and sugar beets, as well as subsidies given on tobacco and cotton obviously affect competition among these crops. For instance, wheat inside the country is priced much higher relative to the world price than is cotton. In 1971, the minimum support price for wheat was raised by the Greek Government from \$106.67 per metric ton to \$113.33. As the world price for wheat declined, the internal price for wheat in June 1971 was approximately 67 percent above the world level compared with 50 percent a year earlier. The world market price level for cotton, on the other hand, rose substantially from the fall of 1969 to the fall of 1970 while the subsidy remained the same. The result was that the price of Greek cotton, taking account of the subsidy, was only about 19 percent over the world level compared to 23 percent in 1969.

Labor considerations are another key competitive factor. In general, labor is getting scarce. Former rain-grown cotton farms have shifted to forage crops. In some sectors, the family typically picks cotton, but in others, labor is hired. On a small family-type farm with a number of children at home, a labor intensive crop like cotton is favored over a less intensive grain crop like wheat or barley. After the children leave home, however, the farmer may have to decide whether to continue growing cotton and hire the additional labor that is needed, or whether to reduce his cotton crop in favor of some less labor-intensive crop. Some farmers, confronted with this situation, have shifted instead to a more labor-intensive crop such as tomatoes, which has a more promising profit margin and thus, bigger rewards for the added cost of additional farm labor.

Other farms have adjusted their operations to a changed farm labor situation by increasing their investment in labor saving machinery or hiring such machinery. This situation underlies the Government policy of encouraging the use of mechanical pickers, but to date, the problems of marketing machine-picked cotton have not been resolved.

The larger farmers are better able to mechanize their operations, but they also need to hire considerable labor and possibly to engage machinery. At times, the machine owner collects by taking a portion of the product. An example of this is the 10 percent toll paid the owner of a combine with a corn harvesting head for picking high yielding hybrid corn.

About one-third of the total cotton acreage is planted with no rotation. The other two-thirds is rotated, but the other crops used vary. On some land, winter grain is harvested by June and the land then remains idle until the following April when it is planted to cotton. The cotton then is picked in October and November, and winter grain is again planted.

On other land, cotton is rotated with cantaloups, watermelons, or other melons which are also summer crops. Still another rotation involves cotton, wheat or other grain, and sugar beets.

### **Mechanical cotton picking**

Greece is one of a comparatively few countries to own a number of mechanical cotton pickers. Greece first emphasized cotton in order to effectively use many workers who were not otherwise fully employed. Then, when the general employment situation for Greek workers improved, both in Greece and elsewhere in Western Europe, farm labor became scarce in many villages where cotton was important. This led to interest in further mechanization of cotton, including mechanical picking.

Most of the 70 mechanical pickers in Greece are owned privately, but a few are owned by two or more farmers, and three were bought by farmers cooperatives. About two-thirds of all pickers are in Thessaly, and one-fourth in Central and Western Macedonia.

In 1965, the Government granted a 70 percent subsidy toward the purchase of cotton pickers. This was lowered to 40 percent in 1966, and in 1970 only 30 percent was given if purchased by individual farmers but 50 percent if purchased by cooperatives. Farmers wishing to buy a picker first had to show that they had at least 100 to 125 acres of cotton. They also had to show the number of separate tracts into which their farms were divided, and



Table 7.—Imports of mechanical cotton pickers into Greece, by types, 1963-70

Year	United States		U.S.S.R.	Total
	International Harvester	Ben Pearson	XT - 1,2	
1963 . . . . .	1	--	--	1
1964 . . . . .	1	--	--	1
1965 . . . . .	9	--	6	15
1966 . . . . .	19	2	23	44
1967 . . . . .	3	3	--	6
1968 . . . . .	--	--	--	--
1969 . . . . .	2	--	--	2
1970 . . . . .	1	--	--	1
Total . . . . .	36	5	29	70

Source: The Hellenic Cotton Board.

the final allocations gave preference to the farmers with fewer plots. Also, farmers buying pickers had to accept the obligation to perform custom picking for other farmers in their community. All allocations were to farmers with irrigated farms since it was not considered practical to machine pick low-yielding rain-grown cotton.

Greece is probably the only country where both U.S. and Russian-made cotton pickers are used. One of the key factors in the farmer's choice of a U.S. or USSR cotton picker is the width of row for which they were engineered. U.S. machines are built for 38 to 40 inch rows, while Russian pickers are built for considerably narrower rows, which are more in keeping with farming practices in Greece.

The acreage picked mechanically has never been large in Greece. In 1965, a total of 1,100 acres was picked with machines. This increased to 5,000 acres in 1966. In 1967, some 5,200 acres were picked entirely, and 1,400 were partially picked by machines. Very few acres were picked by machines in 1969 but in 1970 around 2,500 acres were estimated to have been mechanically picked.

Ginning appears not to be a factor in the limited use of machines. When mechanical pickers were brought into Greece, it was decided to add appropriate gin equipment to certain gins so that machine-picked cotton could be adequately ginned. The Government subsidized 70 percent of the cost of the "additional machinery" for converting the gins. The initial three gins so equipped were at Lamia in Central Greece, Larisa in Thessaly, and Yiannitsa in Macedonia.

No major reliance has yet been placed on the use of mechanical pickers. Greek farmers and farm leaders point out that the marketing system in Greece leaves a great deal of doubt in the farmers' minds as to the prices they will receive for machine-picked cotton. Farmers recognize that the cost of hand picking—from 2.7 to 3.0 cents per pound of seed cotton in 1969 and 1970 compared to 1.5 cents 10 years ago, is high relative to the price received for seed cotton, and high relative to the cost of hiring cotton picked mechanically—about 1.2 cents per pound of seed cotton. Nevertheless, the prevailing view appears to be that even though mechanical picking will cost less than hand picking, the decline in market price would be greater still and the net income from machine-picked cotton would be smaller. At the same time there has been no general provision for machine-picked cotton in the present marketing system and few farmers have wanted to run the risk of economizing on picking costs only to risk losing even more upon selling their cotton. Owing to these factors, in 1969, 40 out of 41 mechanical harvesters in one region were idle.

To encourage mechanical picking, farmers in 1970 were given a subsidy payment of 3.3 cents per pound for mechanically-picked seed cotton compared to 2.1 cents per pound for hand-picked seed cotton (equal to 9.4 and

6.0 cents per pound of lint). The Government also encouraged the cooperatives to take over the marketing and exporting of mechanically-picked cotton. Nevertheless, not more than 3,000 bales were mechanically-picked in 1970.

There is a widespread belief that a bright future for the Greek raw cotton industry is closely associated with finding an effective way to mechanize cotton harvesting. At present, however, quality and marketing problems still remain to be worked out before mechanically-picked cotton will have a ready and satisfactory market.

## Ginning

There were 69 cotton gins in Greece in November 1970, two more than 2 years earlier. All were saw gins. Twenty-four had one stand; 10 had 2 stands; 13, 3 stands; 15, 4 stands; 3, 5 stands; and 4 had 6. (Table 8). Much of the crop is ginned on the larger installations where the equipment in general is better maintained.

