C. CONCLUDING REMARKS

An expansion of demand for Brazil nuts is expected both for the in-shell type and in the new field of health foods. To meet this demand, however, a wide publicity of their merits and the establishment of a system for supplying the product at a price which is both stable and reasonable enough to induce higher demand are required.

I. Clarifying Sales Points

Since Brazil nuts have no distinctive features in terms of "taste" and "flavor", as mentioned above, it is necessary for their uniqueness from other nuts and their advantages to be propagated, to overcome the above-mentioned disadvantages and to add to their appeal to the consumers, thus leading to a larger demand in the future. If some factor leading to a strong image as a health food is found in analyzing the useful components contained in Brazil nuts, emphasis should be given to that point. Furthermore, the development of a unique product, "Brazil nut oil" for example, might be considered, since the oil content of the Brazil nut is very high (66%).

II. Establishment of Production System

The stabilization of production is important to secure price stability, which is essential for the steady expansion of demand. The present production system employs the so-called "Aviamento" method, in which the naturally-grown nuts are collected and transported to the depot by "gatherers". One aspect of this method is that it may not be able to cope with a rapid increase in demand. If the supply is insufficient to cover increased demand, the excess of demand induces a rise in price, which inhibits further expansion of demand in the future. If these conditions are repeated, the product may eventually lose the market. The following example is suggestive for such a development.

Cashew nuts produced under a similar collecting system in the production places, namely in the African countries, decreased in quantity of output due to a decrease in the number of produce collectors after independence, and demand could not be met. This resulted in a rise in price, to the present level at which their price is higher than that of almonds by about $1.00/kg. Then, the market showed a declining trend due to a slackening of demand.

Furthermore, in the Aviamento method, there is a high possibility of contact with aflatoxin, a strain of fungus living in the soil, in the collecting and drying stages, because fallen nuts are also collected. Some countries are nervous about fungi adhering to nuts, a factor which may have to be taken into consideration when exporting. Since aflatoxin is easy to remove by washing in water at the early stages of adhesion, it is advantageous to install washing facilities as a part of the collecting process.

To cope with the expected increase in demand, a shift to cultivation in plantations as one way of stable supply as opposed to the traditional system might be considered, although the problem of profit may remain. To avoid aflatoxin or other contaminants, it is also worthy of consideration to re-examine the methods of collecting and drying, and also to consider the installation of packing plants with washing and drying facilities.

It is said that the background to the success of almond cultivation in California, USA, is that the producers have sufficiently aroused demand on the part of the consumers. This increased demand, with the resultant rise in the market price, has been met by the maintenance of sufficient output by the producers. The adoption of such strategies may also help to raise the position of Brazil nuts in the overall field of nuts.

Appendix Table 1 Exports of Brazil Nuts from Brazil
(In-shell, fresh)

(MT)

	Italy	France	South Africa	USA	UK	German DR	Germany, FR	Argentina	Canada	Nether-lands	Others	Total
1972*												
1973*												
1974				152	317	350	1,777	653	91	31	15	3,388
1975	775			15	254	500	3,515	174			0	5,233
1976				20	35	500	305				0	860
1977					50						0	50
1978					82						0	82
1979	50										0	50
1980			8	326				20			27	381
1981	36	32	14									82

* Data for 1972 and 1973 are included in Table 3.

Source: Bank of Brazil, Export/Import Department (CACEX)

Appendix Table 2 Exports of Brazil Nuts from Brazil
(In-shell, roasted)

(MT)

	USA	Germany, FR	UK	Italy	France	Canada	Argen-tina	German DR	Spain	Nether-lands	Australia	Others	Total
1972*	9,644	6,168	8,534	274	195	809	185	300	251	81	146	116	26,703
1973*	8,250	6,484	5,477	549	170	942	389	250	542	55	114	855	24,107
1974	5,204	543	3,359	125	180	195	0	0	122	15	118	110	9,971
1975	12,245	1,516	3,818	415	321	746	0	0	362	119	191	114	19,847
1976	6,420	2,448	3,328	505	118	624	0	0	0	195	175	131	13,944
1977	6,358	1,918	3,224	626	156	417	80	100	108	105	156	90	13,338
1978	7,622	2,565	3,557	842	247	102	65	0	90	108	134	140	15,472
1979	7,986	3,187	5,311	1,789	349	209	297	203	92	210	150	88	19,871
1980	7,669	2,562	2,606	994	306	83	103	203	135	115	151	91	15,018
1981	6,548	2,471	2,345	431	206	188	102	100	76	74	65	110	12,716

* Data for 1972 and 1973 includes fresh Brazil nut.

Source: Bank of Brazil, Export/Import Department (CACEX)

Appendix Table 3 Exports of Brazil Nuts from Brazil
(Shelled, dry)

(MT)

	UK	USA	Germany, FR	Aus-tralia	South Africa	Nether-lands	Spain	New Zealand	Japan	Belgium-Luxemburg	Canada	Others	Total
1972*	2,344	6,232	381	549	145	243	13	45	16	71	760	75	10,874
1973*	1,739	5,774	359	514	189	258	26	44	24	43	696	74	9,740
1974	1,925	3,403	489	534	278	165	36	79	23	56	250	67	7,305
1975	1,130	5,026	1,224	532	246	383	176	86	40	67	192	48	9,150
1976	1,910	4,054	930	563	291	287	132	63	63	67	118	11	8,489
1977	2,541	3,424	653	617	184	173	131	47	32	60	34	8	7,904
1978	1,740	2,195	448	474	99	157	0	56	42	60	74	23	5,368
1979	2,626	4,331	566	423	179	583	101	84	74	40	146	33	9,186
1980	1,644	3,542	623	265	160	401	156	122	19	58	33	14	7,037
1981	2,497	1,828	555	312	247	158	107	32	32	29	11	4	5,812

* The classification for 1972 and 1973 is "shelled".

Source: Bank of Brazil, Export/Import Department (CACEX)

Appendix Table 4 Customs Tariffs in Brazil Nut Importing Countries

	Brazil nut	
		Processed
Austria (1978)	MFN 0% GSP 0%	Nut pulps canned, 15 kg or less unsweetened MFN 23% B GSP 5% sweetened MFN 25% canned, over 15 kg MFN 10% Nuts, other than pulps canned, unsweetened MFN 8%+S, 280/kgB (16.7%) GSP 0% Other MFN 12%+S 4.00/kg GSP 6%+S 1.50/kg
EC (1981)	MFN 0%	Packings of more than 1 kg MFN 14% GSP 7% ACP 0% Packings of 1 kg or less MFN 16%B GSP 8% ACP 0%
Japan (1981)	MFN 6% GSP 0%	With added sugar or spirit pulp form MFN 35% non-pulp form MFN 28% Without added sugar or spirit pulp form MFN 20% non-pulp form MFN 16% GSP 10% LLDC 0%
New Zealand (1975)	MFN 0%	Unroasted MFN 5% GSP 0% Roasted MFN 0%
Finland (1978)	MFN 0%	Unroasted MFN 6%B GSP 0% Roasted MFN 6%B LLDC 0%
Norway (1978)	MFN 0%	MFN Nkr. 1.20/kg (9.2%) GSP 0%
USA (1981)	MFN 0%	MFN 0%

Appendix Table 4 (cont'd.)

	Brazil nut	
	Processed	
Sweden (1978)	MFN 0%	MFN 0%
Switzerland (1976)	MFN 2.2% (SwF 0.075/kg) GSP 0%	MFN SwF 0.15/kg
Australia (1975)	MFN 0%+2% (fiscal duty) GSP 0%	MFN 0%+2% (fiscal duty) GSP 0%
Canada (1981)	MFN 0%	MFN 10%

GSP (Generalized System of Preferences in favor of developing countries)
MFN (Most-favored-nation tariff rate)
ACP (Africa, Caribbean and Pacific Associables preferential tariff rate)
LLDC (Least less-developed countries preferential tariff rate)
B (Ad valorem rate, fully bound at prevailing rate)

Years in ( ) under names of countries denote CCCN year.

[5] COTTON

[5] COTTON

CONTENTS

[5] COTTON

A. OUTLINE

I. Varieties of Cotton

Cotton belongs to the botanical genus Gossypium, and is classified into four species:

a. Gossypium arboreum Linn
b. Gossypium herbacum Linn
c. Gossypium barbadense Linn
d. Gossypium Hisutrum

The chromosome number of varieties a. and b. above is 13, while that of varieties c. and d. is 26, and cross-fertilization is impossible if the chromosome number is different. The breeding of varieties to match the conditions of the growing location is most important in the production of cotton, and cotton breeders are developing the seeds of new varieties every year.

II. Planting and Picking Times

All the varieties of cotton now being commercially produced are annuals, with the exception of tree cotton mentioned above.

In the northern hemisphere planting is carried out between March and May, and picking from August to December, while in the southern hemisphere planting is generally done from September to November and picking from March to July.

In the regions near the equator the growing period is short, and in some countries (e.g. Ecuador) planting is carried out in January-February and picking from June to August.

For details of planting and picking times and staple lengths in the main producing countries, see Appendix Table 1.

III. Grading

The value of cotton as a trading commodity depends on the quality, and the classification of quality is made on the basis of three items: a. grade, b. staple length and c. character.

a. Grade is determined on the basis of a combination of three factors: color, foreign matter and preparation.

b. Staple length is an important factor in determining the use. The measured length is indicated in increments of 1/32" (1/32 inch).

c. Character consists of other factors not included in the grade and staple length above; i.e., maturity, fineness, staple strength and uniformity. These factors determine the quality of the spun cotton, but in the normal practice of trade nowadays only fineness is employed as a condition for contract, and is usually indicated in terms of micronaire reading. However, this factor is also used only for limited number of varieties, such as American cotton.

As a quality appraisal standard in the cotton trade, the Universal Cotton Standards Agreement has been effected under the auspices of the United States Department of Agriculture, although this Agreement only applies to the upland cotton produced in the United States.

IV. Description and Type

The quality as stipulated in the conditions of contract is specified in two ways, description and type.

a. Trade on description —— This applies to trade carried out on the basis of the quality standards set by each producing country. For American cotton, for example, SMI-1/16", etc. is specified. Judgement is made on the basis of a standard sample box.

b. Trade on type —— This is trade that is carried out on the basis of the type specified by the government agency in the producing country, employing samples for determining the factors such as grade and staple length, or trade on the basis of the private type prepared and distributed by individual private shippers who stake their own reputation among their clients.

V. Cotton Production by Staple Length

The staple length is an important factor in determining the use of the cotton, and competition in both supply and demand occurs within each staple length category.

Recent world cotton production by staple length is shown in the following Table.

	1970-71		1980-81	
	Q'ty (million bales)	Share (%)	Q'ty (million bales)	Share (%)
Extra long (1-3/8" & over)	2.70	(6.1)	3.12	(5.9)
Long (1-1/8" & 1-5/16")	4.68	(10.5)	8.44	(16.0)
Medium Long (1-1/32" & 1-3/32")	27.65	(62.2)	31.13	(59.0)
Medium (13/16" - 1")	8.47	(19.1)	8.05	(15.3)
Short (under 13/16")	0.93	(2.1)	1.98	(3.8)
Total	44.43	(100.0)	52.72	(100.0)

For the details by main country, see Appendix Table 2. The extra long and long staple cottons are used for fine-count yarns of more than count 50; the medium long staple cotton for medium-count yarns of count 30 - 40; the medium staple cotton for coarse-count yarns of count 13 - 20; and the short staple cotton mainly for bedding, wadding and surgical supplies.

The longer the staple length, the higher the price, and therefore there is a general tendency for longer staple to be produced.

VI. Competition between Cotton and Other Fibers

Cotton faced a competitive fiber product when rayon staple was mass-produced in the 1930s, but since the advance of the polyester staple, which entered a period of rapid growth in 1970, cotton has been and remains chiefly in competition with polyester staple among all the synthetic fibers.

For the trends in the conditions of competition, refer to Appendix Table 3 and also to Section C. Consumption, Subsection II; Trends in World Fiber Demand. In short, it can be said that the oil price hike since 1973 has caused a sharp increase in the cost of synthetic fibers, and has halted the one-sided growth of the share held by the synthetic fibers, thus giving cotton possibilities for improved competitiveness in the future.

B. PRODUCTION

I. Trends in Production

Based on the figures shown in Appendix Table 5, which gives total production by cotton season (August 1 to the last day of July the following year), the following Table shows in units of both million bales (478 pounds net bale) and million tons the trends in production according to 5-year (cotton season) average figures since 1965/1966 (see Appendix Table 6).

1. Total World Production

5-year average	Production (million bales)	Production (million MT)	Quantity index
1965-69	52.68	11.42	100.0
1970-74	60.59	13.14	115.0
1975-79	60.37	13.09	114.6
1980-81 *	68.49	14.85	130.0

* 2-year average

On the whole, a gradual increase is shown, and the annual rate of growth [1] is 1.37%.

2. Total Production of the Developed Countries

The developed countries producing cotton include the United States, Greece, Australia, South Africa and Spain, and of these the United States holds a share of approximately 90% (1980/81 average).

The trends in total production in the developed countries are as follows.

1) The annual rate of growth has been calculated on the basis of the increase shown from the 1965-69 average to the 1975-79 average. The same applies hereafter.

5-year average	Production (million bales)	Production (million MT)	Share of world total (%)	Quantity index
1965-69	11.58	2.51	22.0	100.0
1970-74	12.93	2.80	21.3	111.7
1975-79	13.10	2.84	21.7	113.1
1980-81 *	15.05	3.26	22.0	130.0

* 2-year average

Overall, a gradual growth is indicated, but it can be seen that growth was low in comparison with the trend of the world total. The annual rate of growth is 1.24%.

3. Total Production of the Developing Countries

The number of developing countries which produce cotton reaches more than 57 in total, including 8 Central American countries (Mexico, etc.), 8 South American countries (Brazil, Colombia, Peru, Paraguay, Argentina, etc.), 7 Asian countries (India, Pakistan, Thailand, the Philippines, etc.), 7 Middle Eastern countries (Turkey, Syria, Israel, Iran, etc.) and 27 African countries (Egypt, Sudan, Zimbabwe, Tanzania, the Ivory Coast, etc.). Of these, the 9 high-ranking countries, comprising India, Pakistan, Brazil, Egypt, Turkey, Mexico, Sudan, Syria and Argentina, hold a combined share of approx. 77% (based on the 1981/82 average).

The trends in total production in the developing countries are as follows.

5-year average	Production (million bales)	Production (million MT)	Share of world total (%)	Quantity index
1965-69	23.64	5.13	44.9	100.0
1970-74	26.22	5.69	43.3	110.9
1975-79	24.84	5.39	41.2	105.1
1980-81 *	26.32	5.71	38.4	111.3

* 2-year average

Here also a gradual growth is shown, although it is slower than that indicated for total world production, and the share of the world total shows a gradual decline. The annual rate of growth here is 0.50%.

4. Total Production in the Planned Economy Countries

The cotton producing countries belonging to the planned economy countries total 4 in number, namely the USSR, Albania, Bulgaria and China. Of these, the USSR and China share 99.7% of the total production (based on the 1980/81 average).

The trend of total production in the planned economy bloc is as follows.

5-year average	Production (million bales)	Production (million MT)	Share of world total (%)	Quantity index
1965-69	17.46	3.79	33.1	100.0
1970-74	21.44	4.65	35.4	122.8
1975-79	22.43	4.86	37.1	128.5
1980-81 *	27.12	5.88	39.6	155.3

* 2-year average

Here, production shows a steady and rapid growth, outpacing that of the world total, and it should be noted that recently the share held by these countries of the world total has been exceeding that of the developing countries, which was higher in the past. The annual rate of growth is very high, at 2.54%.

II. Trends of Harvested Acreage

The harvested area is another factor affecting production levels, and on the basis of the data provided in Appendix Tables 7 and 8, as in the case of production, the trends of the harvested area by 5-year averages since 1965/66 are summarized as follows.

1. Total Harvested Area Worldwide

5-year average	Harvested area (million acres)	Harvested area (million ha)	Area index
1965-69	78.61	31.81	100.0
1970-74	81.40	32.94	103.5
1975-79	78.77	31.88	100.2
1980-81 *	81.25	32.88	103.4

* 2-year average

On the whole, a trend towards slight growth or a leveling-off of growth is indicated, with an annual growth rate of 0.02%.

2. Total Harvested Area in Developed Countries

5-year average	Harvested area (million acres)	Harvested area (million ha)	Share of world total (%)	Area index
1965-69	11.55	4.67	14.7	100.0
1970-74	12.95	5.24	15.9	112.1
1975-79	12.51	5.06	15.9	108.3
1980-81 *	14.55	5.89	17.9	126.0

* 2-year average

Here, a margin for expansion is indicated, although a decline was also shown during this period. However, it is considered that in all of these countries except Australia, the expansion of the harvested area has reached a ceiling.

The annual growth rate stands at 0.80%, and the reason for the 2-year average in 1980-81 showing a rather sharp increase to 14.55 million acres is that the 2-year average for the United States increased by 1.89 million acres, from 11.64 million acres shown in the 1975-79 average to 13.53 million acres. However, the area decreased to 9.3 million acres in 1982.

3. Total Harvested Area in Developing Countries

5-year average	Harvested area (million acres)	Harvested area (million ha)	Share of world total (%)	Area index
1965-69	49.06	19.85	62.4	100.0
1970-74	49.44	20.01	60.7	100.8
1975-79	47.18	19.10	59.9	96.2
1980-81 *	46.50	18.82	57.2	94.8

* 2-year average

In general, a gradualy decreasing trend in both production and share of the world total is indicated. The annual rate of decrease stands at 0.39%.

With the exception of Pakistan, which shows a trend of gradual growth, and India, where production is strong, all of the other large producing countries show a tendency toward the reduction of the area under cotton, due to competition from other crops such as grains and coffee.

4. Total Harvested Area in the Planned Economy Countries

5-year average	Harvested area (million acres)	Harvested area (million ha)	Share of world total (%)	Area index
1965-69	18.01	7.29	22.9	100.0
1970-74	19.01	7.69	23.4	105.6
1975-79	19.08	7.72	24.2	105.9
1980-81 *	20.20	8.17	24.9	112.2

* 2-year average

Here, a gradual and steady growth trend can be seen and the share of total world production is also gradually increasing. Although growth rate of China is low, the sustained growth shown by the USSR is remarkable. The annual rate of growth for this category is 0.58%.