Farmers sell 99 percent of their cotton in unginned seed cotton form. The exception is the large farmer, who sometimes has his own cotton custom ginned. About 10 percent of the crop is handled by the cooperatives who provide competition for private buyers who handle the rest. Around 20 percent of the gins belong to cooperatives; the rest belong to private concerns, largely cotton merchants, who buy cotton at their own ginning plants. Very few gins operate on a fee basis.

About 3,500 bales of cotton are sold unbaled for use in mattresses, and other items. The rest is sold in baled form. There are no high density bale compressing facilities in Greece, because to the great majority of export destinations, the saving in transportation costs is not enough to offset the extra cost of compressing. In the case of exports to Eastern Bloc countries the buyers often provide shipping facilities.

Typically, Greek cotton bales measure 55 x 28 x 43 inches. They weigh from 529 to 617 pounds but are mostly standardized at about 573 pounds gross weight and have a density of about 15 pounds per cubic foot. In contrast, the American so-called gin or uncompressed bale measures approximately 56 x 28 x 45 inches, weighs 500 pounds gross and has a density of 12 pounds per cubic foot. Greek bales are wrapped in light jute and fastened with 6 wires. Tare consists of about 3 pounds of bagging and 3.3 pounds of wire which is considerably lighter than the tare on U.S. bales. Each bale is identified by a metal tag, giving the ginning season, the gin, and the bale serial number.

The ginning season runs officially from Aug. 15 to Apr. 30, but most of the crop is ginned during the period October-January. All cotton is classified as to quality by the Hellenic Cotton Board.

Table 8.—Number and size of cotton gins in Greece, 1970

Number of stands	Privately owned	Cooperative owned
1 .....	<sup>1</sup> 21	3
2 .....	6	4
3 .....	<sup>1</sup> 9	4
4 .....	9	<sup>2</sup> 6
5 .....	2	<sup>3</sup> 1
6 .....	3	1
Total .....	50	19

<sup>1</sup> Three equipped with high capacity stands.

<sup>2</sup> Two equipped to gin machine-picked cotton.

<sup>3</sup> Equipped to gin machine-picked cotton.



## Varieties and quality

Through the years Greek farmers have shifted varieties considerably. The main forces in this changing picture have been the Hellenic Cotton Board, the Cotton Research Institute, and the Ministry of Agriculture.

The Hellenic Cotton Research Institute was founded in 1932, and has always been active in breeding to develop high yielding varieties with desirable agronomic and fiber properties under conditions found in Greece. All varieties grown for many years have been of American types of the *Gossypium hirsutum* species. In the early 1950's, a locally-developed variety, 2 Gamma, was quite important, accounting for 65 percent of the total area in 1955. At that time, Acala 4-42 was increasing rapidly and accounted for 28 percent of the area. Coker 100W entered the picture in 1956, accounting for over half of Greece's total acreage by 1960, and reached a peak of 73 percent in 1965. Both of these varieties were introduced from the United States and adapted through selection to ecological conditions in Greece. Meanwhile, Variety 10E, which represented a cross between 2 Gamma and 2X, increased from a negligible amount in 1956 to 25 percent of the total acreage in 1959, after which it gradually faded out of the picture, as its early maturing high yield characteristics were more than outweighed by the staple length advantage of other varieties.

Currently, the dominant variety is 4-S, which first was grown commercially in 1964. It resulted from a cross between 10E<sub>02</sub> and SUS<sub>08</sub>, a selection from the old U.S. variety Coker Wilds. 4-S accounted for more than half the total acreage by 1967, and in 1970 accounted for 87 percent. This variety is described in an official report to the International Cotton Advisory Committee as the highest yielding of any upland variety ever tested in Greece, and the most suitable for commercial production since it possesses an outstanding combination of agronomic characteristics, fiber characteristics, and adaptability. It reportedly has almost the same lint quality as Acala 4-42, and yields much better than Coker 100W. It has longer staple, and both higher seed cotton and lint yields than variety 10E, even though it has a lower gin outturn (Table 9). Variety 4-S is said to have a life cycle 8 to 10 days shorter than Acala cotton, and more uniformity in boll opening.

Only Acala 4-42 is grown in Peloponnesus, Epirus, and on the island of Lemnos. This variety accounted for 6 percent and Coker 100 Wilt for 7 percent of the acreage in 1970. The acreage otherwise is mainly 4-S. To maintain the uniformity of cotton production, the country has been divided into large zones in which only the varieties prescribed by the Ministry of Agriculture are grown.

One of the major points of emphasis in cotton improvement work is earliness. Cold soils in the spring place definite limits on how early a farmer can successfully plant cotton. Thus, the farmer is confronted with considerable pressure on the one hand to wait until the soil warms sufficiently to enable cotton to come up to a stand and grow effectively, and on the other hand, to have his cotton ready for picking before the fall rains cause the quality to deteriorate. This is one of the reasons for the popularity of Variety 4-S. However, an even earlier variety than 4-S is needed in Thrace if cotton production is going to make major headway in that region.

Table 9.—Comparison of yield and quality of specified cotton varieties in Greece

Item	Yield		Fiber length	Fiber strength Pressley	Micronaire	Lint percentage
	Seed cotton	Lint cotton				
164 trials, 1961-65:	<i>Pounds per acre</i>	<i>Pounds per acre</i>	<i>Millimeters</i>	<i>1,000 pounds</i>	<i>Index</i>	<i>Percent</i>
4S.....	1,892	696	28.0	81	3.8	36.4
Acala.....	1,500	580	27.6	82	3.8	38.3
Coker.....	1,660	634	27.7	77	3.7	37.7
10E.....	1,749	669	26.3	72	3.9	37.9
198 trials, 1961-68:						
4S.....	2,017	750	28.1	82	3.9	36.9
Acala.....	1,660	643	27.6	83	3.9	38.3
Coker.....	1,776	687	27.7	78	3.8	38.0

The Cotton Research Institute is working on the earliness problem and, to date, two new crosses show outstanding earliness. These maintain the yield level of 4-S, but are slightly shorter—averaging about 1-1/16" staple length compared with about 1-3/32" for 4-S.

Greek cotton leaders are especially pleased with the present characteristics of Variety 4-S, but are seeking to further improve the variety. They hope to improve the gin outturn without sacrificing other characteristics.

The annual report of Greece to the International Cotton Advisory Committee for 1971 stated, "in order to facilitate cotton transactions, total cotton production is classified bale by bale by experts of the Hellenic Cotton Board, which, as a government organization, ensures objectivity and impartiality in carrying out this work. Cotton classification is made according to Standards for Greek cotton, which, in general do not vary substantially from the Universal Standards for American Upland Cotton." Staple lengths, which are given in millimeters also have established equivalents in inches.

Results of the classification program indicate that the staple length of Greek cotton has increased very significantly over the years. Before 1956 it was mostly 31/32" and shorter. By 1970, 97 percent was 1-3/32" and longer, including 2 percent that was 1-1/8 inches. As for grades, the great bulk in recent years has been classed by the Greek authorities as White cotton, largely Strict Middling or Strict Middling/Middling. (Tables 10 and 11).

Samples of Greek cotton obtained in Western European markets that were considered to be Strict Middling were classed by U.S. official classers as Middling White or Middling Light Stopped. The samples were considered to be 1-3/32" or 1-1/8" in staple and this was confirmed by U.S. official classers.

Table 10.—Classification of Greek cotton crop by staple lengths, 1954-70

Year	Length and millimeter			
	25 millimeter and shorter	26 millimeter	27 millimeter	28 millimeter and longer
	Equivalent to			
	1 inch and shorter	1-1/32 inch	1-1/16 inch	1-3/32 inch and longer
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
1954 .....	60.1	20.8	7.8	11.3
1955 .....	56.3	21.4	11.1	11.2
1956 .....	29.3	29.6	17.6	23.5
1957 .....	27.4	28.7	21.9	22.0
1958 .....	19.5	42.3	26.3	11.9
1959 .....	9.1	46.8	30.3	13.8
1960 .....	7.1	49.7	34.0	9.2
1961 .....	1.5	28.5	56.8	13.2
1962 .....	4.0	30.4	52.7	12.9
1963 .....	2.3	29.7	59.8	8.2
1964 .....	2.5	19.5	65.4	12.6
1965 .....	.4	9.1	74.8	15.7
1966 .....	.7	6.6	72.0	20.7
1967 .....	.3	2.8	31.2	65.7
1968 .....	.2	2.1	19.5	78.2
1969 .....	--	.3	4.0	95.7
1970 .....	--	.1	2.6	97.3

Source: Hellenic Cotton Board.



Table 11.—Classification of Greek cotton crop by grade and color, 1954-70

Year	By grade—white and light spotted					By color		
	3, 3½	4, 4½	5, 5½	6, 6½	7, 8, 9	Total white	Light spotted and spotted	Tinted or gray
	Equivalent to U.S. grades <sup>1</sup>							
	GM and GM/SM	SM and SM/M	M and M/SLM	SLM and SLM/LM	Low middling and below			
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
1954 .....	12.7	56.2	22.8	6.3	2.0	--	--	--
1955 .....	5.6	39.0	32.3	17.4	5.7	--	--	--
1956 .....	20.4	62.8	14.6	1.8	.4	--	--	--
1957 .....	9.5	57.0	25.8	4.3	3.4	--	--	--
1958 .....	4.7	60.9	30.9	2.8	.7	--	--	--
1959 .....	2.8	63.4	29.2	4.1	.5	--	--	--
1960 .....	3.0	58.5	35.2	3.1	.2	92.0	7.9	0.1
1961 .....	5.1	72.8	19.6	2.2	.3	95.7	4.1	.2
1962 .....	2.7	60.1	26.2	6.5	4.5	86.6	12.7	.7
1963 .....	1.8	56.3	36.4	4.7	.8	83.4	16.4	.2
1964 .....	2.0	58.0	36.9	2.2	.9	89.5	10.0	.5
1965 .....	5.6	68.4	24.0	1.8	.2	95.0	4.8	.2
1966 .....	3.2	69.0	24.8	2.4	.6	96.0	3.6	.4
1967 .....	3.3	73.7	20.9	1.9	.2	97.3	2.7	--
1968 .....	3.5	72.7	22.4	2.0	.4	96.6	3.4	--
1969 .....	7.6	84.9	7.2	.2	.1	99.5	.5	--
1970 .....	6.1	77.6	13.8	1.0	--	98.5	1.5	--

<sup>1</sup> GM = Good Middling; SM = Strict Middling; M = Middling; SLM = Strict Low Middling; LM = Low Middling.

Source: Bulletins of Hellenic Cotton Board.

## Prices

Greece has a free market in cotton and as most cotton is exported, the price is largely determined by world supply and demand. Prices fluctuate considerably from season to season but in 1969-70, and early in the 1970-71 season were lower than at anytime since 1958-59. Actual cotton prices in Greece in 1970-71 averaged a little lower than in 1960-61 (Table 12). In contrast, the general wholesale price index had risen 22 percent from 1961 to early 1971 and the general wholesale index of foodstuffs had gone up 24 percent.

Most of the time in recent years, Greek cotton has been sold in Western European markets at a lower price than U.S. cotton of the same quality. This difference largely stems from the fact that the price of U.S. cotton often was strongly influenced by the Commodity Credit Corporation's (C.C.C.) price-support levels and reselling prices, while Greek cotton has sold freely without official intervention. In 1967-68 the U.S. cotton crop was the smallest in many years and the scarcity of better qualities caused the price of U.S. SM 1-1/16" cotton to rise to a peak of 37 cents in the Liverpool market. That season, Greek cotton sold at an average discount of 2.4 cents under the U.S. cotton of the same quality which was the largest discount in 15 years.

The following season, 1968-69, Greece had a short cotton crop at a time when U.S. prices were falling rapidly. As a result Greek prices averaged a cent per pound higher than U.S. prices. Greek cotton recovered its price advantage in 1969-70 but in December, 1970 - January, 1971, U.S. cotton temporarily was priced a little lower.

Greek cotton is largely sold by farmers in unginned form. Typical prices have been around 10 to 12 cents per pound since 1957 without as much fluctuation as in prices for ginned cotton.

Table 12.—Midmonth prices for Strict Middling cotton in Greece, 1956-1970

Year beginning August 1	Thessaloniki <sup>1</sup>		Athens <sup>2</sup>	
Yearly average	<i>Cents per lb.</i>		<i>Cents per lb.</i>	
1956 .....	34.3		36.1	
1957 .....	30.3		32.4	
1958 .....	26.5		27.9	
1959 .....	28.4		29.4	
1960 .....	29.4		30.7	
1961 .....	28.0		29.3	
1962 .....	27.8		29.2	
1963 .....	27.6		29.1	
1964 .....	28.9		30.9	
1965 .....	27.9		29.4	
1966 .....	27.2		28.8	
1967 .....	30.3		31.1	
1968 .....	30.0		31.4	
1969 .....	26.7		26.7	
1970 .....	29.3		29.3	
Monthly prices	1969	1970	1969	1970
August .....	30.1	27.0	30.1	26.7
September .....	27.5	26.8	27.4	26.9
October .....	26.8	27.1	26.6	26.9
November .....	25.9	27.7	25.9	27.8
December .....	26.0	29.6	26.3	28.9
January .....	26.5	29.6	26.6	29.9
February .....	26.4	29.7	26.5	29.7
March .....	26.1	29.7	26.2	29.6
April .....	25.9	30.1	25.9	30.1
May .....	25.9	30.9	25.9	31.2
June .....	25.9	31.9	26.0	31.8
July .....	27.1	31.9	26.5	31.9

<sup>1</sup> For Macedonia cotton until October 1969; thereafter not specified. For 31/32" - 1-1/32" until September 1961, 1-1/32" until September 1964, 1-1/16" until October 1967 and 1-3/32" thereafter. <sup>2</sup> For Peloponnesus cotton until October 1969; thereafter not specified.

Compiled from monthly bulletins of Hellenic Cotton Board. Prices converted at 30 drachmae per dollar.

In addition to the price received by farmers in the local market, they also receive subsidy payments from the Government. Such subsidies are not unique in Greece because subsidies also are given oriental tobacco, and minimum prices are guaranteed for several grain crops as well as sugar beets. From 1960 through 1962 the subsidy was at the rate of \$10.79 per acre of irrigated cotton and \$6.75 per acre of nonirrigated cotton. These rates were virtually doubled from 1962 to 1964, reflecting rising costs, especially in wage rates. (Table 13).