III. Trends in Yield

The yield per unit area is another highly important factor in increasing the level of production of cotton. The trends in the yield according to 5-year averages from 1965/69 are outlined below, based on the figures given in Appendix Tables 9 and 10.

1. World Average Yield

5-year average	Yield (pounds/acre)	Yield (kg/ha)	Yield index
1965-69	316	354	100.0
1970-74	358	401	113.3
1975-79	366	410	115.8
1980-81 *	403	452	127.5

* 2-year average

A trend of steady and gradual growth can be seen here, with an annual growth rate of 1.48%.

2. Average Yield in Developed Countries

5-year average	Yield (pounds/acre)	Yield (kg/ha)	Share of world average (%)	Yield index
1965-69	476	534	150.6	100.0
1970-74	476	534	133.0	100.0
1975-79	498	558	136.1	104.6
1980-81 *	493	553	122.3	103.6

* 2-year average

On the whole, only a small increase is indicated, and the annual rate of growth is 0.45%.

3. Average Yield in Developing Countries

5-year average	Yield (pounds/acre)	Yield (kg/ha)	Share of world average (%)	Yield index
1965-69	230	258	72.8	100.0
1970-74	253	284	70.7	110.0
1975-79	251	281	68.6	109.1
1980-81 *	271	304	67.2	117.8

* 2-year average

In this case, the yield shows an increasing trend, but it should be noted that the growth rate, at 0.88%, is falling below that of the world average.

4. Average Yield in the Planned Economy Countries

5-year average	Yield (pounds/acre)	Yield (kg/ha)	Share of world average (%)	Yield index
1965-69	445	499	140.8	100.0
1970-74	549	615	153.4	123.4
1975-79	561	629	153.3	126.1
1980-81 *	641	718	159.1	144.0

* 2-year average

The steady rate of growth indicated here, at 2.35%, is the highest of all, and constitutes the largest factor contributing to the growth of the world average figure.

IV. Summary of Production Situation

From the above, it can be seen that the harvested area is showing a trend towards slight growth or a leveling-off, with the decreasing trend shown by the developing countries lessening the effect of the

increasing trend in the developed countries and the planned economy bloc. However, the yield shows an increasing trend even in the developing countries, although the rate of increase is falling below the world average, and the developed countries also show a slowly increasing yield. In particular, the steady and high rate of growth shown by the planned economy bloc is contributing to the trend of gradual growth in worldwide average yield.

Therefore, it can be seen that the gradual increase of total world production has mainly been brought about by increasing yield rather than by increases in the harvested area, and future increases in world production will also mainly be achieved by growth in the yield.

Appendix Table 11 shows the yields in the major producing countries classified into three groups; high, medium and low; and it can be seen that the high-yield group contributes significantly to the growth of world production.

V. Cost of Production of Raw Cotton

ICAC's Survey of Cost of Production of Raw Cotton, issued during October 1982 and October 1983, is one of a most authentic information on the subject. Accordingly, the essential summary in its "Introduction" are fully quoted hereunder.[1)]

1. "Introduction" of the Survey of Cost of Production of Raw Cotton (1982 edition)

Cotton production costs continue to attract attention. The last Plenary Meeting of the ICAC instructed the Secretariat to conduct another annual survey on costs of producing raw cotton for presentation at the 41st Plenary Meeting. It was felt that continued study of the subject was important in the light of escalating input costs and the decline in cotton prices compared to the 1980/81 season.

The survey questionnaire was sent to all member and non-member cotton producing countries together with explanatory remarks. However, the rate of response was again limited, with 28 countries replying out of about 60 that were contacted. Several major producers did not respond, and many of the replies received were either incomplete or used formats that differed considerably from the standard questionnaire. Ultimately, a sample of 14 countries which

1) Full text of the Survey, which shows detail informations of individual country, is available upon request.

replied to the survey for the last two years was selected for the purpose of analyzing costs in 1981 versus 1980. Before going into the results of this sample, however, it should be pointed out that in some responding countries the basic information on costs is not derived from statistically valid farm management surveys, but is more in the nature of approximations containing elements of subjective judgment. Also, differences in methodology of data collection and factors such as subsidy for production inputs in certain countries, rates of which may vary from year to year, add to the difficulty to compare costs between countries or over time.

Furthermore, the problem of making cost comparisons was compounded by substantial changes in currency exchange rates during 1981. In all countries included in the analysis, there was an erosion in the value of the local currency against the U.S. dollar. Hence, costs expressed in terms of current dollars significantly understated actual costs. In fact, the change in exchange rates in the countries considered here was so large that in every instance costs in dollar terms showed a decline in 1981 from the preceding year's level, whereas in terms of local currencies there was a noticeable increase. In Pakistan, for instance, costs in dollars were down by about 6% for both per hectare gross cost and net cost per pound, while in terms of the local currency these costs were up by 8 and 7%, respectively. In order to eliminate the effect of changes in currency rates, the Secretariat decided to hold the exchange value of the dollar constant for the past 2 years: 1981 costs were taken as reported in dollar terms (Summary Table 1 and Country Table; not attached herein) and 1980 data were converted into 1981 dollars, using countrywise rates of exchange.

In this survey cotton production costs are again expressed in terms of two main categories: direct and indirect costs. Direct costs are those that are clearly associated with physical production, and include on-farm production and harvesting costs, as well as off-farm costs such as transportation and ginning charges. Indirect or overhead costs include items such as management and land costs. The sum of these two categories constitutes the gross cost for producing seed cotton. The net cost for lint is obtained by substracting the value of cotton seed from the gross cost. Net cost is also presented in terms of U.S. cents per pound.

Based on data from 14 countries, the increase in cotton production costs moderated somewhat in 1981 compared to the previous year. The gross cost per hectare rose by about 14%, to an average of $1,090 (Summary Table 2; not attached herein), compared with the previous year's increase of about 17-1/2%. Most of the cost items contributed to the rise in 1981 but the main increases came from large items such as labor, fertilizer, irrigation, ginning, and land. Labor costs, constituting more than a quarter of total cost, went up by 17% to nearly $277 per hectare. Among the various countries, labor costs

increased most in Mexico by over 70%. However, substantial gains took place also in Egypt, up 49%, and in Tanzania, 36%.

Another large increase was in fertilizer costs, which account for some 7% of the total. The gain of around 28% is attributable to both increased prices as well as higher rates of application. In the United States, the quantity of fertilizer applied to an acre rose from 77.4 pounds of nutrients in 1980 to 92.6 pounds in 1981. Reported fertilizer amounts were also considerably larger than a year earlier in several other countries. Nevertheless, there appeared to be a slowdown in the rate of growth in fertilizer use during recent years as farmers became increasingly cost-conscious in order to cope with higher prices of chemicals and fuel.

Irrigation costs were up by nearly 46% last year compared to 1980. The sharpest increase again took place in Mexico, up 142% to around $92 per hectare. Others indicating substantial gains included Iran, up 112%; the Philippines, 97%; and Turkey, 35%. However, the increase in costs in some of these countries may have resulted partly from the fact that data supplied for the two years were not from a uniform set of regions.

The cost of power and equipment rose only by 3.2% last year, to approximately $123 per hectare. However, in terms of individual countries there was a noticeable contrast: while costs of this item declined mostly in countries with relatively little mechanization, sharp increases occurred in the more mechanized cotton producing countries. In many of the developing countries where cotton is produced under "traditional agriculture", mechanization is primarily resorted to for preharvesting operations, such as ploughing, planting, etc.

Among direct on-farm costs, herbicides and other chemicals is the only major category to post a decline, of around 11%. Increased prices and foreign exchange limitations appear responsible for decreases in the quantity used.

Direct off-farm costs, represented mostly by ginning costs, increased by over 32% due mainly to increased costs associated with gains in yields in a number of countries. The increase was particularly notable in the United States, where average yield went up by more than 35%. However, in several countries ginning costs went up significantly also because of sharply higher per unit cost of ginning. For instance, in Australia, only $16.4 were charged for ginning a bale of cotton in 1980, while in 1981 the cost was up to $66.9. Similarly in Spain, the cost more than doubled, to $62.5 per bale.

For the 14 countries analyzed here, overhead costs — mainly for land — increased substantially in 1981 from the previous year

as land gained in value in almost all countries, but especially in Turkey, Mexico, and Iran. The average rental value in 1981 was nearly 56% higher than in 1980. By contrast, management cost per hectare was down.

Despite the increased cost of cotton production in almost all countries in 1981 compared to 1980, per pound cost of lint actually declined by nearly 3%, to some 65 cents, owing to very good yields. However, there were considerable variations between countries as well as between regions within a country, with per pound net costs ranging from 25.8 cents in Tapachula region of Mexico to over a dollar in several countries (Summary Table 1; not attached herein). Nevertheless, in roughly half of the reporting countries net costs per pound were between 35 and 70 cents per pound.

Caution should be exercised in interpreting the findings in this report too literally because of the limited sample size and shortcomings of some of the basic data. Nonetheless, the analysis does provide indications of the overall trend, and the behavior of individual components, of cotton production costs.

2. "Introduction" of the Survey of Cost of Production of Raw Cotton (1983 edition)

The 41st Plenary Meeting of the ICAC instructed the Secretariat to update the time series data on cotton production costs. Accordingly, a survey questionnaire together with explanatory notes was sent to approximately 60 member and non-member cotton producing countries, and about half of them replied. However, some major producers did not respond, and a number of the replies received could not be used in the comparative analysis due to incomplete data and use of formats substantially different from the standard questionnaire. The sample for detailed cost comparisons is, therefore, restricted to 13 countries which replied to the survey this year as well as last.

The findings of this study are subject to limitations of sample size and differences in methodologies of data collection. Many countries lack specific cost studies based on farm management techniques, and reported statistics often contain elements of subjective judgment. While comparisons between countries are difficult due to differences in methodology and provision of input subsidies by some countries, comparisons over time face added problems of exchange rate fluctuations and currency management practices. Exchange rates have been particularly volatile in recent years, and in 1982 there has been an erosion in the value of local currencies against the dollar in virtually all countries in the sample. Thus, costs expressed in dollar terms significantly understated the actual cost:

there was a decline from a year earlier in more than half of the countries in dollar terms, whereas in terms of local currencies costs were up in all contries except two. This divergence was particularly noticeable in Mexico where gross costs went down by over 50% from the previous year in dollar terms, but in terms of local currency were up by 128%. In Colombia, dollar costs increased by only 1.7% against a rise of over 15% in local currency. In order to eliminate the effect of changes in exchange rates, the exchange value of the dollar was held constant for the past two years: the 1982 costs were taken as reported (Summary Table 1 and Country Table; not attached herein), and 1981 costs were converted into 1982 dollars by using appropriate exchange rates (Summary Table 2; not attached herein).

In this study cotton costs are again divided into two broad categories: direct and indirect costs. Direct costs are those that are clearly associated with physical production, and include on-farm production and harvesting costs, as well as off-farm costs such as transportation and ginning charges. Indirect or overhead costs include items such as management and land costs. The sum of these two categories constitutes the gross cost for producing seed cotton. The net cost for lint is obtained by subtracting the value of cotton seed from the gross cost. Net cost is also presented in terms of U.S. cents per pound.

Cotton production costs vary considerably between countries owing to such factors as the size of farm, extent of mechanization, method of irrigaton, application of fertilizers and other chemicals, and varieties grown. Among the responding countries per hectare gross cost in 1982 ranged from $206 in Uganda to $3,254 in Israel (Summary Table 1; not attached herein). There were also significant differences in cost of production between regions within the same country. In the United States, for instance, the cost ranged from $602 per hectare in the Southern Plains to $2,412 in the Southwest.

Cost of producing cotton went up last year in 11 countries out of the sample of 13 analysed by the Secretariat. In fact, the increase in gross costs accelerated in 1982 to over 22% compared to 14% in the previous year, reaching an average of $1,486 per hectare. Increases were common to nearly all items of cost, with most of the advance contributed by large cost items such as labor, agricultural chemicals, power and equipment, fertilizers, and ginning charges.

Labor costs (preharvesting and harvesting), constituting 23% of total cost, rose by 27%, to an average of $342 per hectare. Most of the increase was associated with rising wages — attributable to general inflation and scarcity of labor — but labor-intensive cultivation practices also played an important part. Niger is a case in point where increased use of labor per hectare was the chief reason for a 178% advance in labor costs last year, to $206 per

hectare; the increase in wages was around 27%. Total labor costs also went up substantially in Spain and Syria.

Agricultural chemicals — consisting of pesticides, insecticides, fungicides and others — remain vital to cotton growing, accounting for over 11% of total cost in the 13 countries studied here. Cost under this item resumed its upward trend in 1982 following the preceding year's decline. On the average, roughly $168 per hectare were spent on agricultural chemicals in 1982, up arond 9% from the 1981 level. However, there were noticeable declines in a number of countries — e.g., of around 50% in Tanzania. Use levels of chemicals are being affected by price considerations and, in a number of countries, also by the environment-related move to pest control measures requiring less chemicals.

Power and equipment are still used primarily in preharvesting operations. Overall costs for this item registered a gain of some 16% versus only 3% in 1981. The sharpest increase was in Spain, of over 100%, with government policies encouraging mechanization. Substantial increases also occurred in Bangladesh and Pakistan. By contrast, costs were lower by nearly 17% in Nicaragua. The large increase in labor expenses (of around 29%) at a time of general financial stringency, apparently points to some substitution of labor for power and equipment.

Fertilizer costs, another large item, rose in a majority of countries included in the sample. However, on the average, costs increased by only 8% compared to 28% in 1981. The largest gains were in Tanzania and Pakistan, of 28 and 26%, respectively. By contrast, there were declines in a number of countries, especially Iran.

Among on-farm direct costs, the sharpest proportionate increase was experienced in planting seed, which accounts for only around 1-1/2% to total costs. Based on data from 13 countries, seed costs rose by 72%, to $23 per hectare. The increase is related to more widespread use of newer, improved seed varieties of cotton.

Off-farm direct costs, represented mainly by ginning charges, increased by more than 24%, to an average of $197 per hectare. Ginning costs rose the sharpest in Niger, doubling the level of the preceding year, followed by El Salvador and Spain. While improved yields contributed, the increase came mainly from rising per unit cost of ginning. To illustrate, ginning charges in El Salvador and Colombia went up by over one-fourth last year.

For the 13 countries analyzed here, overhead costs — comprising mainly management and land costs — sent up by some 43% last year, to around $213 per hectare.

Even though cost of production was up sharply in 1982 compared to 1981, the increase in per pound cost of lint was marginal owing to increased yields in many countries. In the sample of 13 countries, while net cost per hectare went up by nearly 19%, to $1,256, the increase in per pound cost — weighted by production — was less than half a percent. The per pound cost was held down not only because of yield increases, but also because of the fact that it was in many of the large producing countries where productivity increases were significant.

However, there were considerable cost differences between countries, with per pound net cost ranging from less than 50 cents in Egypt, Pakistan, Bangladesh and Upper Volta, to over a dollar in Nigeria, Tanzania, Costa Rica and Iran (Summary Table 1; not attached herein). However, for three fourths of respondents the cost per pound ranged from 50 cents to $1.

As indicated by the above, the improvement of yield is one of the most important policies in the cotton industry, and the producing countries should direct their utmost efforts to this end. The development of high yielding varieties (including pest-resistant and weather-resistant varieties) and the improvement of cultivation techniques should be the basic targets of these countries.

VI. Competing Situation of Raw Cotton with Other Crops

Survey of Crops Competing with Cotton, issued by ICAC during November 1979, is one of most informative materials regarding the theme. Accordingly, the essential summary in its "Introduction" are fully quoted hereunder.[1)]

1. "Introduction" of the Survey of Crops Competing with Cotton

In light of the intensified competition for land between cotton and alternative crops, the Secrtariat prepared two reports on the subject a few years ago — Doc. 15 for the 34th Plenary Meeting of the ICAC, November 1975, and Doc. 11, 35th Plenary Meeting, October 1976. The 37th Plenary Meeting held in San Salvador last year instructed the Secretariat to update the previous reports through another survey of crops competing with cotton. The questionnaire, with some modifications to gain further insight into acreage shifts, was sent to various cotton growing countries, and the replies

1) Full text of the Survey, which shows detail information of individual country, is available upon request.

received — 15 from members, and 8 from non-members — form the basis of this document. The limited response, coupled with the fact that several large cotton producing nations did not reply, restricts somewhat the value of the study.

Crops competing with cotton vary among regions and countries and, oftentimes, among different areas within a country. Soil and climatic conditions, availability of water, and the needs of crop rotation are basic determinants of what crops can be planted. However, actual choice then depends on profitability, input availability, and government policies, if any, regarding allocation of land, etc. Based on country replies, the following crops seem to be the most common competitors of cotton: foodgrains — wheat, corn, sorghum, and rice; oil crops — soybean, peanut and sesame; others — sugarcane and sugarbeet. Other crops which compete with cotton in only a few countries include barley; sunflower; alfalfa; berseem clover; vegetable crops such as beans, tomatoes, potatoes and chillies; tapioca; and melons.

During 1978/79, farmers in many countries made significant shifts in acreage from cotton to various competing crops. Cotton plantings declined in 10 out of the 17 countries that reported on quantitative acreage shifts. Global area was reduced by 1.8 milion acres from 82.6 millions in 1977/78. The most frequently mentioned cause of acreage diversion was the rising cost of producing cotton, which has increased relatively faster than for most competitors. This has been due to intensive use of agricultural inputs, such as fertilizers, pesticides, energy, labor and capital. Thus, El Salvador pointed out that while production costs for cotton went up by 23% in 1978/79 compared to a year earlier, increases for most alternative crops were substantially lower — rice, up 1.6%; sorghum, 2.9%; corn, 10.0%; and beans, 20.5%. Rising costs of chemical inputs appear to be restraining their use level. For instance, the reply from Peru indicated that the use of fertilizers and insecticides during 1978/79 was restricted to the absolute minimum.

Besides leading to land diversion to alternative crops, the pressure of vastly increased production costs last season also caused some land abandonment in cotton areas of a few countries. In Colombia, for example, the 1978/79 cotton area was reduced substantially from the preceding season's level, with almost no change in acreage for alternative crops. Some countries, especially those in Central and South America, cited credit availability as a restrictive influence on cotton growing. Others referred to scarcity of labor and the accompanying high wages as an adverse factor. In Syria, the cost of labor was estimated to have gone up by 300% since 1973. Labor requirements are particularly high at harvest time, especially in countries where cotton is hand picked.