In November 1965, the incentive payment was changed to the equivalent of 2.3 cents per pound of seed cotton produced and sold. The rate was raised slightly in 1968 but lowered to 2.1 cents in 1969 and 1970, reportedly to encourage increased efficiency in production and as a part of a general policy of reducing subsidies. It was hoped this action would not adversely affect the achievement of production goals.



Table 13.—Subsidies paid to cotton farmers in Greece for seed cotton 1960-70<sup>1</sup>

Year	All cotton		Nonirrigated cotton
	<i>Cents per pound</i>	<i>Cents per pound</i>	<i>Cents per pound</i>
1960 .....	2.6	--	1.8
1961 .....	3.1	--	2.1
1962 .....	2.8	--	1.8
1963 .....	2.1	--	1.1
1964 .....	1.5	--	1.0
1965 .....	1.8	--	1.0
1966 .....	--	2.3	--
1967 .....	--	2.3	--
1968 .....	--	2.4	--
1969 .....	--	<sup>2</sup> 2.1	--
1970 .....	--	<sup>2</sup> 2.1	--

<sup>1</sup> Prior to 1965 actual subsidy was on basis of acreage in cotton. During 1960-62, subsidy was equivalent to \$10.79 per acre of irrigated cotton and \$6.75 per acre of nonirrigated cotton; 1963, \$13.49 and \$9.44, and 1964-65, \$20.24 and \$12.14. Figures given for these years are subsidies per acre divided by average yields. After 1965 the subsidy was on a kilogram basis with no differentiation as to irrigated and nonirrigated cotton.

<sup>2</sup> 3.3 cents if machine-picked.

Current payments represent a subsidy of around 20 percent compared to the farmers' price for unginned cotton, and are the equivalent of about 5.8 cents per pound of lint.

The Hellenic Cotton Board issues quality differentials to be used in commercial transactions. The differentials consist of percentage premiums or discounts from the base quality of Grade 5, 26 mm. (M 1-1/32"). The differentials cover a much wider range of grades and staples than are produced in any quantity in the Greek crop which is actually quite homogenous in quality.

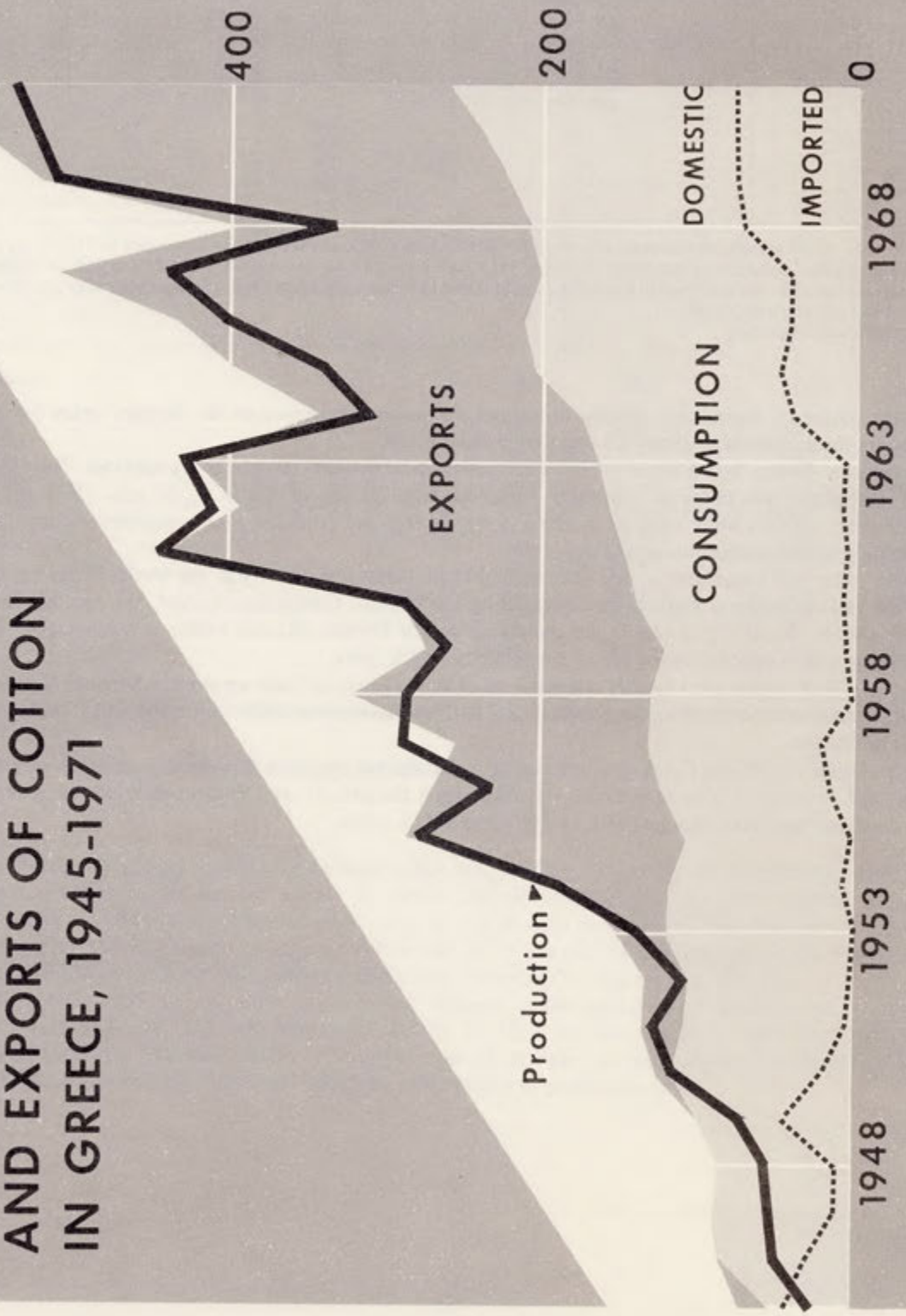
Cotton prices in Greece are as well documented as probably any country in the world. Prices for unginned cotton in the various producer markets are compiled by the Hellenic Cotton Board. Also, the monthly bulletin of the Hellenic Cotton Board gives prices in the central markets of Thessaloniki and Athens in drachmae per kilogram of lint cotton as well as prices ruling in export transactions in U.S. cents.

Prices of Greek cotton are probably strengthened at least slightly by trade agreements between Greece and the communist countries of Eastern Europe and the U.S.S.R. These agreements enable purchases which otherwise might be difficult to finance.

The exchange rate of the Greek drachma versus the dollar has remained firm at 30 drachmae to the dollar for many years and commercial rates have varied very little from the official rate. Consequently cotton price trends in Greece in drachmas have been identical with export prices in U.S. cents.

# PRODUCTION, CONSUMPTION, AND EXPORTS OF COTTON IN GREECE, 1945-1971

THOUS. BALES  
(480 LB. NET)



YEAR BEGINNING AUGUST 1



## International Trade

In recent years Greece has exported between 175,000 and 310,000 bales of cotton annually, which makes it not one of the largest exporters in the world but still a very substantial shipper.