Acreage shifts can also come as a result of government policies

favoring one crop over the other through price support and land allocation schemes. In most responding countries farm prices are guaranteed, and last season's support prices for cotton were generally kept in line with those for other crops. However, there were instances where the support level favored cotton, or vice-versa, depending on policy intentions. To illustrate, in Benin cotton price support was increased by 10% last season while the level for other crops was unchanged. In Pakistan, on the other hand, while support prices for cotton were maintained, those for rice were increased substantialy. Still, little acreage was diverted from cotton to rice because of limited irrigation facilities for the latter crop. Land allocation measures were of little moment in causing acreage shifts from cotton as only a few countries have such programs in effect.

Other measures used by the authorities to influence farm decisions relate to subsidies on production inputs. Overall, the thrust of official policies in a number of countries has been towards expanding food crops at the expense of cotton.

Marketing and processing facilities can also be a significant inducement for increased plantings of a particular crop. Thus, in Syria a noticeable land diversion from cotton to sugarbeets in recent years was largely ascribed to the newly-built sugar processing facilities in the traditional cotton growing areas.

In contrast to the area decline for cotton in most countries in 1978/79, there were several instances of increased cotton acreage. In Australia, for example, the cotton area was up by nearly 40%, benefiting from increased irrigated land and a favorable price parity for cotton.

As for the current season, the extent of the shift between cotton and alternative crops again hinges mainly upon comparative economic returns, and weather conditions. Higher prices for cotton than a year earlier have stimulated farmers' interest and, of the 9 countries which projected 1979/80 plantings, 6 indicated increases compared to last season. Sharp recoveries are indicated in the United States and Colombia. Availability of inputs was reported to be generally satisfactory but high prices could restrain their use. In a number of countries, however, the impact of higher inputs costs is softened due to government subsidies for key factors of production. Also, an improved credit situation for cotton farmers reported by some countries of South and Central America is a favorable factor.

At an assumed average farm price of 60 US cents per pound, most countries would find cotton more profitable than a majority of competing crops. This observation was based on conditions prevailing in the spring/early summer months of 1979.

Looking ahead, several factors should assure maintenance of widespread interest in cotton growing. Pressing world needs for food do not seem to pose a serious threat to cotton area in the foreseeable future. For instance, the reply from India indicates that production and productivity of food crops are being raised to meet the needs of a large population, "but the need for foodgrains production does not impinge on the cotton area".

There are numerous countries where pressure on cultivated land is not yet intense, and some countries in the Americas and Africa, in fact, still have an appreciable amount of reclaimable land. Of the replying countries, Togo points to a reserve of arable land which can be brought into cultivation with improved infra-structure — new roads, ginning, facilities, etc. In Peru, it is anticipated that the development of the jungle areas will result in expanded cotton acreage.

In a number of countries, such as Mali, cotton is the only cash crop available to the farmer, and no viable alternatives are foreseen for the immediate future. Furthermore, cotton by-products — cottonseed meal and oil — are a valuable source of human nutrition, and the meal is used widely as a livestock feed.

Cotton is indeed the mainstay of the economy of a large number of countries and accounts for a substantial proportion of total agricultural production and employment. For many countries it is a leading foreign exchange earner. Moreover, the textile industry is a key priority for a number of developing countries.

The level of future cotton plantings will ultimately be determined by its profitability vis-a-vis competing crops. However, while there have been sharp year-to-year changes in global cotton plantings over the years, the basic trend in area has not changed for over two decades. In fact, acreage is less now than the level of the early 1950s, whereas production has gone up by roughly 50% since that time. All of the gain in cotton production has thus come from increased yields. This trend is expected to continue in the coming years. Many countries are, in fact, anticipating significant productivity gains through new and improved varieties of seed, greater use of chemical farm inputs, expanded irrigation facilities, and extension efforts.

2. The United States' answer to Question 7 is worth noting among the answers given by each country, which were introduced after the above-mentioned Introduction:

Question 7 asked, "Assuming an average farm price of 60 US cents per pound for ginned cotton, at approximately what farm price

for the various competing crops would farmers in your country find it more profitable to grow these alternative crops?"

Southeast:	Soybeans:	$5.50 per bu.
	Corn:	$2.55 per bu.
Southwest:	Grain sorghum:	$3.20 per bu.
	Wheat:	$5.20 per bu.
Mississippi Delta:	Soybeans:	$6.60 per bu.
	Rice:	$8.20 per cwt.
West:	Barley:	$6.00 per bu.
	Wheat:	$6.10 per bu.

As related material, Appendix Table 20, Annual Average Prices Received by Farmers, USA, 1969-1982 and Appendix Fig. 3, Prices Received by Farmers, USA are attached at the end of this chapter.

Looking at soybeans, which seem to be most competitive among the main crops competing with cotton, Appendix Table 21 and Appendix Fig. 4 show the fluctuation range in the prices and harvested area of soybean and cotton, and from where the following points can be made:

a. For the six years from 1967 to 1972, the fluctuation range in the prices of both items was small, with harvested areas gradually increasing.

b. Being sensitive to sharp rises in price owing to the rapid increase in the price of oil in 1973, the price of soybeans increased by 97.1% and harvested area increased by 9.68 million acres, while cotton showed only autonomous changes, i.e., a 11.8% increase in price and a decrease of 1.52 million acres in area.

c. The price of cotton followed the rise in consumer prices, increasing by 58% in 1974, and for the three years until 1976, there was an inverse movement in the respective harvested areas of cotton and soybean; that is, the increase in the area of cotton was accompanied by a decrease in that of soybean, and the increase in the area of soybean was accompanied by the decrease in that of cotton. Nevertheless, the fluctuation range did not correlate, although the fluctuation in both prices was large.

d. From 1977 to 1979, the harvested area of soybean showed a sharp increase, while that of cotton increased slightly. Having reached the most recent peak ($9.24) in 1977, the price of soybean fell rapidly, thereafter showing a tendency towards gradual increase. The price of cotton gradually increased after the fall to a bottom price (47.90 cents) at the end of 1977.

e. In both 1980 and 1982, harvested areas showed an inverse movement to each other, but in both 1981 and 1983, these areas of

both commodities decreased. The most recent peaks of cotton and soybean in harvested area were 14.53 million acres in 1980, and 72.16 million acres in 1982, respectively. The tendency of the prices of both to fall since 1980 may be said to reflect the drop in the price of oil and concomitant world recession.

f. As shown above, it can be presumed that there is a competing and substitutable relationship between cotton and soybean on an annual and macro basis, but the substitutability appears not to be very high because the fluctuation range in the harvest area of cotton is very small compared to that of soybeans.

VII. Plans and Policies in Producing Countries

Many cotton producing countries attach considerable importance to the production of raw cotton, and they often take special measures for its production.

According to the ICAC survey, of the 34 countries which responded 28 countries are taking some measures regarding the price received by the farmers through providing price supports or guarantees.[1)]

There are 22 countries which grant some form of subsidy for cotton production, and as many as 26 countries which have special measures for financing.

On the other hand, there are only 8 countries which place controls on the planted area under raw cotton.

1) Details of individual and specific policies by country are tabulated in ICAC's Government Regulations on Cotton, 1982.

C. CONSUMPTION

In order to consider trends in world cotton consumption, the survey should firstly incorporate fundamental items such as the equipment and operational situation of the world spinning industry, but the description of these items will be omitted because the final purpose of this Study is to project cotton demand, and an analysis will be first made of the Cotton-World Statistics published by ICAC (International Cotton Advisary Committee), which aggregates the amount of cotton consumed at spinning plants.

For the equipment and operational situation of the world spinning industry, please see Country Statements for Every Annual Conference published by ITMF (International Textile Manufacturers Federation).

I. Trends in Consumption

On the basis of Appendix Tables 12 and 13, which show total consumption by cotton season (August 1 to the last day of July the following year), the trends in consumption in terms of the 5-year (cotton season) averages since 1965/66 are as follows.

1. Total World Consumption

5-year average	Consumption (million bales)	Consumption (million MT)	Quantity index
1965-69	54.03	11.71	100.0
1970-74	59.28	12.85	109.7
1975-79	62.50	13.55	115.7
1980-81 *	66.15	14.34	122.4

* 2-year average

On the whole, a gradual increase is indicated, and the annual rate of increase [1] is 1.47%.

1) The annual rate of increase is calculated on the basis of the amount of increase registered from the 1965-69 average to the 1975-79 average. The same applies hereafter.

2. Total Consumption in Developed Countries

The cotton consuming developed countries include the two North American countries of the United States and Canada, nine EC countries and other West European countries, plus Japan, Australia and South Africa.

The trends in total consumption in the developed countries are shown below.

5-year average	Consumption (million bales)	Consumption (million MT)	Share of world average (%)	Quantity index
1965-69	19.87	4.31	36.8	100.0
1970-74	17.99	3.90	30.4	90.5
1975-79	16.57	3.59	26.5	83.4
1980-81 *	15.03	3.26	22.7	75.6

* 2-year average

Overall, a large decrease is indicated, at an annual rate of 1.80%, with the share of the world total also decreasing significantly.

This reflects the sharp decline of the share held by cotton in fiber textile factory consumption in the developed countries. Since the overseas market for cotton goods from these countries has been reduced due to the development of the cotton industry in the newly industrializing countries, and their domestic market has also been eroded by the advent of synthetic fiber products and by cheap-priced cotton goods from the newly industrializing countries, the cotton industry in the developed countries is on the decline, and as a result, their consumption of raw cotton has decreased. Another reason is that in most of the developed countries the demand for cotton goods, having the high hygroscopicity and air permeability, is not as strong as in the hot and humid countries.

As a reference, the trends of the share held by cotton of fiber textile factory consumption in the developed countries are as follows.

(%)

Calendar year	USA	Canada	Western Europe Total	Japan	Australia
1951	70.6	65.8	58.8	67.6	39.7
1960	65.2	56.4	51.1	53.3	28.4
1970	40.2	35.4	35.1	35.2	22.9
1979	28.8	20.0	29.0	33.7	20.5

Source: ICAC

3. Total Consumption in Developing Countries

The cotton consuming developing countries reach more than 60 in number, including Southwest Asian countries (India, Pakistan, etc.), South American countries (Brazil, etc.), newly industrializing countries in Asia (the Republic of Korea, Taiwan, etc.) and the ASEAN countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand), African countries (Egypt, etc.), Middle Eastern countries (Turkey, etc.), and Central American countries (Mexico, etc.).

The trends in total consumption in the developing countries are shown in the following Table.

5-year average	Consumption (million bales)	Consumption (million MT)	Share of world average (%)	Quantity index
1965-69	15.19	3.29	28.1	100.0
1970-74	18.74	4.06	31.6	123.4
1975-79	21.99	4.77	35.2	144.8
1980-81 *	23.32	5.05	35.3	153.5

* 2-year average

A steady and gradual increase is shown here, and the annual rate of increase is the largest at 3.79%.

As a further reference, the trends of the share held by cotton of fiber textile factory consumption in the main developing countries are as follows.

(%)

Calendar year	India	Pakistan	Brazil	Egypt	Turkey	Mexico
1951	94.2	NA	82.1	85.3	72.7	82.4
1960	92.9	NA	80.7	88.9	81.1	77.2
1970	89.3	95.0	71.8	NA	75.2	NA
1979	75.2	88.0	66.4	90.1	63.4	37.7

Source: ICAC

All of the main developing countries listed in the above Table are cotton producing countries, and are consuming what they produce and exporting the balance. However, from the total for the

developing countries it can be noted that the difference between production and consumption is on a decreasing trend, and export capacity is consequently decreasing, as will be mentioned later.

4. Total Consumption in the Planned Economy Countries

The cotton consuming countries belonging to the planned economy countries consist of the East European countries, including the USSR, and the planned economy countries in Asia, including China.

The trends in total consumption in the planned economy bloc are shown below.

5-year average	Consumption (million bales)	Consumption (million MT)	Share of world average (%)	Quantity index
1965-69	18.97	4.11	35.1	100.0
1970-74	22.55	4.89	38.0	118.9
1975-79	23.95	5.19	38.3	126.3
1980-81 *	27.80	6.03	42.0	146.5

* 2-year average

On the whole, a steady and gradual increase is indicated for this group, and the annual rate of increase is very high at 2.36%.

The reason that consumption is consistently higher than production is that, especially in China, consumption widely exceeding the quantity of production has continued, and as a result, the whole bloc has an excess of imports, as will also be described later.

The share held by cotton of fiber textile factory consumption in the entire planned economy countries is very high, as shown below.

(%)

Calendar year	Entire planned economy countries
1951	84.0
1960	78.5
1970	72.1
1979	65.3

Source: ICAC

The share occupied by cotton of fiber textile factory consumption by the individual planned economy countries is not available in the ICAC statistics, but from other data it has been compiled as follows.

a. USSR/Eastern Europe Total

Year	Cotton (million MT)	(%)	MMF (million MT)	(%)	Fiber total (million MT)	(%)
1974	1.89	(38.4)	1.85	(37.6)	4.92	(100.0)

Note : Others 24%

Source: FAO

b. USSR

Year	Cotton * (million MT)	MMF ** (million MT)	Fiber total (million MT)
1980	1.97	1.20	N.A.
1981	2.04	N.A.	N.A.

* ICAC, cotton season

** *USSR/Eastern Europe Trade Association data,* calendar year

c. China: Share of Domestic Consumption by Material

Year	Cotton (million MT)	(%)	MMF (million MT)	(%)	Fiber total (million MT)	(%)
1970	1.87	(88)	0.20	(10)	2.12	(100)
1976	2.60	(86)	0.34	(11)	3.03	(100)
1978	2.60	(83)	0.44	(14)	3.14	(100)
1979	2.67	(82)	0.51	(16)	3.25	(100)
1980	3.27	(77)	0.91	(21)	4.26	(100)

Note : Other 2-3% is wool. Being not included in above fiber total, there are about one million tons of flax and about 0.1 million tons of silk consumed annually.

Source: Japan Chemical Fiber Association, Trends of World Fiber Demand, January 1982

d. Summary of ITMF (International Textile Manufacturers' Federation) Data (1) and (2)

(million MT)

	Cotton (%)	MMF	Others	Total
1974				
USSR	1.88 (72)	0.72	N.A.	2.60 (100)
Eastern Europe	0.74 (64)	0.40	0.01	1.15 (100)
Subtotal	2.62 (70)	1.12	0.01	3.75 (100)
China	2.30 (96)	0.09	N.A.	2.39 (100)
Total	4.92 (80)	1.21	0.01	6.14 (100)
World total	12.57	3.75	0.14	16.46
1979				
USSR	1.95 (73)	0.72	*	2.67 (100)
Eastern Europe	0.73 (53)	0.60	0.05	1.38 (100)
Subtotal	2.68 (66)	1.32	0.05	4.05 (100)
China	2.91 (90)	0.34	N.A.	3.25 (100)
Total	5.59 (77)	1.66	0.05	7.30 (100)
World total	13.82	5.33	0.21	19.36

* Less than 5,000 tons

Note: 'Others' category shows too small quantity because the survey would not cover a sufficient range. Therefore, the share of cotton against the total is only given as a reference.

II. Trends in World Fiber Demand [1)]

Trends in total world production of fibers, focusing the competitive situation between cotton and man-made fibers (MMF), especially non-cellulosic staple fibers, the principal competitor of cotton, are as follows.

1) Demand is taken as a reflection of the production statistics.

5-year average	Raw cotton	MMF				Wool & Silk	Grand Total
		Rayon & Acetate Total	Non-Cellulosic (Staple)	Non-Cellulosic Total	Total		
Quantity (million MT)							
1965-69	11.42	3.41	(1.43)	2.98	6.39	1.61	19.42
1970-74	13.25	3.53	(3.15)	6.36	9.89	1.56	24.70
1975-79	13.07	3.23	(4.81)	9.15	12.38	1.57	27.02
1980-81 *	14.85	3.22	(5.84)	10.61	13.83	1.65	30.33
Share of world total (%)							
1965-69	58.8	17.6	(7.4)	15.3	32.9	8.3	100.0
1970-74	53.6	14.3	(12.8)	25.7	40.0	6.4	100.0
1975-79	48.4	12.0	(17.8)	33.9	45.8	5.8	100.0
1980-81 *	49.0	10.6	(19.3)	35.0	45.6	5.4	100.0
Quantity index (1965-1969 = 100.0)							
1965-69	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970-74	116.0	103.5	220.3	213.4	154.8	96.9	127.2
1975-79	114.4	94.7	336.4	307.0	193.7	97.5	139.1
1980-81 *	130.0	94.4	408.4	356.0	216.4	102.3	156.2

* 2-year average

Source: Compiled on the basis of Textile Organon data.

The important points emerging from the above Table are summarized as follows.

a. The share of cotton in the world total showed a gradual decrease from the 58.8% of the 1965-69 average to 48.4% in the 1975-79 average, but in the 1980-81 average it showed a recovery (49.0%) and in 1981 it showed a considerable resiliency (49.8%).

b. On the other hand, the MMF total showed a gradual increase from the level of 32.9% in 1965-69 to 45.8% in 1975-79, but in 1980-81 it showed a leveling off (45.6%) and in 1981 alone, a drop to 44.8%.

c. The share held by the non-cellulosic staple fibers, a direct competitor of cotton, of total fiber production showed a sharp increase from 7.4% in 1965-69 to 17.8% in 1975-79, and a further increase to 19.3% in 1980-81. However, in 1981 alone, it showed signs of a leveling off, at 19.1%.

As a background for the above data, it can be pointed out that the sharp increase in the price of oil after 1973 raised the cost of MMF sharply, and the competitive relationship between cotton and the non-cellulosic staple fibers entered a new phase in which cotton saw increasing competitive power in terms of price. In the both cases of mixed spun yarn and mixed woven fabric, the mixing ratio of cotton is increasing.

d. Therefore, excepting fibers, such as non-cellulosic filament, rayon, acetate, wool and silk, which are not in direct competition with cotton, and extracting the trend of the total combined share of cotton and the non-cellulosic staple fibers which are in an interchangeable or substitutable relationship, it is obvious that there is no significant change from the figure of 66.2% in the 1965-69 average; with 66.2% indicated in 1975-79 and a slight increase to 68.3% in 1980-81. This means that the total share of these two fibers of the world total is expected to continue in the future at around 66-70%.

e. It is expected that cotton will compete with the non-cellulosic staple fibers within the range of the total share mentioned above, and if the above production statistics are to reflect demand, the future share held by cotton of world fiber demand can reasonably be expected to reach a maximum of 50%, with a mean value of 45% and a minimum of 40%.

f. It should also be noted here that the annual rate of increase of total world fiber production (=demand) from the 1965-69 average to the 1975-79 average was 3.36%, while the annual rate of increase to the 1980-81 average figure was 3.81%. For the trends since 1940, see Appendix Table 3.

D. INTERNATIONAL TRADE

I. Trends in International Trade

Based on the figures given in Appendix Tables 14 to 17, which show the total volume of trade by cotton season (August 1 to the last day of July in the following year), the trends in the volume of trade by 5-year average since 1965-66, expressed in units of one million bales (478 pounds net bale) and one million tons are as follows.

1. Total World Volume of Trade

5-year average	Exports		Share of production (%)	Imports		Share of consumption (%)
	million bales	million MT		million bales	million MT	
1965-69	17.18	(3.72)	32.6	17.67	(3.83)	32.7
1970-74	18.66	(4.05)	30.8	19.03	(4.13)	32.1
1975-79	19.52	(4.23)	32.3	20.17	(4.37)	32.3
1980-81 *	19.92	(4.32)	29.1	20.28	(4.40)	30.7

* 2-year average

On the whole, the volume of trade shows a gradual increase but both the share held by exports of production and the share of imports in consumption are showing a weaker trend.

2. Total Volume of Trade in Developed Countries

The developed countries which export cotton consist of only the United States, Australia and South Africa, and the majority of exports are accounted for by the United States, although recently the quantity of exports from Australia has been gradually increasing. Other developed countries are importing countries.

5-year average	Exports million bales	Exports million MT	Share of production (%)	Imports million bales	Imports million MT	Share of consumption (%)
1965-69	3.75	(0.81)	32.4	10.56	(2.29)	53.1
1970-74	4.77	(1.03)	36.9	10.11	(2.19)	56.2
1975-79	6.05	(1.31)	46.2	9.15	(1.98)	55.2
1980-81 *	6.75	(1.46)	44.9	8.47	(1.84)	56.4

* 2-year average

With regard to exports, it can be said that the United States and Australia are continuing production attaching importance to exports, but since the United States has implemented controls on production a larger scale of exports is less likely.

Imports also show a strong possibility of remaining at the present scale, because consumption shows a gradually decreasing trend.

3. Total Volume of Trade in Developing Countries

Of the developing countries which produce cotton, the South American countries show a gradual increase in domestic consumption and their exports consequently show a trend of gradual decline. A similar trend can be seen to have begun recently in Central America, the Middle East, and the African countries. Southwest Asian countries consume most of their production domestically, although Pakistan has some export capacity. On the other hand, the ASEAN and newly industrializing countries in Asia depend on imports to meet most of their consumption.

5-year average	Exports million bales	Exports million MT	Share of production (%)	Imports million bales	Imports million MT	Share of consumption (%)
1965-69	11.01	(2.39)	46.6	3.16	(0.69)	20.8
1970-74	10.63	(2.30)	40.5	4.20	(0.91)	22.4
1975-79	9.29	(2.01)	37.4	5.67	(1.23)	25.8
1980-81 *	8.60	(1.86)	32.7	5.50	(1.19)	23.6

* 2-year average

Overall, exports show a declining trend both in actual export figures and in the ratio of exports to production. This is concurrent with the trend towards a gradual decline in imports shown by the developed countries.

On the other hand, the level of imports shows a trend towards a gradual increase, and the main reason for this is the gradual increase of total imports by the newly industrializing countries in Asia and ASEAN.[1)]

4. Total Volume of Trade in the Planned Economy Countries

For the USSR/Eastern European countries internal trade is included. In China the level of production was previously unable to catch up with the increase in consumption, with the result that imports gradually rose and there was no export capacity.

5-year average	Exports		Share of production (%)	Imports		Share of consumption (%)
	million bales	million MT		million bales	million MT	
1965-69	2.42	(0.52)	13.9	3.95	(0.86)	20.8
1970-74	3.26	(0.71)	15.2	4.73	(1.03)	21.0
1975-79	4.18	(0.91)	18.6	5.35	(1.16)	22.3
1980-81 *	4.58	(0.99)	16.9	6.30	(1.37)	22.7

* 2-year average

On the whole, both imports and exports show a gradually rising tendency, but since China increased production to exceed consumption in 1982, it is expected that the level of exports will increase and imports will decline in the future.

5. Summary of International Trade Situation

The future prospects largely depend on the recovery of consumption in the developed countries and the export capacity of the developing countries, but since there is a tendency for domestic

1) Total imports of the newly industrializing Asian countries and ASEAN countries (million bales):

1965-69	2.01	1970-74	2.91
1975-79	4.49	1980-81	4.42

consumption to be increasing in the developing countries and the planned economy countries, there is little possibility that the level of international trade will increase significantly, with the actual figures showing only a slight increase.

II. Structure of the International Market

1. Wide Scope of the International Cotton Market

Since cotton holds a share of nearly one half of fiber consumption and is the raw material for the cotton goods which are essential in our daily life, it is used in all of the countries in the world. Countries which consume raw cotton as a material for spinning total 95 in number, and more than 20 such countries are to be found in each of the continents of Asia, Oceania, Africa, America and Europe.

About 70 countries produce cotton, and it is used all over the world. Of these, 28 are located in Africa, 18 in the American continent, 17 in the continents of Asia and Oceania, and 6 in the continent of Europe. For many developing countries the production of cotton is their key industry.

Some of these cotton producing countries cannot meet the demand from their domestic fiber industry and are importing cotton, but there are many countries in all of the continents except Europe which are exporting cotton as a major export good.

On ther other hand, about 70 countries import cotton for their domestic fiber industries, and their distribution is 25 in the continent of Europe, 21 in the continents of Asia and Oceania, 12 in the continent of Africa and 10 in the American continent. Most of the cotton consuming countries in Europe, Asia and Oceania depend on imported cotton, but in the African and American continents only half of the consuming countries depend on imports.

2. Structure of Trade

Exports can be divided into the free type found in the United States, Australia, etc., where cotton is freely exported by individuals or trading companies, and the controlled type where some form of administrative intervention takes place. The latter includes countries where administrative intervention is by indirect means such as the setting of a minimum price or export controls (e.g.

India, Brazil), and countries which intervene directly by having a national sales or export corporation handle all exports (e.g. the Soviet Union, Pakistan).[1)]

In the case of imports, all of the importing and consuming countries permit free importation without any restrictions, whereas the producing and exporting countries in many cases have some form of control such as the levying of import duties or an import license system.[2)]

As mentioned above, there are some countries where the government directly or indirectly intervenes in order to sell that country's cotton abroad. Even in such cases, the current price level on the world market cannot be ignored, since the export price, unlike domestic prices, must be competitive in the world market.

In order to prevent excessive fluctuations in the price of cotton, there is a movement among some developing countries to stabilize the price utilizing the Common Fund of UNCTAD. Under this plan, when the price falls below the lower limit surplus cotton is purchased, and when it rises above the upper limit stock is discharged. However, this plan seems to involve many problems.

In order to maintain and develop a true invigoration of the world cotton economy, it will be important to maintain the existing free market conditions with their autonomous adjustment function supplemented by the second window of the Common Fund, and also to promote consumption through international surveys and activities, to assist the developing countries with agricultural technology to improve the unit yield, to introduce a loan system through international financial institutions and to give other indirect assistance to the developing countries or to countries in temporary difficulties when the market price falls.

On the other hand, an agreement called "Arrangement Regarding the International Textile Trade", shortened to "MFA" (Multi-Fibers Arrangement) came into effect on January 1, 1974, and the third arrangement was put into effect on January 1, 1982, and has been further extended to the end of July, 1986.

This arrangement, made under auspices of GATT, is the principle arrangement between several countries concerning various types of textile including cotton goods, and Article 4 of MFA permits bilateral agreements to be concluded. Today, many countries have entered into bilateral agreements with exporters on the basis of

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1) See Section B, Exports, in ICAC's Government Regulations on Cotton, 1982.
2) See Section C, Imports, in ICAC's Government Regulations on Cotton, 1982.

this Article in order to control textile imports which compete with domestic textile goods.

Brazil has signed bilateral agreements with the United States and the EC, but not with Japan.

At a glance, the existence of MFA and bilateral agreements thereunder seems to be disadvantageous to developing countries which desire to expand textile exports, but if these agreements are prohibited protectionism in the textile trade is likely to increase and disrupt the free trade system. Judging from this, the existence of such agreements is desirable for the steady expansion of international textile trade.

In fact, even in the United States and the EC, where agreements such as MFA may make possible certain degrees of restriction on textile imports, the cotton produced domestically is gradually decreasing under the influence of the steady increase in imported cotton goods (see Appendix Table 12). Further, it cannot be said that domestic cotton spinning industries are actively protected by existing import restrictions. If the above-mentioned restriction was strongly protective, imported cotton goods would have been reduced and cotton imports increased by importing countries, but the total of cotton imports of the EC and West European countries shows, in general, a gradual decrease or a position of steadiness with a likelihood of decrease (see Appendix Table 16).

This leads to the conclusion that the current arrangements concerning the international textile trade have no direct or indirect effect on changes in the flow of international cotton trade.

3. Terms and Conditions of Trade

The main cotton importing and exporting countries in the world have their own cotton associations or public cotton agencies, and all of these organizations set regulations governing the cotton trade. The purchasing and selling parties conclude the contract in accordance with any one of these regulations in the international cotton trade, but sometimes special conditions are inserted into the agreement between the parties. The trade regulations established by the Liverpool Cotton Association in the United Kingdom are the most widely used in the world.

In the controlled type of exporting countries, domestic cotton is in many cases exported in accordance with the export conditions prescribed by the country concerned.

In either case, the basic terms and conditions for the cotton trade include the following main items.

Quality : Place of production, and sometimes production year and the quality of the cotton in question are specified.

Quantity: Net weight (in kg or pounds) and usually the number of bales are indicated, and the settlement is usually made on the basis of the net weight (usually the weight at the port of discharge is taken, although the weight at the port of shipment may sometimes be used).

Price : Usually indicated as a fixed price (US cents per pound or kg), although sometimes the contract may be concluded "on call"; i.e., only the premium or discount is indicated against the particular delivery month price at the futures cotton exchange. In such a case, the price must be fixed by determining the futures cotton quotation (standard for price) by seller's call or buyer's call by the agreed date.

In addition, CIF or FOB, destination, time of shipment or time of delivery, insurance and payment terms must be specified. It is also a general practice in the cotton trade to decide in advance which court of arbitration is to be used if any dispute occurs regarding the quality or the contract itself.

4. Futures Contracts

The above description concerns spot contracts, which are concluded by receiving the spot cotton with settlment being made in cash. However, the futures contracts is also important in the cotton market.

The futures contract, unlike the spot contract is rarely conducted as a transfer of the title to spot cotton, but rather the sold goods are repurchased or the bought goods are resold, thus offsetting the amounts of sales and purchases without involving the transfer of the spot cotton itself, and this type of transaction is in many cases completed by settling the difference between the selling price and the buying price. In cases where the cotton is actually bought or sold, if the quality of the cotton is within the range specified by the futures cotton exchange concerned, the seller can freely deliver the cotton in his possession. Of course, the difference in quality between the listed standard-quality cotton and the delivered cotton is settled in cash, although the actual quality of the delivered cotton cannot be predetermined.

The futures contract is conducted at a given exchange under the forward trade regulations through authorized brokers, in the prescribed trade unit and during the prescribed market hours, by depositing a certain amount of margin money and paying a prescribed commision.

In the period from the prewar days until recently, futures cotton markets were operating in New York, New Orleans and Chicago in the United States, in Liverpool and London in the United Kingdom, Bremen in the Federal Republic of Germany, Bombay in India, Karachi in Pakistan, Osaka in Japan, Sao Paulo in Brazil, Alexandria in Egypt, Le Havre in France and Hong Kong. These exchanges underwent many periods of opening and closing, and are now almost all closed, with the New York Cotton Exchange currently the only international exchange in existence.

At the New York Cotton Exchange, futures contracts are always conducted on the basis of the cotton being delivered in the current month and the subsequent 17 months (delivery months). These futures contracts are utilized for on-call transactions for spot cotton as mentioned above, and also as a "hedge" to reduce the risk of loss due to price fluctuations. A series of quotations published daily, from the nearest active future at New York (nearest month) to the distant active future at New York (distant month) one and a half years ahead, is widely used by the world cotton market as a price indicator suggesting the future trend of spot cotton prices.[1)]

III. Parties in International Trade [2)]

In the advanced countries, most of the exportation of cotton is conducted by cotton merchants, although some of this trade is conduced by the cotton farmers' cooperative associations (e.g., in the United States and Australia). Most of the importation of cotton is also conducted by the cotton merchants, although some is conducted by the cotton spinners themselves. International trade usually consists of trade between two countries where a cotton merchant resident in the importing country buys directly from a cotton merchant resident in the exporting country. Sometimes, however, the cotton produced in a particular country is purchased by a cotton merchant resident in the importing country through an international cotton merchant resident in a third country.

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1) See Cotton Futures Trading, U.S. Department of Agriculture.

2) See ICAC's Government Regulations on Cotton, 1982, Section B, Exports, and Section C, Imports. For details of the importers in various countries, see "Cotton Buying Practices in Foreign Coun tries", extracted from USDA's How U.S. Cotton Is Sold for Export.

In the USSR cotton is exported exclusively through the national fiber trading corporation.

The cotton produced in many developing countries is exported through the sole cooperative association of the cotton producers or a public export corporation or other monopoly agency (El Salvador, Honduras, Kenya, Pakistan, Peru, Syria, Uganda, Zimbabwe, etc.). In some cases, exportation is conducted by several state authorized cotton traders, but the export policy regarding the price, quantity and other export conditions are determined and published by the government (Egypt, Sudan).

In India and Brazil, exportable quantity and minimum prices are controlled by the government and exportation is conducted by cotton traders and other export organizations.

In the cotton producing and exporting countries, the import of foreign cotton is often controlled to protect domestic production, and India and Bangladesh limit importation to their central buying agencies.

In Hungary and the East European countries as well, it seems that the agencies for importing cotton are designated.

IV. Marine Transportation

Since the international cotton trade is conducted over a wide area stretching over five continents, most traders must depend on marine transportation. Therefore, exporters must be well acquainted with the marine transportation situation in order to effect shipment to their customers in the various countries.

Shipping companies have their offices in all of the major cotton markets, and freight brokers are located in other cotton areas who furnish exporters with up-to-date information on freight rates and ship availability to the destination ports.

When an exporter concludes a cotton export contract for a certain shipment or delivery date on a CIF or C&F basis, he himself books vessel space. If the contract is concluded on an FOB or FAS basis, the buyer books the vessel space. In either case, the exporter must deliver the cotton cargo to the shipping company at the loading port within the reserved period of transportation.

In almost all the major cotton markets, vessels are booked to regularly service the market and a certain amount of vessel space is made available according to established schedules and at a stable

freight rate.[1] Recently there is a strong trend for the cotton-exporting developing countries to establish their own marine transportation enterprises, in order to improve their international balance of payments. Pakistan, Mexico, Brazil, Argentina, Egypt, India, etc. operate state or semi-governmental shipping corporations. Even the developed exporting countries such as the USSR and Australia have begun to transport a large amount of their cotton through national shipping corporations.

Australia and the USSR in particular have followed the land of the United States in realizing containerization for the marine transportation of cotton. India and Pakistan are also endeavoring to containerize transportation. Currently, the United States and Australia have completed the full containerization of cotton transportation, and this has considerably shortened the required number of sailing days and cargo handling time.

V. Export Plans and Policies in Producing Countries

There are many cases where cotton producing countries are implementing various kinds of measures in order to promote exports of their own cotton. According to the ICAC survey, of the 32 responding countries, 11 countries export through special agencies or special arrangements, 9 countries grant special loans for exports, 3 countries grant export subsidies and 2 countries have installed a special exchange rate.[2]

It is to be noted that 11 countries are levying import duties.

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1) In order to revise the freight rates, it is necessary to obtain the approval of the industry or the authorities concerned.

2) For a detailed description by country, see ICAC's Government Regulations on Cotton, 1982.

E. PRICE

I. Trends in World Cotton Prices

World market prices for cotton are formed chiefly on the basis of the price of medium long staple cotton (1-1/32" to 1-3/32"), which accounts for the majority of supply and demand. Here we shall outline the price movements on the basis of the available figures for annual averages, as given in the Cotton Outlook A Index (CIF Northern Europe; for SM1-1/16") from 1966-67 onwards (since 1981-82, for M1-3/32").

From 1966 to the end of 1970, prices on the whole were around 30 cents per pound. In the middle of 1971, however, monetary instability occurred throughout the world, and although the Smithsonian Agreement was concluded in December of that year, stability could not be recovered. In February 1973, the U.S. dollar was again devalued (10%), and various countries in the world switched in succession to the floating exchange rate system. Subsequently the U.S. dollar continued to decline, and the worldwide era of inflation began.

The price of cotton continued to increase rapidly, to 37 cents in 1971-72, 42 cents in 1972-73 and 76 cents in 1973-74. In these three years, the consumption of cotton was continuously rising but production was increasing even more rapidly. Therefore inflation can be considered to be the main reason for the rising price of cotton.

In addition, when the Arab petroleum-exporting countries reduced the level of petroleum exports to countries other than friendly countries at the end of 1973, and have increased the oil price fourfold since January 1974, some of the demand for man-made fibers was transferred to cotton, thus contributing to the high price of 76 cents in annual average mentioned above, with almost 90 cents at the peak.

However, the sharp increase in energy costs brought about a revolution in prices, and the production cost of cotton also increased steeply due to sharp increases in the prices of fertilizer, agricultural chemicals and agricultural machinery. On the other hand, the conservation of energy and other resources and the restrained consumption of various goods were promoted throughout the world, and the general recession set in, with the result that the demand for fiber also decreased.