Most of Greece's exports of cotton are to Eastern Europe and the USSR. Exports to the Soviet Union increased very substantially in 1969-70 and the USSR became Greece's largest cotton buyer, taking 74,000 bales, but exports to this destination declined to only about 11,000 bales in 1970-71.

The second most important purchaser was Yugoslavia, which takes around 50,000 bales annually. Bulgaria, Czechoslovakia, Hungary, Poland, and Romania all buy moderately large quantities each year. (Table 14) Some of the cotton sold to these countries is said eventually to arrive in Western Europe via triangular trade deals, but it is difficult to determine statistically how much cotton is involved.

Greece is, of course, geographically close to the Communist countries of Eastern Europe and the Soviet Union. There are only 3 days shipping time to Odessa, USSR compared with 7 days to Northern Europe. As stated by a leading Greek cotton exporter, "reduced transport expenses and easy handling in general help Greek cotton to be absorbed in a large proportion by the Eastern countries." Marketing is well developed through a number of well-organized exporters.

Trade with Eastern Europe and the USSR is facilitated by bilateral trade agreements. The agreements typically provide for trade up to a certain monetary amount and give lists and quantities of commodities to be exchanged.

Table 14.—Exports of cotton from Greece by country of destination, averages 1950-64 and annual 1965-70, year beginning Aug. 1<sup>1</sup>

Area and country	Average			1965	1966	1967	1968	1969	1970 <sup>2</sup>
	1950-54	1955-59	1960-64						
	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>	<i>1,000 bales<sup>3</sup></i>
<b>Bloc countries:</b>									
Bulgaria .....	0	6	13	17	15	18	18	12	19
Czechoslovakia .....	0	6	12	14	20	12	13	18	19
Hungary .....	0	6	18	27	29	22	18	30	17
Poland .....	0	5	23	22	23	16	15	27	10
Romania .....	0	2	2	6	0	13	3	22	9
USSR .....	0	4	27	17	40	23	16	74	11
<b>Total .....</b>	<b>0</b>	<b>29</b>	<b>95</b>	<b>103</b>	<b>127</b>	<b>104</b>	<b>83</b>	<b>183</b>	<b>85</b>
<b>EC countries:</b>									
Belgium and Luxembourg .....	( <sup>4</sup> )	2	3	1	( <sup>4</sup> )	8	( <sup>4</sup> )	2	3
France .....	9	51	14	1	2	14	3	12	14
Germany, West .....	( <sup>4</sup> )	4	5	( <sup>4</sup> )	0	7	2	7	18
Italy .....	11	31	18	6	13	35	9	17	52
Netherlands .....	( <sup>4</sup> )	( <sup>4</sup> )	7	1	1	7	1	2	1
<b>Total .....</b>	<b>20</b>	<b>88</b>	<b>47</b>	<b>9</b>	<b>16</b>	<b>71</b>	<b>15</b>	<b>40</b>	<b>88</b>
<b>Other countries:</b>									
Israel .....	0	4	6	6	7	10	6	0	( <sup>4</sup> )
Portugal .....	0	1	12	4	7	23	10	2	6
Spain .....	( <sup>4</sup> )	1	2	17	1	19	7	2	30
Switzerland .....	( <sup>4</sup> )	( <sup>4</sup> )	4	1	1	19	6	9	9
United Kingdom .....	3	1	4	( <sup>4</sup> )	1	9	4	1	11
Yugoslavia .....	5	22	50	51	60	50	49	57	46
Other countries .....	2	14	4	1	2	4	( <sup>4</sup> )	( <sup>4</sup> )	<sup>5</sup> 23
<b>Total .....</b>	<b>10</b>	<b>43</b>	<b>82</b>	<b>80</b>	<b>79</b>	<b>134</b>	<b>82</b>	<b>71</b>	<b>125</b>
<b>Grand total .....</b>	<b>30</b>	<b>160</b>	<b>224</b>	<b>192</b>	<b>222</b>	<b>309</b>	<b>180</b>	<b>294</b>	<b><sup>6</sup> 298</b>

<sup>1</sup> Exports were small prior to 1950-54. <sup>2</sup> August-June, preliminary. <sup>3</sup> Bales of 480 pounds net. <sup>4</sup> Less than 500 bales. <sup>5</sup> To Japan. <sup>6</sup> Exports for full year are estimated at 305,000 bales.

Source: Monthly Bulletin of External Trade Statistics and the Hellenic Cotton Board; U.S. Agricultural Attaches and other representatives abroad.

Such commodities as lumber, machinery, tractors, farm equipment and plant equipment figure in the products purchased from the USSR, in return for cotton. From Yugoslavia, cattle, meat, paper products, machinery, and other items are traded for cotton. The Eastern countries reportedly often pay 3 to 4 percent more for Greek cotton than the Western European countries but it is likely that the goods moving the other way also are higher priced.

Trade in cotton with the European Community (EC) has not usually been a major factor in Greece's export cotton business despite Greece's associate relationship. At the same time, trade with other Western European countries has been relatively small. It should be noted, however, that Greek exports to Western Europe more than doubled from 54,000 bales in all of 1969-70 to 139,000 bales in the 10-month period August 1970-June 1971. This probably reflected the rise in world cotton prices in 1970-71 and the difficulty in Western Europe of obtaining supplies from some other sources. Nearby Italy is usually the most important Western European buyer of Greek cotton. A moderate quantity of cotton was sold to Japan in 1970-71 for the first time in at least many years.

Greek shippers point out that it costs more to ship Greek cotton than Turkish cotton because of the absence of high density compress facilities in Greece. This doesn't make very much difference to nearby destinations but it does to Japan and other far points.

Although Greece is a substantial exporter of cotton, it is also an importer of cotton. In fact, Greece follows the most liberal import trade policy on cotton of any important cotton exporting country. Imports are not subject to quantitative restrictions and are free of duty if imported by the local spinning industry. They rose from near zero in the 1950's to around 50,000 bales annually in the latter 1960's, and to as high as 91,000 bales in the peak import year of 1968.

As noted earlier, Greek cotton is now largely 1-3/32" in staple length and above Middling in White grades. These qualities enjoy a generally strong export demand and to a large extent are better than are needed to produce many of the textiles manufactured in Greece. The individual consuming mills therefore appreciate the opportunity to import less expensive cotton that is still adequate for their needs.

Since the early 1960's Turkey has replaced the United States as the major source of imported cotton, although the United States had a temporary comeback in 1968 and again sold several thousand bales in 1971. (Table 15).

Table 15.—Greek imports of cotton by country, annual 1950 - 70

Year	Turkey	United Arab Republic	United States	Other	Total
	<i>1,000 bales<sup>1</sup></i>	<i>1,000 bales<sup>1</sup></i>	<i>1,000 bales<sup>1</sup></i>	<i>1,000 bales<sup>1</sup></i>	<i>1,000 bales<sup>1</sup></i>
1950 .....	0	1	13	8	22
1951 .....	0	1	( <sup>2</sup> )	0	1
1952 .....	0	1	0	0	1
1953 .....	0	1	( <sup>2</sup> )	0	1
1954 .....	0	1	8	( <sup>2</sup> )	9
1955 .....	0	1	1	( <sup>2</sup> )	2
1956 .....	0	1	16	2	19
1957 .....	0	3	16	2	21
1958 .....	0	1	( <sup>2</sup> )	0	1
1959 .....	0	2	6	0	8
1960 .....	0	2	4	1	7
1961 .....	0	1	( <sup>2</sup> )	3	4
1962 .....	5	2	0	2	9
1963 .....	2	1	0	7	10
1964 .....	34	2	2	8	46
1965 .....	35	2	2	5	44
1966 .....	22	25	1	6	54
1967 .....	5	24	16	( <sup>2</sup> )	45
1968 .....	54	26	9	2	91
1969 .....	27	19	1	5	52
1970 <sup>3</sup> .....	--	--	--	--	<sup>4</sup> 41

<sup>1</sup> Bales of 480 pounds.