In 1974-75 the cotton price suffered a reactionary fall to 52 cents, the reason being that although the level of production continuously increased, consumption conversely dropped, resulting in a record stock of 31.7 million bales having to be carried over to the following year.

In 1975-76, the price recovered to 65 cents because cotton production was greatly restrained, and with an almost identical situation continuing in 1976-77, surplus stock was eliminated and the price increased to 81 cents, the second-highest price.

In 1977-78, the price again experienced a reactionary fall, this time to 65 cents, the reason here being that cotton production recovered to a level exceeding consumption. Subsequently, however, the price entered its third period of increase, and a steady rise in consumption played the role of a force pulling prices ever higher; to 76 cents in 1978-79, 85 cents in 1979-80 and 94 cents in 1980-81.

In 1981-82, cotton production hit an all-time high of 71.3 million bales, but consumption declined by 0.5 million bales from the previous peak of 66.2 million bales recorded in the preceding year. The price of cotton again entered a period of decline, decreasing to 73 cents. With the worldwide recession now in progress, the price in 1982-83 shows a downward trend, declining to 69 cents at the end of November 1982 (Appendix Figs. 1 and 2).

To summarize, strongly influenced by external factors such as changes in the value of currencies, inflation, sharp increases in energy prices and the resultant sharp increase of prices in general, the price of cotton has repeated three large wave-like fluctuations since 1971, although the difference between the peak and trough of the wave has been gradually decreasing and the bottom point has also been raised, partly due to the price support system adopted by the major producing countries.

A forecast of price trends on a long-term basis is extremely difficult, with the strong influence exerted by the external factors described above.

The trends in world cotton prices and the world cotton supply and demand situation are shown in Table E-1.

II. Trends in Cotton and Polyester Staple Fiber Prices

As already described in the section Trends in World Fiber Demand (Subsection II of Section C), polyester staple fiber is both interchangeable and substitutable with cotton, and the difference in price between these two fibers is one of the major factors affecting the share held by each of the total demand for fibers.

Since synthetic fiber as a spinning material contains no foreign matter and has a uniform staple length and less wastage than cotton, it is advantageous in terms of input efficiency. However, because of the difference in their respective characteristics they are used

Table E-1 Trends in World Cotton Prices and World Supply and Demand Situation

Cotton year	Annual average price (cents per lb)	Stock at beginning of season (million bales)	Production (million bales)	Total supply (million bales)	Consumption (million bales)
1966-67	28.27	30.7	48.9	79.6	52.3
1967-68	31.21	27.2	47.7	74.9	52.7
1968-69	28.75	23.5	55.2	78.7	54.4
1969-70	27.97	24.4	53.0	77.4	55.2
1970-71	31.09	22.3	53.9	76.2	56.2
1971-72	37.14	20.7	59.0	79.7	57.9
1972-73	42.01	21.7	61.7	83.4	59.3
1973-74	76.32	24.2	63.5	87.7	62.3
1974-75	52.48	25.4	64.6	90.0	59.0
1975-76	65.26	31.7	54.3	86.0	61.4
1976-77	81.69	24.5	57.5	82.0	60.9
1977-78	65.00	21.3	64.3	85.6	60.9
1978-79	76.07	25.1	59.8	85.0	63.3
1979-80	85.58	22.2	65.9	88.1	65.5
1980-81	94.11	22.5	65.5	88.0	66.2
1981-82	73.76	21.4	71.3	92.7	65.7
1982-83		27.7	67.2	94.9	67.0(P)

Notes : Annual average price shows Cotton Outlook - A Index (CIF Northern Europe, SM 1-1/16" (since 1981-82, M 1-3/32")
(P) - preliminary

Source: ICAC

differently, and in addition, with the existence of industrial incentive policies, price is not the only factor in selection. If, however, the prices of these two types of fiber approach each other, the competition between them becomes more severe.

As can be seen from Table E-2, in 1965 when polyester staple fiber finally reached a share of 7.4% of the world fiber total, its price was 85 cents, three times higher than that for cotton (31 cents). However, in 1970, with the progress of mass production, the difference in price decreased; namely 41 cents as against 31 cents for cotton, and the share held also increased to 12.8%, as against 53.6% for cotton.

Subsequently, in 1975 after the oil crisis, the price of polyester staple fiber increased to 48 cents, but the price of cotton surpassed it for the first time and rose to 54 cents, due to the consumption of cotton exceeding production.

Table E-2 Trends in Cotton and Polyester Staple Prices in the World, 1965 - 1982

Calender year	Cotton ¢/lb	Polyester Staple ¢/lb			Cotton/Polyester ratio
		USA	Japan	UK	
1965	31		85		0.36
1970	31		41		0.76
1975	54 a)		48 c)		1.13
1980	91.1 b)	73.3	82.3	95.8 d)	1.24 f)
1981	84.1	83.4	84.5	82.0	1.01
1982 e)	72.8	76.5	76.8	80.2	0.95

Notes : a) Up to 1975, SM 1-1/16" delivered to U.S. mills.
b) 1980 and subsequent years, Outlook Index A, SM 1-1/16"/ M 1-3/32".
c) Up to 1975, 1.5 denier FOB U.S. Producing Plants.
d) 1980 and subsequent years, 1.7 decitex & 33 mm staple.
e) Jan.-Nov. average.
f) Compared with Polyester Staple in USA.

Source: Up to 1975, USDA; 1980 and subsequent years, Cotton Outlook.

In this period the share held by cotton decreased to 48.4%, while that held by polyester staple fiber increased to 17.8%.

In 1980 the price of cotton was 91 cents, while that of polyester staple fiber remained rather low, partly because the consumption of cotton registered a higher increase than did production. The share of cotton increased to 49.0% while that of polyester staple fiber remained at 19.3%.

In 1981, cotton and polyester staple fiber competed with each other at around 84 cents, and in 1982, again due to cotton production exceeding consumption, the price of cotton stood at a little less than 73 cents, while the price of polyester fiber was a little more than 76 cents; i.e., this marks the period of cotton being cheaper in price. The price of polyester staple fiber, however, continued falling under the influence of the subsequent reduction in oil prices, while that of cotton rose sharply mainly due to the large curtailments in United States' cotton production. This caused the price of cotton to be again substantially higher than that of polyester staple fiber by 1983. Although price is not the only factor in choosing of a commodity, changes in demand for cotton may occur if there is continued restraint on the rise in oil prices in the future, or if the price of polyester staple fiber continues to be lower than that of cotton.

Fluctuations in the price of oil have a decisive effect on synthetic fibers but not so much on cotton. The cost of cotton can be reduced by improving the yield, but it is also true that excessively increased production will invite a decrease in price, and on a long-term basis the prices of these two fibers are expected to be formed at a level allowing certain margin of profit.

F. DEMAND AND SUPPLY PROJECTION

In projecting the demand for cotton in 1990 and 2000, the following three cases have been made on the basis of the available data.

I. Projection of World Cotton Demand Based on Past Annual Rates of Increase of World Cotton Consumption (Demand Projection 1)

5-year average	Million MT	Quantity index	Annual rate of increase
1965-69	11.71	100.0	
1975-79	13.55	115.7	1.47%
1980-81	14.34	122.5	1.70%

Base year (average)	Consumption level of base year (million MT)	Applicable annual rate of increase (%)	1990 (projected) (million MT)	2000 (projected) (million MT)
1975-79	13.55	1.47	15.68*	18.14*
		1.70	16.04	18.98
1980-81	14.34	1.47	16.59*	19.20*
		1.70	16.97	20.09

Note: The figures with asterisk are used in Section IV (Summary of Supply and Demand Projection) below.

II. Projection of Cotton Demand Based on Estimates of World Total Fiber Demand and Share Held by Cotton (Demand Projection 2)

1. In the 1960s, the world demand for fiber increased at an annual rate of 4%, which can be divided into 1.9% caused by the population increase and 2.1% due to an increase in per capita consumption. In the 1970s, demand increased at an annual rate of 3.2%,

with 1.8% due to the increase in population and 1.4% due to the per capita increase in consumption. World demand for fiber in 1980 stood at 30.20 million tons (per capita consumption: 6.8 kg), on the basis of which this demand projection has been made.

In view of the fact that the growth rate of per capita consumption saw a declining trend in the 1960s and 1970s, the growth of per capita consumption has been assumed at an annual rate of 0.6 - 1.2% in making the projection. For the growth in population an annual growth rate of 1.3 - 1.7% was assumed.[1)]

2. As previously mentioned in Item e, Subsection II in Section C on consumption, the share of cotton in total world demand for fiber will probably continue to be between 40% to 50%. Therefore, world demand for cotton has been projected for three cases: cotton share of 40, 45 and 50% in world total fiber demand.

Base year : 1980
Demand in 1980 (actual): 30.20 million MT

Applicable annual rate		World fiber demand	
Population increase (%)	Growth of per capita consumption (%)	1990 (projected) (million MT)	2000 (projected) (million MT)
1.7	1.2	40.20	-
1.7	0.8	38.70	-
1.6	1.0	-	52.00
1.6	0.8	-	48.10
1.5	1.2	39.40	-
1.5	0.8	37.90	-
1.3	1.0	-	49.40
1.3	0.6	-	45.70

Source: Japan Chemical Fiber Association, Trends of World Fiber Demand (in Japanese), January 1982

On the basis of the above calculation, three estimates of the share held by cotton were used to give the following approximate projections.

1) See Trends of World Fiber Demand, pp. 18-19, Japan Chemical Fiber Association

	World fiber demand	Cotton demand by estimated share		
		50%	45%	40%
	(million MT)	(million MT)		
1990	40.20	20.10	18.09	16.08
	38.70	19.35	17.42*	15.48
	39.40	19.70	17.73	15.76
	37.90	18.95	17.06*	15.16
2000	52.00	26.00	23.40	20.80
	48.10	24.05	21.65*	19.24
	49.40	24.70	22.23	19.76
	45.70	22.85	20.57*	18.28

Note: Figures with asterisk indicate figures used in Subsection IV below.

III. *Projection of Cotton Production on the Basis of Rate of Increase of Annual Yield (Supply Projection)*

In I and II above, the volume of demand or the requisite production to meet demand have been projected. Then, being contrasted to such projected demand, a supply projection is prepared here, in order to derive balance between supply and demand.

As already stated in Subsection IV of Section B on Production, any increase in world cotton production is expected to be achieved by the improvement of yield rather than by an increase of the harvested area.[1)]

Therefore, the rate of increase of the average annual yield for the world has been determined on the basis of past trend, and on the basis of the rate obtained, the estimated yields for 1990 and 2000 have been calculated. The latter figures have then been multiplied by the estimated harvested area to obtain the projected volume of production, as follows.

Year	Yield (pounds/acre)	Quantity index	Annual rate of increase
1965-69	316	100.0	
1975-79	366	115.8	1.48%
1980-81	403	127.5	2.05%

1) This describes the world-wide trend and does not deny the existence of countries where the increase in the harvested area of cotton enables production to increase.

Here, a base yield of 403 pounds, an annual rate of increase of yield at 1.48%, and for the harvested area, both of the extreme estimates of 80 million acres and 81 million acres have been used.

	1990		2000	
Yield (pounds/acre)	467		541	
Harvested area (million acres)	80	81	80	81
Production (million MT)	16.95	17.16	19.63	19.88

From the above calculations, the projected supply is about 17 million tons for 1990 and about 19.8 million tons for 2000.

IV. Summary of Demand and Supply Projections

If the figures of the Supply Projection in III above are collated with those of the Demand Projection obtained in I and II to obtain the point of balance, the following figures are obtained.

	Projected Supply (million MT)	Projected Demand 1 (million MT)	Projected Demand 2 (million MT)
1990	17.0	15.7 - 16.6	17.0 - 17.4
2000	19.7	18.2 - 19.2	20.6 - 21.7

Demand Projection 1 is calculated on the basis of the past annual rate of increase of world cotton consumption, and a large part of the period taken into consideration includes the period before the oil crisis. Consequently, this projection may be a little too low as an estimate for the subsequent period when the price competitiveness of cotton recovered. On the other hand, Demand Projection 2 has been made taking 45% as the figure for the share of cotton in world fiber demand. This is considered reasonable as an estimate at the present time.

The Supply Projection is almost the same as the lower case of Demand Projection 2, and since the rate of increase of the annual yield in projecting supply is considered rather conservative, following figures are derived as the most probable projections.

1990 17 million MT (78.4 million bales)
2000 20 million MT (92.2 million bales)

G. EXPORT POSSIBILITIES OF COTTON PRODUCED IN BRAZIL

Concerning the export of cotton from Brazil, Appendix Table 14 shows that approximately one million bales per annum, reaching 2 million bales in some years, were exported in the period of 1960 to 1972. However, exports started to decline from 1973 onwards, and in 1979 fell to almost zero. This does not signify that the export competitiveness of Brazilian cotton decreased sharply, but rather that due to the development of the cotton spinning industry in Brazil, the level of domestic consumption increased steeply. In this connection, the domestic consumption of cotton in Brazil in the latter half of the 1960s was 1.2-1.3 million bales, but this figure recently more than doubled to 2.5-2.7 million bales. Therefore, in considering the future export possibilities for Brazilian cotton, the first thing which must be done is to forecast the development of the cotton spinning industry in Brazil and the domestic demand created by this development, and then to investigate whether there is any export capacity remaining.

Furthermore, in order to export the primary product, it is also important to ensure the delivery of a stable supply to the international market, and in that sense, it is necessary to be able to project on a long-term basis the intended quantity of future exports.

Based on the above preconditions, the problems facing cotton in Brazil and Carajas are now discussed.

I. Factors to be Investigated concerning the Growing of Cotton in Brazil

From the viewpoint of market surveys, and on the basis of past statistics, it is judged that the following points must be adequately investigated.

a. The acreage has remained at around 4.9 million acres since 1976/77, and is not increasing.

The largest acreage in the past was 7.10 million acres in 1969/70. Is it possible to secure land, labor and capital to regain this level of acreage?

b. The yield was 243 lbs per acre in 1976/77 and increased to 286 lbs in 1981/82, but as indicated in Appendix Tables 9 to 11, the yield for Brazil belongs to the low group among the major cotton producing countries. In this connection, the yield in the

major producing countries such as the United States, the USSR and China is more than 500 lbs, and the yield in Israel and Australia is more than 1,000 lbs. In order to increase the yield in Brazil, it is considered necessary to introduce irrigation, but the availability of the necessary investment funds and depreciation should also be taken into account.

c. In increaseing the acreage, it will be necessary to take into consideration competition from coffee, etc.

II. Factors to be Considered in the case of Carajas

a. When growing cotton, it is desirable that no rainfall occurs from the flowering period to the time of picking. The possibility of seasonal storms occurring should be considered.

b. It is necessary to develop an irrigiation system in order to realize higher yield, which requires that the necessary technology, labor and capital must be available.

c. When cotton is produced, the initial consumption will be in the spinning area centering on Sao Paulo. The development of transportation routes and the preparation of the necessary infrastructure must be taken into account.

Also, consideration must be given as to whether the price including the tranportation cost is able to compete with the price of the cotton produced in southern Brazil.

d. In order to export cotton abroad, it will also be necesary to improve the infrastructure. Economical transportation, and profitability taking into account the cost of infrastructure, should be investigated.

e. The introduction of cotton growers will of necessity depend on experienced growers from southern Brazil. However, one possible problem may be their lack of experience regarding irrigation.