<sup>2</sup> Less than 500 bales.

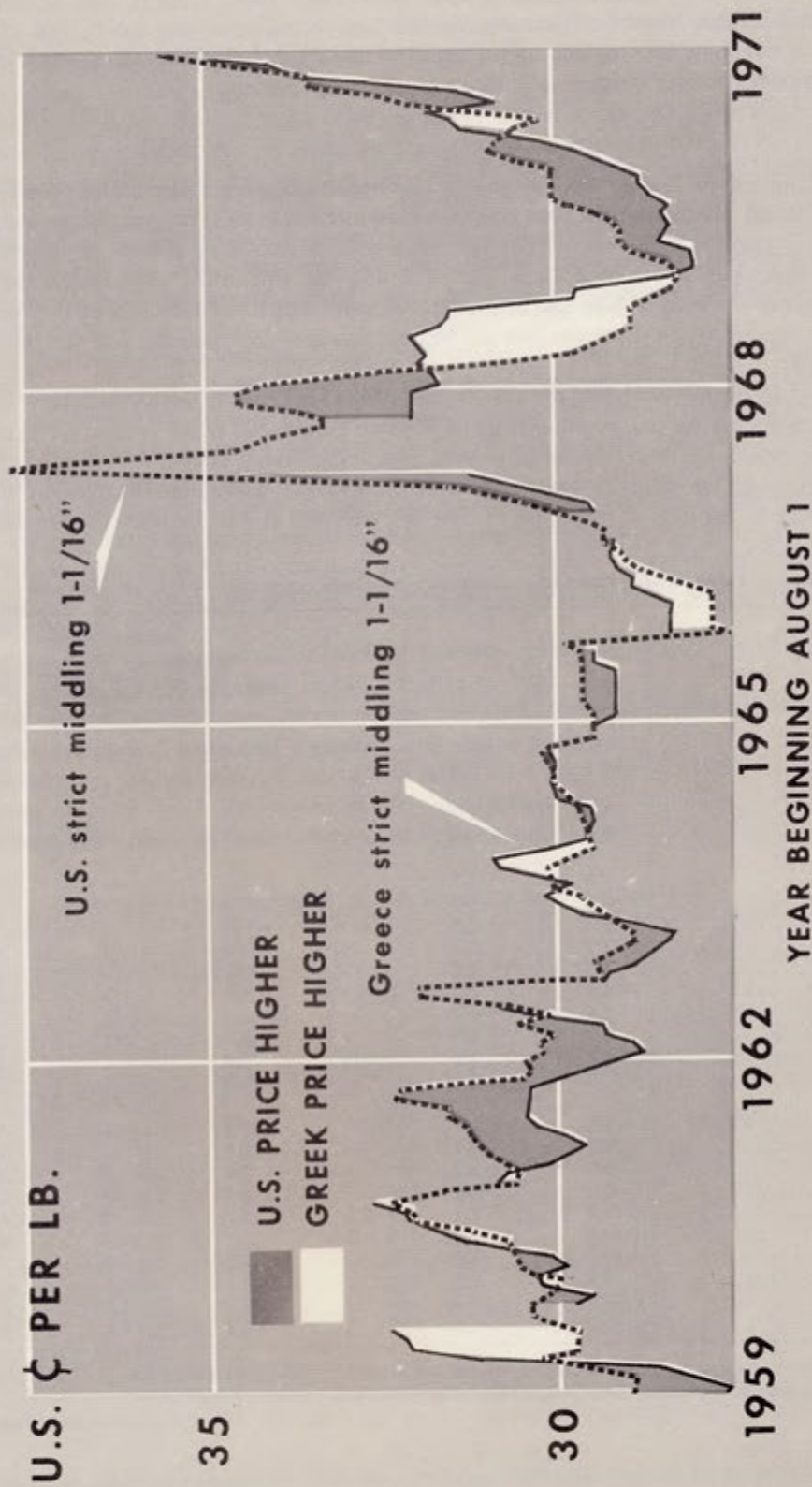
<sup>3</sup> August - June.

<sup>4</sup> Country breakdown not available.

Source: Monthly Bulletin of External Trade Statistics of Greece.



# C.I.F. PRICES FOR U.S. AND GREECE STRICT MIDDLING 1 1/16" COTTON AT LIVERPOOL



Much of the Turkish cotton is said to consist of lower grades from Adana which are used in making coarse yarns for weaving. The United Arab Republic, however, also has been a major supplier since 1966. This cotton is mostly long-staple cotton but some is extra-long staple, useful in making fine yarns. An advantage is that it can be bought with clearing balances owed to Greece.

## Textiles

The consumption of textiles by the people of Greece has been rising steadily over the years. The mill consumption of fibers adjusted for the fiber content of imports and exports of yarn, fabric, and other textiles shows that the average person in Greece has been consuming a total of around 20 pounds per capita per year of cotton, wool, linen and manmade fibers since 1965. This is double the amount he consumed in the early 1950s and 50 percent more than in the early 1960s. The 20 pounds compares with a world average of 13.2 pounds; an average for Yugoslavia and Turkey of 14.6 pounds; for all Western Europe, 28.2 pounds; and for the United States, 48.3 pounds. (Table 16).

A little over 10 pounds per capita per year, or half of the fiber used in Greece, is cotton. This is about equal to the average per capita cotton consumption in all of Western Europe and to the average for Turkey. It is higher than Yugoslavia's 7 pounds, but is far below the 21 pounds used in the United States.

The market for cotton and other textiles in Greece derives only limited benefit from the growth of population, which is increasing at the rate of only 0.66 percent per year. But it does derive very considerable benefit from a

Table 16.—Per capita fiber availability, for Greek consumers<sup>1</sup> 1938 and 1948 - 69

Year	Cotton	Wool	Flax <sup>2</sup>	Manmade fibers			Total fibers
				Rayon	Noncellulosic	Total	
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
1938 .....	6.3	2.2	--	0.1	--	0.1	8.6
1948 .....	5.9	1.4	--	.3	--	.3	7.6
1949 .....	6.0	2.1	--	.6	--	.6	8.7
1950 .....	7.0	2.3	--	1.1	--	1.1	10.4
1951 .....	8.1	2.3	--	.7	--	.7	11.1
1952 .....	6.5	2.3	--	.7	--	.7	9.5
1953 .....	7.1	3.2	--	1.0	( <sup>3</sup> )	1.0	11.3
1954 .....	7.7	2.1	--	1.8	( <sup>3</sup> )	1.8	11.6
1955 .....	6.8	2.2	--	1.9	( <sup>3</sup> )	1.9	10.9
1956 .....	7.5	1.9	--	2.1	( <sup>3</sup> )	2.1	11.5
1957 .....	8.2	2.3	--	2.5	( <sup>3</sup> )	2.5	13.0
1958 .....	8.6	2.6	--	2.4	.1	2.5	13.7
1959 .....	7.7	2.4	--	1.8	.1	1.9	12.0
1960 .....	7.6	2.7	--	2.5	.1	2.6	12.9
1961 .....	8.3	3.1	--	2.6	.1	2.7	14.1
1962 .....	9.1	2.9	--	2.4	.2	2.6	14.6
1963 .....	8.7	4.8	--	2.7	.3	3.0	16.5
1964 .....	9.3	3.3	0.3	3.6	.9	4.5	17.4
1965 .....	10.3	3.7	.2	3.5	1.2	4.7	18.9
1966 .....	10.5	3.9	.2	4.2	1.5	5.7	20.3
1967 .....	10.8	3.5	.2	3.5	1.8	5.3	19.8
1968 .....	9.9	3.7	.2	3.5	2.5	6.0	19.8
1969 .....	10.2	3.7	.2	3.3	3.1	6.4	20.5

<sup>1</sup> Mill consumption adjusted for fiber content of exports and imports of fiber manufacturers. 1964.

<sup>3</sup> Less than 0.05 percent fiber consumption. Compiled from reports of the FAO.

<sup>2</sup> Not available prior to 1964.



rapidly rising standard of living. During 1960-68 the gross domestic product of Greece at constant prices, per capita, rose an average of 6.4 percent annually while the per capita consumption of all textiles, in fiber equivalents, rose 5.4 percent annually (1960-69). This was despite setbacks in 1967 and 1968.

The ultimate offtake of cotton goods has not fared as well as textiles generally because of increased competition from manmade fibers. The per capita consumption of cotton goods rose an average of 3.5 percent per year during the 1960s. In other words, the per capita consumption of cotton textiles has been rising 55 percent as fast and the per capita consumption of all textiles has been rising 85 percent as fast as the per capita gross domestic product of Greece.

In 1950, 67 percent of the textiles used in Greece were made of cotton as compared to 22 percent wool and 11 percent, rayon and acetate, and zero, other manmade fibers. By 1969, cotton's share had declined to 50 percent and wool's to 18 percent, while rayon and acetate's share had risen to 16 percent and other manmade fibers including polyester and nylon, to 16 percent.

The market for textiles in Greece is largely supplied by the Greek cotton textile industry, which dates back many years and a generation ago consisted mainly of very small mills. The mills were geared to produce the kinds of cotton textiles that were in greatest demand by a generally poor nation. It took some time after the secession of hostilities following World War II to replace and repair destroyed and damaged equipment because of the tight foreign exchange situation that prevailed for a number of years.

Since Greek has become more prosperous, mills that once were characterized by old machinery have been modernized. Some entirely new mills have been established and considerable new machinery has been installed in older mills. In 1971 there were some 32 spinning mills and 50 weaving mills. A number of the mills have integrated spinning and weaving. The two largest firms account for about half of the total industry and the next 12 in order of size account for about 20 percent.

The spinning and weaving capacity of the industry has been rapidly expanding. Spindle numbers increased from a quarter of a million in 1950 to a peak of half a million in 1965. There was a decline of about 50,000 by 1968, presumably representing a replacement of old equipment with a smaller number of higher speed spindles. But the industry is again expanding and about 140,000 new spindles are to be added by the end of 1971.

Data on loom numbers are not available over a long period, but from 1965 to 1969 the number of ordinary (nonautomatic) looms declined from 5,000 to 3,300 while the number of automatic looms increased from about 2,700 to 3,600. About 500 additional looms were to be installed by the end of 1971. (Table 17).

Table 17.—Spindles and looms in Greece, 1950, 1955, 1960-71

Year	Cotton spinning spindles	Looms <sup>1</sup>		
		Automatic	Ordinary	Total
	<i>1,000</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
1950.....	246	(2)	(2)	(2)
1955.....	376	(2)	(2)	(2)
1960.....	410	1,830	4,270	6,100
1961.....	410	1,900	4,100	6,000
1962.....	408	2,286	5,287	7,573
1963.....	417	2,388	5,038	7,426
1964.....	442	2,846	5,017	7,503
1965.....	502	2,707	5,023	7,730
1966.....	491	2,855	4,511	7,366
1967.....	490	2,855	4,385	7,240
1968.....	450	3,400	3,400	6,800
1969.....	451	3,590	3,300	6,890
1970.....	422	--	--	7,500
1971.....	480	--	--	7,700

<sup>1</sup> Includes installed rayon looms.

<sup>2</sup> Not available.

Source: European Cotton Industry Statistics, IFCATI, except 1970 and 1971 data which are from Greece's official statements to the I.C.A.C.

The mill consumption of cotton in Greece has risen from a little over 100,000 bales annually in the early 1950's to an average in excess of 200,000 bales annually since 1965. In the 1950's all but a few thousand bales was of domestic origin. The rest came mainly from the United States with a little from the U.A.R. and Syria. In the last few years, however, from a fourth to a third of the cotton consumed in the mills has been imported, mostly from Turkey and the U.A.R. (Table 18).

The mill consumption of cotton in Greece did not keep pace with the rise in domestic cotton production for many years but the situation now may be changing. In 1955-59 total mill consumption of cotton was equal to 45 percent of cotton production; in 1960-64 it was equal to 41 percent; in 1965-69 to 51 percent.

Besides cotton, Greek cotton spinning mills spin a few million pounds of rayon staple and a small amount of synthetic staple fibers, but these amounted to less than 2 percent of the quantity of cotton consumed in 1969. Taking account of all textile mills including woolen mills and those processing continuous filament manmade fibers, however, cotton represented only 62 percent of the fibers consumed at the mill level compared to 71 percent in 1960. (Table 19).

Of Greece's production of cotton yarn, practically all that is used domestically is manufactured into woven fabrics. Very little is used in knit goods or carpets.

Since World War II, at least, Greece has imported very little cotton yarn and, during the 1950's, exported very little. In the 1960's, however, exports of yarn increased rapidly and in 1965-69 averaged 6,508 metric tons annually, or 17 percent of Greece's cotton yarn production. Such a quantity required approximately 35,000 bales of cotton annually. (Table 20).

The bulk of Greece's exports of cotton yarn goes to countries in the EC. The Federal Republic of Germany takes half of the total and the Netherlands 20 percent. Exports to the United States totaled 1,925 metric tons in 1966 but since have dropped to nearly zero. Exports to Eastern Europe also have declined.

Table 18.—Mill consumption of raw cotton in Greece, 1948-70

Year <sup>1</sup>	Domestic	Imported	Total
	<i>1,000 Bales<sup>2</sup></i>	<i>1,000 Bales<sup>2</sup></i>	<i>1,000 Bales<sup>2</sup></i>
1948 .....	--	--	80
1949 .....	--	--	91
1950 .....	87	22	109
1951 .....	104	3	107
1952 .....	101	2	103
1953 .....	114	1	115
1954 .....	104	8	112
1955 .....	99	2	101
1956 .....	103	16	119
1957 .....	107	22	129
1958 .....	124	3	127
1959 .....	113	5	118
1960 .....	126	9	135
1961 .....	138	5	143
1962 .....	145	7	152
1963 .....	153	7	160
1964 .....	133	41	174
1965 .....	149	50	199
1966 .....	161	45	206
1967 .....	153	45	198
1968 .....	130	75	205
1969 .....	145	80	225
1970 <sup>3</sup> .....	160	80	240

<sup>1</sup> Year beginning Aug. 1.