Appendix Table 1 Planting and Picking Dates and Other Crop Data

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
	(%)			(Inches)	(Inches)	(Micronaire)
Afghanistan*						
Acala 1517C	60	Apr. 15~May 15	October	1-1/16"	1-1/32"~1-1/8"	4.0
Acala 4-42	30	〃	November	1"		
108-F	10	〃	December	1"		
Angola*						
DPL 16	60	January	Aug.~Oct.		1-1/16"	3.9~4.1
Coker C. Queen	30	March	July~Aug.		1-1/16"~1-3/32"	3.8~4.0
Acala	10	〃	〃		1-1/8"	3.4~3.6
Argentina						
Toba II INTA	36	Sept. 15~Oct. 15	Feb.~July	1"	15/16"~1-1/16"	3.9
Mocovi INTA	21	〃	〃	1"	15/16"~1-1/16"	3.9
La Banda 56	10	〃	〃	1"	15/16"~1-1/16"	3.9
Quichua INTA	3	〃	〃	1"	15/16"~1-1/16"	3.9
Australia						
DPL 16	87	Sept.~Dec.	April~July	1-3/32"	1-1/32"~1-1/16"	3.6~4.9
Namcala	8	〃	〃	1-1/16"	1-1/16"~1-3/32"	3.5~4.6
Stoneville 702	5	〃	〃	1-1/16"	1-1/16"~1-3/32"	3.8~5.0
Bangladesh*						
DPL 16	35	Oct.~Nov.	Mar.~Apr.		1-3/32"	
Comillas	65	May~June	Oct.~Dec.		3/8"~1/2"	8.0~11.0
Bolivia						
Stoneville 7A, 213	83	Oct.~Nov.	Mar.~May	1-1/16"		3.6
Reba B50	17	〃	〃	1-1/16"		3.6
Brazil*						
IAC 17 (South)	40	Sept.~Nov.	Mar.~June	1-1/16"	1"~1-3/32"	3.2~4.0
Moco (North)		Perennial	Aug.~Feb.	1-3/16"	1-1/32"~1-3/16"	3.2~3.8
Sertao (〃)	60	Mar.~June	〃	1-1/32"	1-1/32"~1-3/32"	3.5~3.7
Matu (〃)		〃	〃	1"	15/16"~1"	3.7~4.4
Bulgaria*						
Native & USSR types		April	Aug.~Nov.		15/16"~1-1/32"	
Benin*						
HAR444-2, BJA 52.		June~July	Oct.~Feb.	1-1/32"	31/32"~1-1/16"	
Burma*						
SRT-1	36	Feb.~Mar.	July~Sept.	1-1/32"		
Wagyi	30	Perennial	Jan.~Feb.	7/8"		
M 5/6	25	Feb.~March	July~Sept.	7/8"		
Wagaie	9	Apr.~May	Oct.~Nov.	5/8"		
Burundi*						
1021	100	Dec. 25~Jan. 15	May	1-1/16"	1-1/16"~1-3/32"	
Cameroon*						
Allen		June	Nov.~Dec.	1-1/32"	1"~1-3/32"	3.6~4.2
Central Afr. Emp.						
BJA B2	97	June~July	Oct. 15~Feb. 15	1-1/32"	1-1/32"~1-1/16"	3.6~3.9
SRI F4	3	〃	〃	1-1/32"	1-1/32"~1-1/16"	3.7~3.9
Chad*						
BJA 592		June	Nov.~Dec.	1-1/16"	1"~1-1/32"	
Coker 417		〃	〃	1-1/16"	1"~1-1/32"	
Y 1422		〃	〃	1-1/16"	1"~1-1/32"	
Colombia						
Coastal-Meta region						
DPL 61	53.46	July 24~Sept.17	Jan.~March	1-1/16"	1-1/32"~1-3/16"	4.2~4.9
DPL 16	29.24	〃	〃	1-1/16"	1-1/32"~1-1/16"	4.2~4.9
Coker 201	5.72	July 17~Sept.23	〃	1-1/16"	1-1/32"~1-1/16"	3.6~4.4
DPL Smooth Leaf	5.19	〃	〃		1-1/32"~1-1/16"	3.6~4.4
ICA-Bravo	2.44	〃	〃		1-1/32"~1-3/32"	4.1~4.6
DPL 55	1.43	〃	〃		1-1/32"~1-1/16"	4.2~4.5
Stoneville 213	1.11	〃	〃	1-1/16"	1-1/32"~1-1/8"	4.8~5.2
Acala 1517 Br2	0.95	〃	〃	1-3/32"	1-3/32"~1-3/32"	4.1~4.4
Gossica N-21	0.34	〃	〃		1-1/32"~1-1/16"	4.9~5.2
Stoneville 731	0.12	〃	〃		1-1/32"~1-1/8"	4.8~5.2
Interior region						
DPL 16	53.07	Jan. 22~Mar.9	June~July	1-1/16"	1-1/16"~1-1/16"	4.5~5.1
Acala 1517-70	16.90	Jan. 22~Feb.28	July~Aug.	1-3/32"	1-3/32"~1-3/32"	3.7~4.0
Acala 1517 Br2	16.76	〃	〃	1-3/32"	1-3/32"~1-3/32"	3.8~4.2
DPL Smooth Leaf	4.70	Jan. 22~Mar.9	June~July		1-1/32"~1-1/16"	4.4~4.8
Gossica N-21	3.93	〃	〃		1-1/32"~1-1/16"	4.3~5.1
Gossica P-21	1.65	〃	〃		1-1/32"~1-1/8"	4.1~4.5
Experimental types	1.30	〃	June~Aug.		1-1/32"~1-3/32"	3.6~3.9
Stroman 254	1.23	〃	July~Aug.		1-3/32"~1-3/32"	3.7~3.9
DPL 61	0.46	〃	June~July	1-1/16"	1-1/32"~1-1/8"	4.5~5.1
Dominican Rep.						
Stoneville, DPL	100	August	Dec.~Mar.	1-1/32"		
Ecuador						
Coker 5110	47.4	Jan. 1~15	June~July	1-3/32"		3.4
Coker 5110	9.6	Feb. 15	August	1-3/32"		3.4
Coker 310	43.0	Jan. 1~15	June~July	1-3/32"		3.4
Egypt						
Giza 45	2.12	Before Mar.15	Sept.~Oct.	1-5/16"		3.5
Giza 70	30.15	〃	〃	1-3/32"		4.3
Giza 68	3.22	〃	〃	1-3/32"		3.8
Giza 75	10.19	Feb. 15~Mar.15	〃	1-3/16"		4.6
Giza 69	10.79	〃	〃	1-3/32"		4.4
Giza 67	15.32	〃	〃	1-15/32"		3.6
Dandara	16.39	〃	〃	1-3/32"		3.6
Giza 66	9.95	〃	〃	1-1/32"		4.0
Giza 72	1.68	〃	Aug.~Oct.	1-1/32"		3.6
El Salvador						
Stoneville	100	June~July	Nov.~Feb.	1-1/16"	1-1/16"~1-1/16"	3.5~4.9
Ethiopia*						
Acala, Albar		June~Aug.	Nov.~Jan.		1"~1-1/8"	

Appendix Table 1 (cont'd.)

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
				(Inches)	(Inches)	(Micronaire)
Greece						
4S	88	Apr. 6～May 3	Sept. 20～Oct. 30	1-3/32"	1-1/16"～1-1/8"	2.7～4.9
Coker 210	10	〃	〃	1-3/32"	1-1/16"～1-1/8"	2.7～4.9
PU	2	〃	〃	1-1/32"	1-1/16"～1-1/8"	2.7～4.9
Guatemala						
Stoneville 256, 213		June～July	Nov. 15～Apr. 15	1-1/16"		
Honduras						
Stoneville	100	July～Aug.	Dec.～Apr.	1-3/32"		4.8
India						
(1975/76 crop)*						
MCU-4, 5, H-4	9.9	June	Feb.～Apr.	1-1/16"	1-1/16"and above	
Deviraj(Gujarat)	2.9	〃	〃		1-1/16"and above	
Buri L-147(A.P. and Maharashtra)	16.6	May～July	Nov.～Feb.	15/16"	15/16"～1-1/32"	4.7
Laxmi(AP, Tamil Nadir Karnataka. Gujarat)	8.6	Aug.～Sept.	Feb.～Apr.	31/32"	31/32"～15/16"	3.0～4.1
Punjab Americans	8.8	Apr.～May	Nov.～Dec.	7/8"	31/32"～15/16"	
Digvijay & Vijalpa	5.1	June～July	Feb.～Mar.	31/32"	31/32"～15/16"	3.9～4.5
AK 235, 277(Karnataka and Maharashtra)	4.1	June～July	Sept.～Jan.	7/8"	31/32"～15/16"	4.8～5.5
Jayadhar	4.0	Aug.～Sept.	Feb.～Apr.	7/8"	31/32"～15/16"	5.2～5.6
A51.9(Madhya Prad.)	3.9	June～July	Nov.～Jan.	7/8"	31/32"～15/16"	
Virnar	5.8	June	〃	15/16"	31/32"～15/16"	5.3
Dholleras	9.0	June～Aug.	Jan.～Mar.	15/16"	31/32"～15/16"	5.2～5.5
Punjab Desi	4.9	Apr.～July	Sept.～Nov.	31/32"	Below3/4"	7.8
Iran						
Sahel	55	Apr. 1～May 20	Oct. 10～Dec.	1-3/32"	1-1/32"～1-1/8"	3.0～4.0
Varamin	36	〃	Oct.～Dec.	1-3/32"	1-1/32"～1-1/8"	3.0～4.0
Acala	6	Apr.～May 10	〃	1-1/16"	1-1/32"～1-1/8"	3.0～4.0
Hopi Acala	1	〃	〃	1-1/16"	1-1/32"～1-1/8"	3.0～4.0
DPL 15	0.3	Mar. 10～Apr. 10	〃	1-1/8"	1～1-1/8"	3.0～4.0
Boomi	1.7	Mar. 20～May 20	Oct. 10～Dec.	31/32"	15/16"～1"	4.0～6.5
Iraq						
Coker 100 Wilt (Improved)	100	Mar.～Apr.	Sept.～Nov.	1-1/32"	1"～1-1/32"	4.4
Israel						
Acala	92.5	April	Sept.～Oct.	1-1/8"	1-1/16"～1-3/16"	3.5～4.5
Pima	7.5	〃	Oct.	1-5/16"	1-3/16"～1-7/16"	3.3～3.9
Italy						
Gela, Biancaville, Terranova, Acala		Apr. 1～10	Sept.	15/16"		
Ivory Coast*						
L 231-24		June～Aug.	Oct.～Jan.	1-3/32"	31/32"～1-1/16"	3.8
L 299-10		〃	〃	1-3/32"	31/32"～1-1/8"	4.2
Mono, Allen 333, Har 444-2		〃	〃			

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
	(%)			(Inches)	(Inches)	(Micronaire)
Kenya						
UKA	78.4	Feb.～Apr.	Aug.～Dec.	1-3/32"	1-3/32"～1-1/16"	3.8～4.0
BPA	21.6	Oct.～Nov.	May～July	1-3/32"	1-3/32"～1-5/16"	4.0～4.2
Korea, Rep.*						
Mokpo No. 5	80	May	Sept.～Oct.	1"	1"～1-1/32"	4.2～4.8
Madagascar						
Acala, Stoneville		Oct.～Dec.	May～July		1"～1-3/32"	
Malawi						
Makoko 72	100	Nov.～Apr.	End. Mar.～Sept.	1-3/32"	1-5/32"～1-7/32"	4.1
Mali						
BJA-SM 67	100	June 1～July 20	Oct.～Dec.	1-1/32"	1-1/32"～1-1/16"	4.5
Mexico						
(1)DPL 16	56	Nov. 10～Aug. 15	June 1～Mar. 15	1-1/32"	1-1/32"～1-7/32"	3.5
(2)DPL 80, Acala Stoneville, Caeri 77	16	〃	〃		1"～1-5/16"	4.5
(3)By major regions:						
Sinaloa		Nov. 10～30	June～July			
Sonora(South)		Jan.～Mar. 15	July～Oct. 15			
Sonora(North)		Feb. 15～May 15	July 25～Dec.			
Mexicali		Mar. 15～May 15	Sept.～Dec.			
Comarca Lagunera		Mar. 25～Apr. 25	Aug. 15～Nov.			
Chihuahua		Mar. 20～Apr. 30	Sept.～Nov. 15			
Apatzingan		June 15～July 31	Dec.～Feb. 15			
Chiapas		July 15～Aug. 15	Dec. 15～Feb.			
Santo Domingo		Mar.～Apr. 15	Sept.～Dec. 15			
Matamoros		Feb.～Mar. 15	July 15～Aug.			
Oaxaca		July 15～Aug. 15	Dec. 15～Feb.			
Morelos		〃	〃			
Morocco						
Pima 67	99	Apr.～May	Sept.～Oct.	1-1/32"	1-1/32"～1-7/32"	3.6～3.7
Karnak		〃	〃	1-3/32"	1-1/32"～1-5/16"	4.0
Tadla 16	1	〃	〃		1-3/16"～1-5/32"	3.5～3.6
Mozambique						
A-637-24		Nov.～Jan.	May～July		1-3/32"～1-7/16"	
A-637-33		〃	〃		1-1/16"～1-1/8"	
Nicaragua*						
Conal S	65	June～July	Nov.～May	1-1/16"	1"～1-1/16"	3.8～5.2
Conal SR	31	〃	〃	1-1/16"	1"～1-1/16"	3.8～5.2
Stoneville 213	3	〃	〃	1-1/16"	1"～1-1/8"	3.8～5.2
Niger						
HAR L 299-10	100	June～July	Oct. 15～Feb.	1-1/16"		4.2

Appendix Table 1 (cont'd.)

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
	(%)			(Inches)	(Inches)	(Micronaire)
Nigeria						
Samaru 71	60~65	July~Aug.	Dec.~Feb.	1-5/32"	1"~1-3/8"	3.3
Samaru 72	30~35	July	〃	1-7/32"	1-1/8"~1-11/32"	3.3
Samaru 77	2.5~5	〃	〃	1-9/32"	1-13/32"~1-15/32"	3.6
Pakistan						
Upland types						
AC-134	40	Apr.~June	Oct.~Dec. 15	1"	29/32"~1-1/16"	4.0~5.0
BS-1	13	May	November	29/32"	29/32"~1"	4.0~5.0
M-4/M-100(N.T.)	23	April	September	29/32"	29/32"~1"	3.5~4.5
149-F	5	May	November	1-1/16"	1-1/16"~1-3/32"	3.9~4.3
H-59-1(Qallandari)	1	April	September	1-1/16"	31/32"~1-3/16"	3.5~3.7
S-59-1(Sarmast)	1	May~June	Oct.~Nov.	1-1/16"	31/32"~1-3/16"	3.5~3.7
B-557	8	Apr.~May	Sept.~Oct.	1"	7/8"~1-1/8"	4.3
Desi types						
Punjab	4	April	September	1/2"	3/4"~5/8"	7.5~9.0
Bahawalpur	3	May~June	Sept.~Oct.	1/2"	3/4"~5/8"	7.5~10.2
Sind	2	May	October	1/2"	3/4"~5/8"	9.6~10.2
Paraguay*						
Reba B50, P279, BTK 12	100	Oct.~Dec.	Feb.~Apr.	1-1/16"	1-1/32"~1-3/32"	3.5~4.2
Peru*						
Tanguis	55	July~Nov.	Feb.~Aug.	1-3/16"	1-1/32"~1-9/32"	4.6~5.8
Pima. Pima S-1	37	Dec.~Mar.	May~Oct.	1-9/16"	1-7/16"~1-15/16"	3.3~4.2
Del Cerro	6	Nov.~Feb.	Apr.~Sept.	1-3/16"	1-5/16"~1-7/16"	3.6~3.8
Aspero	2	Dec.~Mar.	Aug.~Nov.	1-1/32"	29/32"~1-1/16"	6.5
Philippines*						
DPL 16		Oct.~Nov.	Mar.~Apr.			
Rhodesia*						
Albar 637	65	Oct.~Dec.	Apr.~July	1-1/16"	1-1/32"~1-1/16"	
DPL 16	30	〃	〃	1-1/16"	1-1/16"~1-3/32"	
Del Cerro	5	〃	〃	1-5/16"	1-3/16"up	
Senegal						
BJA SM 67	100	June 20~July 30	Nov.~Feb.	1-1/16"		4.5
South Africa						
DPL	26.5	Oct. 20~Nov.	Apr.~July	1-1/16"	1-1/32"~1-1/16"	4.4
Albacala	16.2	Oct. 6~Nov.	〃			
Acala SJ 1	15.9	Oct. 15~Nov.	〃	1-1/16"	1-1/32"~1-3/32"	4.5
Cape Acala, Acala 1517-70	33.3	Oct. 26~Nov.	〃	1-3/32"	1-1/16"~1-1/16"	3.8
CS 2	1.4	Oct. 6~Nov.	〃	1-1/16"	1-1/32"~1-3/32"	
Albar 637	6.0	〃	〃	1-1/32"	1-1/32"~1-1/16"	
Alma	0.6	〃	〃			

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
	(%)			(Inches)	(Inches)	(Micronaire)
Spain						
Coker 310	93	Apr.1~May 20	Oct. 15~Dec. 30	1-1/16"	1"~1-1/16"	(
Coker 312	3	〃	〃	1-1/16"	1"~1-1/16"	(3.0~5.0
Promese	5	〃	〃	1-1/16"	1"~1-1/16"	(average
Acala SJ-1	7	〃	〃	1-1/16"	1"~1-1/16"	(3.8
Sudan						
Barakat	42	Early August	Jan.~Apr.	1-5/32"	1-1/32"~1-5/32"	3.8~4.2
VS	4	〃	〃	1-7/32"	1-5/32"~1-9/32"	3.5~3.8
Huda	5	August	Dec.~Mar.	1-13/32"	1-9/32"~1-13/32"	4.1
Acala	38	May~Sept.	Sept.~May	1-13/32"	1-1/16"~1-1/16"	4.0~4.6
Albar A(57)12	10	June 15~Aug. 15	Oct. 15~Feb.	1"	29/32"~1-1/32"	3.1~3.8
Acrain	2	July	Dec.~Mar.	1"	29/32"~1-1/32"	3.1~3.8
Syria						
Aleppo 1	90.0	Apr.~May	Sept.~Nov.	1-13/32"	1"~1-5/32"	4.67
Aleppo 33	2.5	〃	〃	1-13/32"	1"~1-5/32"	4.67
Aleppo 40	7.5	〃	〃	1-13/32"	1"~1-5/32"	4.67
Tanzania						
UK 64	15.9	Nov.~Dec.	May~June		1-1/32"~1-1/16"	3.5~4.0
UK 68	9.3	〃	〃		1-1/32"~1-1/16"	3.3~3.9
UK 69	28.5	〃	〃		1-1/32"~1-1/16"	3.4~3.8
UK 70	15.6	〃	〃		1-1/32"~1-1/16"	3.4~3.9
UK 71	9.6	〃	〃		1-1/32"~1-1/16"	3.6~3.8
UK 74	5.2	〃	〃		1-1/32"~1-1/16"	3.5~4.5
HM 2	10.3	〃	〃		1-1/32"~1-1/16"	
IL 66	3.1	Nov.~Feb.	May~July		1-3/32"~1-5/32"	3.2~3.6
IL 74	0.9	Jan.~Feb.	June~July		1-3/32"~1-5/32"	
Thailand						
Reba BTK 12		July~Aug.	Dec.~Jan.	1-1/32"	1-7/32"	3.8
Takfa 1		〃	〃	1-1/32"	1-3/16"~1-5/16"	4.0
DPL Smooth Leaf		〃	〃	1-1/16"		4.3
Togo						
HAR L 299-10	100	June 1~July 20	Nov.~Mar.	1-1/16"		4.2
Turkey						
Cukurova Region						
DPL 15/21	50	Apr.~May	Aug. 15~Oct. 30	1-1/32"	1"~1-3/32"	4.2~4.3
Carolina Queen	45	〃	〃	1-1/32"	1"~1-1/32"	4.4~4.5
Adana 1967-10	5	〃	〃	1-3/32"	1"~1-3/32"	4.1~4.2
Aegean Region						
Nazilli 66-100	40	Apr. 20~May 20	Oct. 10~Nov. 30	1-1/16"	1-1/16"~1-1/16"	4.5
Coker 100 A/2	60	〃	Oct. 1~Nov. 20	1-1/16"	1-1/16"~1-1/16"	4.0
Del Cerro	1	〃	〃	1-3/16"	1-3/32"~1-5/32"	3.8

Appendix Table 1 (cont'd.)