<sup>2</sup> Bales of 480 pounds net.

<sup>3</sup> Estimated.

Source: Statements of Greek delegations to the Plenary Meetings of ICAC and manuscript data.



Table 19.—Mill consumption of cotton, wool, and manmade fibers in Greece, calendar year 1960, 1965, 1968-70

Fiber	Quantity					Percentage distribution				
	1960	1965	1968	1969	1970	1960	1965	1968	1969	1970
	<i>1,000 tons<sup>1</sup></i>	<i>1,000 tons<sup>1</sup></i>	<i>1,000 tons<sup>1</sup></i>	<i>1,000 tons<sup>1</sup></i>	<i>1,000 tons<sup>1</sup></i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Cotton . . . . .	27.6	39.8	43.8	46.7	49.8	71.5	63.3	60.2	61.9	62.4
Wool . . . . .	4.5	7.8	9.0	9.9	10.0	11.6	12.4	12.4	13.1	12.6
Rayon and acetate . . . . .	6.3	11.9	12.7	10.5	10.8	16.4	18.9	17.4	14.0	13.6
Noncellulosic manmade . . . . .	.2	3.4	7.3	8.3	9.1	.5	5.4	10.0	11.0	11.4
Total . . . . .	38.6	62.9	72.8	75.4	79.7	100.0	100.0	100.0	100.0	100.0

<sup>1</sup> Of 2,204.6 pounds.

<sup>2</sup> Estimated.

Source: Cotton-World Statistics, International Cotton Advisory Committee. April 1971, and Textile Organon.

Table 20.—Cotton yarn and cloth: Production, imports and exports in Greece, averages 1951-54 - 1965-69, annual 1965-70

Year	Yarn and thread				Cloth			
	Production	Imports	Exports	Available for use in Greece	Production	Imports	Exports	Available for use in Greece
Average:	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>	<i>Tons<sup>1</sup></i>
1951-54 . . . . .	21,875	458	251	22,082	13,250	2,361	472	15,139
1955-59 . . . . .	22,660	76	197	22,539	20,540	3,168	46	23,662
1960-64 . . . . .	28,020	69	2,515	25,574	19,780	3,196	290	22,686
1965-69 . . . . .	37,480	121	6,508	31,093	24,524	3,433	486	27,472
Annual:								
1965 . . . . .	34,700	57	4,215	30,542	22,200	3,796	766	25,230
1966 . . . . .	37,700	135	7,562	30,273	26,400	3,945	414	29,931
1967 . . . . .	38,400	59	6,360	32,099	25,400	3,737	470	28,667
1968 . . . . .	37,500	174	6,659	31,015	24,100	2,919	121	26,898
1969 . . . . .	39,100	180	7,742	31,538	24,520	2,767	660	26,627
1970 . . . . .	<sup>2</sup> 41,600	210	11,954	29,856	( <sup>3</sup> )	2,061	1,084	( <sup>3</sup> )

<sup>1</sup> Of 2,204.6 pounds.

<sup>2</sup> 3 quarters raised to annual.

<sup>3</sup> Not available.

Source: Statements of Greek delegation to the Plenary Meetings of ICAC.

Greece imports around 3,000 metric tons of cotton cloth annually, around 12 percent of its consumption, and several times more than it exports. Imports are largely finished goods, about one-third from the EC with some from other countries in Western Europe, Eastern Europe, and the United States. Cotton fabrics from Eastern Europe are said to be low-priced cotton goods, while many of the goods from Western Europe and the United States are specialties and blends. Greece's limited exports of cotton cloth are mostly to the EC and other destinations in Western Europe.

Greek exports of yarn and textiles now enjoy unrestricted free entry to the EC thanks to the country's associate membership in that organization. Since wage rates are relatively low in Greece and raw cotton is produced within the country, the manufacture of cotton textiles for export to the EC is expected to expand rapidly in the future. Much will depend, of course, on the EC's policy regarding textile imports from low-cost sources.

U.S. imports of cotton textiles from Greece are governed by a recently renewed bilateral arrangement which is effective for 4 years beginning July 1, 1971. It provides for a ceiling equal to 10.9 million square yards of cotton textile products for the first year of the agreement. Within this total there are sublimits for yarn, fabric and made-up goods, and apparel, but no quotas for individual items. U.S. imports of some Greek cotton textiles have been subject to limitations since 1962 when Greek exports of yarn to the United States expanded sharply. There are no limitations on manmade fiber and wool textile exports to the United States.

Greek exports of cotton yarn and cloth benefit from a system of subsidies given industrial exports. If the value added in processing a raw agricultural commodity such as cotton is 25 to 30 percent, an exporter can borrow 3 times the f.o.b. value of the exports at an interest rate of 5 percent. This is considerably below the going rate of 9 percent. If the value added is 40 percent, he can borrow 4 times, and on up to 60 percent and 6 times the f.o.b. value. For cotton yarns, the value added is 40 to 50 percent which results in an interest rebate equivalent to 16 to 20 percent of the export value.

Greece produces small quantities of continuous filament rayon yarn and continuous filament nylon 6 and 66 yarn. There is one plant producing each. No staple fiber is produced. About three-fourths of the manmade fibers used in Greece are imported. (Table 21).

Table 21.—Greece: Manmade fiber production, 1945-69<sup>1</sup>

Year	Cellulosic	Noncellulosic	Total
	<i>Million pounds</i>	<i>Million pounds</i>	<i>Million pounds</i>
1945 .....	0.1	--	0.1
1946 .....	.7	--	.7
1947 .....	1.2	--	1.2
1948 .....	1.7	--	1.7
1949 .....	2.0	--	2.0
1950 .....	<sup>1</sup> 4.4	--	<sup>1</sup> 4.4
1951 .....	<sup>1</sup> 3.5	--	<sup>1</sup> 3.5
1952 .....	<sup>1</sup> 5.0	--	<sup>1</sup> 5.0
1953 .....	<sup>1</sup> 4.1	--	<sup>1</sup> 4.1
1954 .....	<sup>1</sup> 3.7	--	<sup>1</sup> 3.7
1955 .....	3.4	--	3.4
1956 .....	2.5	--	2.5
1957 .....	3.2	--	3.2
1958 .....	2.9	--	2.9
1959 .....	2.9	--	2.9
1960 .....	3.4	--	3.4
1961 .....	4.2	--	4.2
1962 .....	4.4	0.5	4.9
1963 .....	5.0	.6	5.6
1964 .....	5.6	.6	6.2
1965 .....	6.2	.8	7.0
1966 .....	7.1	.7	7.8
1967 .....	7.2	.8	8.0
1968 .....	7.1	1.4	8.5
1969 .....	7.7	3.8	11.5

<sup>1</sup> All filament yarn except in 1950-54 when some rayon staple fiber was produced.

Source: Textile Organon.



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