Country and principal varieties grown	Percent of total area	Planting dates	Picking dates	Modal staple length	Range in staples	Fibre fineness
	(%)			(Inches)	(Inches)	(Micronaire)
Uganda						
BPA	66.7	May 15~Aug.	Nov.~Feb.	1-5/8"	1-1/8"~1-9/16"	3.5~4.0
Satu	33.3	Apr. 15~July 31	Oct.~Dec.	1-1/4"	1-1/8"~1-5/16"	4.0~4.5
U.S.S.R.*						
Upland types						
108-F		Apr.~May	Sept.~Nov.	1-1/16"		
C-4727		"	"	1-1/16"		
138-F		"	"	1-3/16"		
2833		"	"	1-1/16"		
149-F		"	"	1-5/32"		
133		"	"	1-3/16"		
Tashkent 1		"	"	1-1/16"		
Egyptian types						
9647 I		Apr.~May	Sept.~Nov.	1-1/2"		
8763 I		"	"	1-1/2"		
5904 I		"	"	1-7/32"		
5595 B		"	"	1-1/4"		
9078 I		"	"	1-1/4"		
C-6030		"	"	1-7/32"		
C-6029		"	"	1-1/4"		
T-7		"	"	1-7/32"		
6465-B		"	"	1-1/16"		
United States						
Upland types						
Stoneville 213	16	Feb. 15~May 15	July 15~Dec. 15	1-1/16"	1"~1-1/8"	4.7
Acala SJ-2	9	Apr. 1~May 1	Oct. 1~Dec. 15	1-1/8"	1-1/16"~1-5/16"	4.2
DPL 61	9	Apr. 15~May 15	Sept. 1~Dec. 15	1-3/32"	1-1/16"~1-1/8"	4.7
GSA 71	7	Feb. 15~Mar. 15	July 15~Sept. 15	1"	31/32"~1-1/16"	4.7
DPL 16	6	Feb. 15~May 15	July 15~Dec. 15	1-1/16"	1-1/16"~1-1/8"	4.5
Lankart 57	5	Apr. 1~June 15	Oct. 1~Jan. 15	1"	15/16"~1-1/16"	4.3
Lankart 611	5	"	"	31/32"	15/16"~1-1/16"	3.9
Lankart LX-571	4	"	"	1"	15/16"~1-1/16"	4.3
Paymaster 303	4	"	"	1"	15/16"~1-1/16"	3.5
Tamcot SP-37	3	Feb. 15~Mar. 15	July 15~Sept. 15	1"	31/32"~1-1/16"	3.9
Egyptian types						
Pima S-5	97	Apr. 1~May 15	Oct. 1~Feb. 1	1-3/8"	1-3/8"~1-7/16"	3.9
Pima P-28	3	"	"	1-5/16"	1-3/8"~1-7/16"	3.8
Upper Volta						
BJA SM 67	90	June 15~July 31	Oct. 15~Mar. 1	1-1/32"		4.5
444/2-Coker	10	"	"	1"		3.8
Uruguay*						
DPL Coker	100	October	Feb.~Mar.	1-1/8"	1-1/16"~1-1/8"	
Venezuela*						
Coker 100	47	(	(		1-1/16"~1-3/16"	
DPL 16	30	(Sept.~Nov.	(Jan.~Apr.		1-1/16"~1-1/8"	
DPL *Smooth Leaf*	16	(*and*	(*and*		1-1/16"~1-1/8"	
Del Cerro, Tanguis	7	(Jan.~Aug.	(Oct.~Feb.		1-1/16"~1-1/16"	
West Indies						
MSI	100	Aug. 15~Sept. 15	Jan. 15~Apr. 15	2-3/8"	2-1/16"~2-1/8"	3.0
Yemen Arab Rep.*						
Acala	most	Aug.~Sept.	Jan.~Mar.			
Yemen, P.D.R.*						
K 4	100	Aug.~Sept.	Jan.~Apr.	1-1/16"	1-7/16"~1-9/16"	3.5~4.9
Yugoslavia*						
Upland types		Apr.~May	Aug.~Nov.		1"~1-1/16"	4.5
Zaire(1973)*						
Reqa B50(North)	most	June~July	Dec.~Jan.	1-1/8"	1-1/8"~1-3/32"	
NC/8, 1021(South)		Dec.~Jan.	June~July	1-3/32"	1-1/16"~1-1/8"	
Zambia*						
Albar 637		Nov. 15~Dec. 15	May~Aug.	1-1/16"	1-1/16"~1-3/32"	

Note: An asterisk (*) denotes that the information was compiled by the ICAC (International Cotton Advisory Committee) Secretariat from office records and supplementary research.

(In thousands of equivalent 478-pound net weight bales)

	Short (Under ⅞")			Medium (⅞"–1")			Medium long (1-⅛" & 1-⅜")			Long (1-½" & 1-⅝")			Extra-long (1-⅝ & over)			Total		
	1978–79	1979–80	1980–81	1978–79	1979–80	1980–81	1978–79	1979–80	1980–81	1978–79	1979–80	1980–81	1978–79	1979–80	1980–81 (p)	1978–79	1979–80	1980–81
North America																		
El Salvador	1	3	—	4	8	1	293	231	169	27	56	40	—	—	—	325	300	200
Guatemala	—	—	—	11	7	5	745	672	564	4	6	6	—	—	—	760	685	575
Mexico	7	7	7	68	65	66	1,443	1,393	1,497	52	50	56	—	—	—	1,570	1,515	1,625
Nicaragua	—	—	—	5	—	47	510	7	29	—	93	269	—	—	—	515	100	345
U. S. A. (a)	1	4	7	2,742	4,026	2,304	6,700	7,079	6,890	1,016	3,067	2,321	90	96	102	10,549	14,262	10,624
Others	3	2	2	6	6	4	58	50	43	—	7	5	1	1	1	68	56	55
Total	12	16	16	4,836	4,112	2,627	9,749	9,432	8,182	1,099	3,271	2,696	91	97	103	13,757	16,928	13,624
South America																		
Argentina	—	—	—	542	143	301	234	527	80	24	—	4	—	—	—	800	670	385
Brazil	—	—	—	200	200	200	2,200	2,315	2,500	150	125	125	—	—	—	2,550	2,640	2,825
Colombia	—	—	—	—	—	—	339	523	488	36	50	45	—	2	2	375	575	535
Paraguay	—	—	—	—	—	—	292	315	430	33	35	45	—	—	—	325	350	475
Peru	—	—	—	—	—	—	4	9	8	300	327	336	96	125	116	400	461	460
Others	4	3	2	—	33	25	136	85	58	40	53	40	—	—	—	180	174	125
Total	4	3	2	742	376	526	3,205	3,774	3,564	583	590	595	96	127	118	4,630	4,870	4,805
Western Europe	—	—	—	3	3	2	633	488	525	219	168	282	—	—	—	855	659	809
Eastern Europe	—	—	—	55	60	75	—	—	—	—	—	—	—	—	—	55	60	75
U. S. S. R.	—	—	—	—	—	—	9,650	10,200	10,825	1,600	1,800	2,000	750	1,000	1,375	12,000	13,000	14,200
Asia and Oceania																		
Australia	—	—	—	4	2	6	224	356	428	17	25	22	—	—	—	245	383	456
India	1,850	1,900	1,800	3,170	3,150	3,130	520	520	500	130	130	130	480	500	440	6,220	6,300	6,000
Iran	5	11	12	—	—	—	240	449	263	365	—	—	—	—	—	610	460	275
Pakistan	136	151	139	1,562	2,286	1,371	448	860	1,740	37	60	46	—	—	—	2,183	3,357	3,296
Syria	—	—	7	1	—	1	645	563	489	19	27	48	—	—	—	665	590	545
Turkey	—	—	—	—	—	—	1,760	1,760	1,840	440	440	460	—	—	—	2,200	2,200	2,300
Yemen (Aden)	—	—	—	—	—	—	10	9	10	—	—	—	7	6	5	17	15	15
Others	8	7	10	101	119	127	682	753	770	86	40	64	20	21	25	897	940	996
Total (b)	1,999	2,069	1,968	4,838	5,557	4,635	4,629	5,370	6,040	1,094	722	770	477	527	470	13,037	14,245	13,883
Africa																		
Chad	—	—	—	27	99	—	160	50	113	23	4	32	—	—	—	230	153	145
Egypt	—	—	—	—	—	—	—	—	—	1,359	1,452	1,725	663	778	715	2,022	2,230	2,440
Mozambique	—	—	—	—	—	—	80	55	65	20	15	15	—	—	—	100	70	80
Nigeria	—	—	—	165	108	100	5	27	25	—	—	—	—	—	—	170	135	125
Sudan	—	—	—	22	16	13	315	18	28	3	215	165	300	292	252	640	525	445
Tanzania	—	—	—	—	—	—	140	260	235	60	—	—	—	—	—	200	260	235
Uganda	—	—	—	—	—	—	13	7	9	17	18	11	—	—	—	30	25	20
Zaire	—	—	—	—	1	—	31	44	43	3	3	2	—	—	—	34	48	45
Others	2	2	—	103	85	69	1,387	1,599	1,473	104	136	146	60	67	85	1,668	1,905	1,786
Total	2	2	—	329	309	182	2,161	2,080	1,991	1,589	1,843	2,096	1,023	1,137	1,052	5,094	5,371	5,321
Grand Total (b)	**2,017**	**2,090**	**1,986**	**8,803**	**10,417**	**8,047**	**30,017**	**31,344**	**31,127**	**6,184**	**8,394**	**8,439**	**2,437**	**2,888**	**3,118**	**49,458**	**55,133**	**52,717**
%	4.1	3.8	3.8	17.8	18.9	15.3	60.7	56.9	59.0	12.5	15.2	16.0	4.9	5.2	5.9	100.0	100.0	100.0

(a) Not adjusted for ginnings within season.
(b) Excluding Mainland China.

Source: ICAC

Appendix Table 3 World Production of Major Textile Fibers

(1,000 MT)

Year	Man-Made Fibres						Raw Cotton	Raw Wool	Raw Silk	Grand Total	Percentages				
	Rayon & Acetate			Non-Cellulosic											
	Filament	Staple	Total	Filament	Staple	Total					Man-made Fibres	Raw Cotton	Raw Wool	Raw Silk	Grand Total
1940	542	585	1,127	1	4	5	1,132	6,971	1,134	59	9,298	12	75	12	1	100
1941	572	706	1,278	4	4	8	1,286	6,243	1,152	49	8,729	15	71	13	1	100
1942	547	669	1,216	7	4	10	1,226	5,886	1,129	36	8,248	15	71	14	*	100
1943	526	648	1,174	10	4	14	1,188	5,455	1,125	23	7,788	15	70	15	*	100
1944	482	492	974	14	4	18	992	5,373	1,070	14	7,449	13	72	15	*	100
1945	401	200	601	14	3	17	618	4,667	1,034	11	6,330	10	74	16	*	100
1946	503	281	784	17	5	21	806	4,749	947	17	6,519	12	73	15	*	100
1947	602	347	949	22	2	24	972	5,518	983	19	7,492	13	74	13	*	100
1948	707	446	1,153	30	4	34	1,187	5,474	981	20	8,862	14	75	11	*	100
1949	744	502	1,246	40	7	47	1,293	7,148	1,015	21	9,476	14	76	11	*	100
1950	874	738	1,612	54	15	69	1,681	6,647	1,057	19	9,404	18	71	11	*	100
1951	963	956	1,919	76	27	103	1,922	8,990	1,061	21	11,395	17	74	9	*	100
1952	831	772	1,603	92	37	129	1,732	8,693	1,187	27	11,609	15	75	10	*	100
1953	947	937	1,884	113	45	159	2,043	9,061	1,165	27	12,295	17	74	9	*	100
1954	926	1,101	2,027	141	54	195	2,222	8,916	1,190	26	12,354	18	72	10	*	100
1955	1,042	1,236	2,278	184	83	266	2,545	9,492	1,265	29	13,331	19	71	10	*	100
1956	1,021	1,361	2,382	200	108	308	2,690	9,221	1,338	31	13,281	20	70	10	*	100
1957	1,052	1,419	2,471	254	155	409	2,880	9,030	1,310	31	13,252	22	68	10	*	100
1958	959	1,315	2,274	269	151	419	2,693	9,738	1,384	34	13,849	20	70	10	*	100
1959	1,093	1,419	2,512	351	225	576	3,088	10,267	1,461	32	14,847	21	69	10	*	100
1960	1,131	1,476	2,608	417	285	702	3,310	10,113	1,463	31	14,918	22	68	10	*	100
1961	1,135	1,555	2,690	497	334	831	3,520	9,819	1,482	31	14,852	24	66	10	*	100
1962	1,202	1,663	2,864	638	442	1,080	3,944	10,456	1,477	33	15,911	25	66	9	*	100
1963	1,231	1,828	3,059	779	555	1,334	4,393	10,945	1,506	31	16,876	26	66	9	*	100
1964	1,328	1,959	3,286	978	713	1,691	4,977	11,309	1,480	32	17,798	28	64	8	*	100
1965	1,374	1,964	3,338	1,126	926	2,052	5,390	11,684	1,493	33	18,800	29	63	8	*	100
1966	1,374	1,966	3,340	1,276	1,095	2,371	5,711	10,994	1,563	33	18,281	31	60	9	*	100
1967	1,346	1,964	3,310	1,427	1,300	2,727	6,037	10,823	1,574	34	18,468	33	59	8	*	100
1968	1,421	2,108	3,529	1,839	1,747	3,586	7,115	11,952	1,625	37	20,729	34	58	8	*	100
1969	1,425	2,129	3,554	2,120	2,058	4,178	7,732	11,450	1,614	39	20,835	37	55	8	*	100
1970	1,393	2,043	3,436	2,363	2,337	4,700	8,136	11,784	1,602	41	21,563	38	55	7	*	100
1971	1,401	2,054	3,455	2,567	2,742	5,609	9,064	13,008	1,566	41	23,879	38	55	7	*	100
1972	1,342	2,217	3,559	3,213	3,164	6,377	9,936	13,686	1,457	42	25,121	40	54	6	*	100
1973	1,363	2,298	3,661	3,833	3,807	7,640	11,301	12,758	1,432	43	26,514	43	52	5	*	100
1974	1,302	2,230	3,532	3,785	3,702	7,487	11,019	14,046	1,531	45	28,541	41	53	5	*	100
1975	1,136	1,823	2,959	3,763	3,590	7,353	10,312	11,741	1,538	47	23,838	44	50	6	*	100
1976	1,188	2,022	3,210	4,128	4,473	8,601	11,811	12,462	1,487	48	25,808	46	48	6	*	100
1977	1,172	2,109	3,281	4,312	4,837	9,149	12,430	13,936	1,466	49	27,903	46	50	5	*	100
1978	1,167	2,151	3,318	4,603	5,431	10,034	13,352	12,970	1,528	51	27,901	48	47	5	*	100
1979	1,176	2,196	3,371	4,898	5,710	10,608	13,979	14,258	1,573	55	29,885	47	48	5	*	100
1980	1,161	2,081	3,242	4,745	5,747	10,492	13,734	14,217	1,581	56	28,586	47	48	5	*	100
1981	1,103	2,089	3,192	4,808	5,922	10,730	13,922	15,484	1,609	57	31,072	45	50	5	*	100

Notes: * Less than 0.5%.

Data for silk and man-made fibers are on a calendar year basis, while the figures for cotton and wool are on a seasonal basis.

Man-made fibers: Non-cellulosic fiber data before 1940 are not available. Textile glass fiber production data not included. Cotton: ICAC

Wool: Commonwealth Economic Committee (London) Silk: International Silk Association.

Appendix Table 4 World Production of Major Textile Fibers, by 5-Year Averages

5-year average	Man-Made Fibers						Total	Raw Cotton	Raw Wool	Raw Silk	Grand Total
	Rayon & Acetate			Non-Cellulosic							
	Filament	Staple	Total	Filament	Staple	Total					
Quantity (million MT)											
1950-54	0.85	0.88	1.73	0.09	0.04	0.13	1.86	8.34	1.13	0.02	11.41
1955-59	1.03	1.03	2.06	0.26	0.14	0.40	2.46	9.55	1.35	0.03	13.71
1960-64	1.20	1.70	2.90	0.66	0.47	1.13	4.03	10.53	1.48	0.03	16.07
1965-69	1.10	2.31	3.41	1.55	1.43	2.98	6.39	11.42	1.57	0.04	19.42
1970-74	1.36	2.17	3.53	3.21	3.15	6.36	9.89	13.25	1.52	0.04	24.70
1975-79	1.17	2.06	3.23	4.34	4.81	9.15	12.38	13.07	1.52	0.05	27.02
1980	1.16	2.08	3.24	4.74	5.75	10.49	13.73	14.22	1.58	0.06	29.59
1981	1.10	2.09	3.19	4.81	5.92	10.73	13.92	15.48	1.61	0.06	31.07
Share of world total (%)											
1950-54	7.45	7.71	15.2	0.7	0.4	1.1	16.3	73.1	9.9	0.2	100.0
1955-59	7.51	7.51	15.0	1.9	1.0	2.9	17.9	69.7	9.8	0.2	100.0
1960-64	7.47	10.58	18.0	4.1	2.9	7.0	25.1	65.5	9.2	0.2	100.0
1965-69	5.66	11.89	17.6	7.9	7.4	15.3	32.9	58.8	8.1	0.2	100.0
1970-74	5.51	8.79	14.3	12.9	12.8	25.7	40.0	53.6	6.2	0.2	100.0
1975-79	4.33	7.62	12.0	16.1	17.8	33.9	45.8	48.4	5.6	0.2	100.0
1980	3.92	7.03	10.9	16.1	19.4	35.5	46.4	48.1	5.3	0.2	100.0
1981	3.54	6.73	10.3	15.4	19.1	34.5	44.8	49.8	5.2	0.2	100.0
Quantity index (1965-1969 = 100)											
1950-54	77.3	38.1	50.7	5.8	2.8	4.4	29.1	73.0	72.0	50.0	58.8
1955-59	93.6	44.6	60.4	16.8	9.8	13.4	38.5	83.6	86.0	75.0	70.6
1960-64	109.1	73.6	85.0	42.6	32.9	37.9	63.1	92.2	94.3	75.0	82.7
1965-69	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970-74	123.6	93.9	103.5	207.1	220.3	213.4	154.8	116.0	96.8	100.0	127.2
1975-79	106.4	89.2	94.7	280.0	336.4	307.0	193.7	114.4	96.8	125.0	139.1
1980	105.5	90.0	95.0	305.8	402.1	350.7	214.9	124.5	100.6	150.0	152.4
1981	100.0	90.5	93.5	310.3	414.0	360.1	217.8	135.6	102.5	150.0	160.0

Source: Textile Organon

Appendix Table 5 World Production of Cotton, by Countries

[1,000 bales (478 lb net)]

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developed countries																		
North America	USA	14,920	9,860	7,215	11,030	9,950	10,269	10,270	13,890	13,300	11,525	8,500	10,650	14,525	10,885	14,820	11,200	15,700
	Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	14,920	9,860	7,215	11,030	9,950	10,269	10,270	13,890	13,300	11,525	8,500	10,650	14,525	10,885	14,820	11,200	15,700
9 EC countries	France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Germany, FR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Italy	21	12	11	8	9	5	6	4	4	4	3	3	3	2	2	2	2
	UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EC 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	21	12	11	8	9	5	6	4	4	4	3	3	3	2	2	2	2
Other European countries *		728	829	758	711	804	778	753	912	713	865	810	730	925	853	657	807	873
Western Europe Subtotal		749	841	769	719	813	783	759	916	717	869	813	733	928	855	659	809	875
Other developed countries	Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Australia	93	85	150	154	128	89	201	145	140	152	115	130	205	245	383	456	570
	S. Africa	65	65	70	125	90	85	85	82	185	187	85	164	240	255	300	265	215
	Subtotal	158	150	220	279	218	174	286	227	325	339	200	294	445	500	683	721	785
Total		15,827	10,851	8,204	12,028	10,981	11,226	11,315	15,033	14,342	12,733	9,513	11,677	15,898	12,240	16,162	12,730	17,360
Developing countries																		
Central America	Mexico	2,615	2,240	2,000	2,450	1,750	1,440	1,715	1,780	1,500	2,230	910	1,045	1,627	1,570	1,515	1,625	1,445
	Other Central America	1,241	1,071	1,057	1,064	814	900	1,189	1,268	1,611	1,430	1,281	1,562	1,685	1,668	1,151	1,175	912
	Subtotal	3,856	3,311	3,057	3,514	2,564	2,340	2,904	3,048	3,111	3,660	2,191	2,607	3,312	3,238	2,666	2,800	2,357
South America	Brazil	2,500	2,050	2,750	3,320	3,100	2,300	3,150	2,950	2,465	2,440	1,800	2,510	2,125	2,530	2,640	2,825	2,900
	Argentina	480	400	340	520	670	390	400	575	585	790	645	740	1,015	800	670	385	740
	Colombia	300	405	465	640	590	540	590	630	620	700	560	685	645	375	575	535	400
	Peru	544	471	390	515	393	410	400	315	410	372	285	283	331	398	461	460	420
	Other South America	142	139	132	177	169	173	247	320	382	492	398	547	645	510	524	600	524
	Subtotal	3,966	3,465	4,077	5,172	4,922	3,813	4,737	4,790	4,462	4,794	3,688	4,765	4,761	4,613	4,870	4,805	4,984
Asia	ASEAN countries **	90	135	125	165	85	55	75	95	50	90	51	93	143	119	277	336	350
	Newly industrializing countries in Asia																	
	Rep. of Korea	18	21	18	20	20	20	19	18	21	14	14	10	8	9	12	11	10
	Taiwan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hong Kong	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	18	21	18	20	20	20	19	18	21	14	14	10	8	9	12	11	10

Appendix Table 5 (cont'd.)

(1,000 bales (478 lb net))

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developing countries (cont'd.)																		
Asia (cont'd.)	Southwest Asia																	
	India	4,600	4,600	5,300	4,900	4,850	4,400	5,800	5,370	5,530	5,950	5,350	4,950	5,680	6,220	6,300	6,000	6,400
	Pakistan	1,925	2,149	2,400	2,440	2,485	2,570	3,265	3,235	3,037	2,925	2,370	2,006	2,651	2,183	3,357	3,296	3,400
	Others	221	194	208	189	211	186	197	207	251	268	299	348	286	289	234	226	255
	Subtotal	6,746	6,943	7,908	7,529	7,546	7,156	9,262	8,812	8,818	9,143	8,019	7,304	8,617	8,692	9,891	9,522	10,055
Middle East	Iran	700	530	545	770	760	710	680	955	920	1,095	640	720	820	610	460	275	330
	Iraq	45	40	55	60	65	65	65	65	70	70	55	50	40	40	30	23	27
	Israel	101	115	131	154	183	163	169	186	173	230	225	247	295	365	347	360	405
	Turkey	1,500	1,760	1,825	2,005	1,845	1,845	2,400	2,505	2,365	2,760	2,215	2,190	2,650	2,200	2,200	2,300	2,250
	Syria	830	655	585	710	690	690	725	750	720	670	730	720	695	665	590	545	600
	Yemen	5	5	5	3	2	2	3	3	30	30	40	35	40	40	40	40	40
	Yemen P.D.R.	16	20	8	30	23	26	25	25	16	21	20	13	22	17	15	15	15
	Subtotal	3,197	3,125	3,154	3,732	3,568	3,501	4,067	4,489	4,294	4,876	3,925	3,975	4,562	3,937	3,682	3,558	3,667
Africa	Egypt	2,402	2,098	2,014	2,013	2,497	2,346	2,351	2,369	2,258	2,018	1,762	1,828	1,840	2,022	2,230	2,440	2,385
	Sudan	755	890	900	1,050	1,135	1,130	1,125	920	1,090	1,015	500	735	915	640	525	445	730
	Uganda	375	360	285	355	390	345	345	360	230	145	115	65	90	33	25	20	30
	Tanzania	310	365	325	240	330	300	300	350	300	335	195	310	232	260	280	235	210
	Mozambique	180	205	195	205	215	162	218	225	160	210	80	55	85	100	70	80	100
	Others	836	1,027	970	1,916	1,726	1,431	1,543	1,522	1,611	1,845	1,753	1,936	1,669	1,852	1,941	1,836	1,681
	Subtotal	4,858	4,945	4,689	5,379	6,293	5,714	5,682	5,746	5,649	5,568	4,405	4,931	4,831	4,907	5,071	5,056	5,136
Total		22,731	21,945	23,028	25,511	24,998	22,599	26,946	26,998	26,405	28,145	22,293	23,685	26,234	25,515	26,469	26,088	26,559
Planned economy countries																		
Europe	USSR	8,930	9,460	9,370	9,200	8,850	10,800	11,000	11,400	11,100	12,250	11,730	12,050	12,700	12,000	13,000	14,200	13,700
	Others	95	145	130	100	85	100	90	105	90	85	85	75	60	55	60	75	70
	Subtotal	9,025	9,625	9,500	9,300	8,935	10,900	11,090	11,505	11,190	12,335	11,815	12,125	12,760	12,055	13,060	14,275	13,770
Asia	China	7,100	8,500	8,900	8,300	8,100	9,200	9,600	8,200	11,700	11,500	10,700	10,000	9,450	10,000	10,200	12,500	13,700
	Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	7,100	8,500	8,900	8,300	8,100	9,200	9,600	8,200	11,700	11,500	10,700	10,000	9,450	10,000	10,200	12,500	13,700
Total		16,125	18,125	18,400	17,600	17,035	20,100	20,690	19,705	22,890	23,835	22,515	22,125	22,210	22,055	23,260	26,775	27,470
Grand Total		54,683	50,921	49,632	55,139	53,014	53,925	58,951	61,736	63,637	64,713	54,321	57,487	64,342	59,810	65,891	65,593	71,389

*. Greece, Spain and Yugoslavia.
** Thailand and the Philippines (from 1975/76 for the Philippines)

Source: ICAC

Appendix Table 6 World Production of Cotton, by 5-Year Averages

5-year average	World total	Developed countries	Developing countries	Planned economy countries	Major producing countries													Share of world total (%)
					USA	Mexico	Brazil	Argentina	India	Pakistan	Turkey	Syria	Egypt	Sudan	USSR	China	Total	
Quantity (million bales)																		
1965-69	52.68	11.58	23.64	17.46	10.60	2.21	2.74	0.48	4.85	2.28	1.79	0.69	2.20	0.95	9.17	8.18	46.14	87.6
1970-74	60.59	12.93	26.22	21.44	11.85	1.73	2.65	0.55	5.41	3.01	2.38	0.71	2.27	1.06	11.31	10.04	52.97	87.4
1975-79	60.37	13.10	24.84	22.43	11.88	1.33	2.32	0.77	5.70	2.51	2.29	0.68	1.94	0.66	12.30	10.07	52.45	86.9
1980-81	68.49	15.05	26.32	27.12	13.45	1.54	2.86	0.56	6.20	3.35	2.28	0.57	2.41	0.59	13.95	13.10	60.86	88.9
Quantity (million MT)																		
1965-69	11.42	2.51	5.13	3.79	2.30	0.48	0.59	0.10	1.05	0.49	0.39	0.15	0.48	0.21	1.99	1.77	10.00	87.6
1970-74	13.14	2.80	5.69	4.65	2.57	0.38	0.57	0.12	1.17	0.65	0.52	0.15	0.49	0.23	2.45	2.18	11.48	87.4
1975-79	13.09	2.84	5.39	4.86	2.58	0.29	0.50	0.17	1.24	0.54	0.50	0.15	0.42	0.14	2.67	2.18	11.38	86.9
1980-81	14.85	3.26	5.71	5.88	2.92	0.33	0.62	0.12	1.34	0.73	0.49	0.12	0.52	0.13	3.02	2.84	13.18	88.9
Share of world total (%)																		
1965-69	100.0	22.0	44.9	33.1	20.1	4.2	5.2	0.9	9.2	4.4	3.4	1.3	4.2	1.8	17.4	15.5	87.6	
1970-74	100.0	21.3	43.3	35.4	19.6	2.8	4.4	0.9	8.9	5.0	3.9	1.2	3.7	1.7	18.7	16.6	87.4	
1975-79	100.0	21.7	41.1	37.2	19.7	2.2	3.8	1.3	9.4	4.2	3.8	1.1	3.2	1.1	20.4	16.7	86.9	
1980-81	100.0	22.0	38.4	39.6	19.6	2.3	4.2	0.8	9.1	4.9	3.3	0.8	3.5	0.9	20.4	19.1	88.9	
Quantity index (1965-1969 = 100.0)																		
1965-69	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1970-74	115.0	111.7	110.9	122.8	111.8	78.3	96.7	114.6	111.5	132.0	133.0	102.9	103.2	111.6	123.3	122.7	114.8	
1975-79	114.6	113.1	105.1	128.5	112.1	60.2	84.7	160.4	117.5	110.1	127.9	98.6	88.2	69.5	134.1	123.1	113.7	
1980-81	130.0	130.0	111.3	155.3	126.9	69.7	104.4	116.7	127.8	146.9	127.4	82.6	109.5	62.1	152.1	160.1	131.9	

Source: ICAC

Appendix Table 7 World Harvested Acreage of Cotton, by Countries

(1,000 acres)

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developed countries																		
North America	USA	13,615	9,552	7,997	10,160	11,058	11,160	11,471	12,984	11,970	12,547	8,796	10,914	13,275	12,400	12,831	13,215	13,841
	Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	13,615	9,552	7,997	10,160	11,058	11,160	11,471	12,984	11,970	12,547	8,796	10,914	13,275	12,400	12,831	13,215	13,841
9 EC countries	France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Germany, FR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Italy	35	26	22	18	17	12	13	9	8	12	12	6	9	7	7	7	6
	UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EC 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	35	26	22	18	17	12	13	9	8	12	12	6	9	7	7	7	6
Other European countries *		843	947	731	710	766	582	547	735	611	650	506	520	653	529	468	497	498
Other developed countries	Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Australia	48	54	71	76	77	61	98	107	76	83	70	80	87	122	173	207	256
	S. Africa	175	175	175	200	200	200	200	200	215	220	170	155	200	272	297	303	267
	Subtotal	223	229	246	276	277	261	298	307	291	303	240	235	287	394	470	510	523
Total		14,716	10,754	8,996	11,164	12,118	12,015	12,329	14,035	12,880	13,512	9,554	11,675	14,224	13,330	13,776	14,229	14,868
Developing countries																		
Central America	Mexico	1,959	1,733	1,703	1,787	1,296	995	1,134	1,236	1,040	1,402	558	591	963	851	920	876	865
	Other Central America	934	783	769	744	632	615	647	836	984	995	788	1,027	1,192	1,079	672	684	628
	Subtotal	2,893	2,516	2,472	2,531	1,928	1,610	1,781	2,072	2,024	2,397	1,346	1,618	2,155	1,930	1,592	1,560	1,493
South America	Brazil	5,500	5,000	5,600	6,500	7,100	6,000	6,500	6,000	5,700	5,500	4,700	5,300	5,000	5,000	5,100	5,100	5,300
	Argentina	1,095	815	697	1,003	1,117	906	984	1,097	1,171	1,248	1,022	1,280	1,500	1,656	1,402	685	965
	Colombia	395	412	425	575	697	557	539	687	633	727	622	844	960	434	535	492	382
	Peru	544	469	411	417	355	337	297	319	366	330	243	274	292	305	363	361	310
	Other South America	343	293	297	328	305	307	418	545	617	744	573	811	1,028	1,129	788	957	915
	Subtotal	7,877	6,989	7,430	8,823	9,574	8,107	8,738	8,148	8,487	8,549	7,160	8,509	8,800	8,524	8,188	7,595	7,872
Asia	ASEAN countries **	179	196	239	255	265	105	182	128	105	140	152	117	217	208	314	425	460
	Newly industrializing countries in Asia																	
	Rep. of Korea	47	46	42	41	42	40	34	32	33	26	24	19	15	17	20	21	20
	Taiwan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hong Kong	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	47	46	42	41	42	40	34	32	33	26	24	19	15	17	20	21	20

Appendix Table 7 (cont'd.)

(1,000 acres)

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developing countries (cont'd.)																		
Asia (cont'd.)	Southwest Asia																	
	India	19,626	19,358	19,755	18,771	19,058	18,792	19,233	19,037	18,715	18,678	18,429	17,013	19,437	19,982	19,958	19,770	20,000
	Pakistan	3,877	3,975	4,447	4,313	4,338	4,283	4,837	4,967	4,559	5,019	4,574	4,608	4,555	4,672	5,142	5,209	5,355
	Others	929	853	732	598	688	713	682	694	610	802	933	919	799	851	768	841	863
	Subtotal	24,432	24,186	24,934	23,682	24,084	23,788	24,752	24,678	23,884	24,499	23,936	22,540	24,791	25,505	25,868	25,820	26,218
Middle East	Iran	950	970	740	840	940	790	765	840	855	912	717	730	781	692	550	358	482
	Iraq	75	80	95	110	150	150	165	150	150	130	80	75	50	62	43	45	35
	Israel	43	54	73	75	81	80	78	78	78	95	95	100	126	146	141	143	151
	Turkey	1,693	1,789	1,773	1,761	1,578	1,304	1,701	1,878	1,674	2,070	1,656	1,436	1,919	1,611	1,513	1,660	1,615
	Syria	----------	----------	----------	----------	(a)	----------	----------	----------	50	60	60	60	60	60	60	60	60
	Yemen	40	37	12	40	30	35	30	30	30	30	30	30	40	30	30	30	30
	Yemen PDR	732	630	592	690	739	616	619	589	495	509	514	449	461	418	381	343	348
	Subtotal	3,533	3,530	3,285	3,516	3,518	2,975	3,358	3,565	3,332	3,806	3,152	2,880	3,437	3,019	2,718	2,639	2,721
Africa	Egypt	1,972	1,930	1,688	1,519	1,683	1,689	1,583	1,611	1,661	1,507	1,397	1,295	1,477	1,234	1,241	1,292	1,223
	Sudan	1,086	1,200	1,201	1,202	1,304	1,262	1,249	1,201	1,223	1,223	991	1,024	1,196	1,035	1,017	956	922
	Uganda	2,174	2,176	2,148	1,998	2,088	2,167	2,778	2,748	1,764	1,245	1,475	1,000	1,400	700	400	350	450
	Tanzania	550	600	650	670	700	700	700	700	700	700	570	900	960	1,125	1,125	1,000	1,000
	Mozanbique	908	1,012	932	935	868	947	815	762	700	700	350	238	335	400	300	320	350
	Others	3,424	3,485	3,590	4,051	4,462	4,394	4,528	4,399	4,803	4,868	4,714	5,287	4,881	4,659	4,395	4,321	3,980
	Subtotal	10,114	10,403	10,209	10,375	11,105	11,159	11,653	11,421	10,851	10,243	9,497	9,744	10,249	9,153	8,478	8,239	7,925
Total		49,075	47,866	48,611	49,223	50,516	47,784	50,498	50,564	48,716	49,600	45,267	45,427	49,664	48,356	47,178	46,299	46,709
Planned economy countries																		
Europe	USSR	6,034	6,098	6,034	6,042	6,276	6,785	6,845	6,758	6,775	7,116	7,225	7,287	7,393	7,506	7,635	7,776	7,828
	Others	168	176	180	160	165	160	155	145	145	145	125	123	106	95	90	100	100
	Subtotal	6,202	6,274	6,214	6,202	6,441	6,945	7,000	6,903	6,920	7,261	7,350	7,410	7,499	7,601	7,725	7,876	7,928
Asia	China	11,500	12,000	11,900	11,700	11,600	11,900	12,000	12,100	12,000	12,000	11,900	11,500	11,600	11,600	11,200	11,900	12,700
	Others	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal	11,500	12,000	11,900	11,700	11,600	11,900	12,000	12,100	12,000	12,000	11,900	11,500	11,600	11,600	11,200	11,900	12,700
Total		17,702	18,274	18,114	17,902	18,041	18,845	19,000	19,003	18,920	19,261	19,250	18,910	19,099	19,201	18,925	19,776	20,628
Grand Total		81,493	76,894	75,721	78,289	80,675	78,644	81,827	83,602	80,516	82,433	74,071	76,012	82,987	80,887	79,879	80,304	82,205

* Greece, Spain and Yugoslavia

** Thailand and the Philippines (from 1975/76 for the Philippines)

Source: ICAC

Appendix Table 8 World Harvested Acreage of Cotton, by 5-Year Averages

5-year average	World total	Developed countries	Developing countries	Planned economy countries	Major producing countries												
					USA	Mexico	Brazil	Argentina	India	Pakistan	Turkey	Syria	Egypt	Sudan	USSR	China	Total
Area (million acres)																	
1965-69	78.61	11.55	49.06	18.01	10.48	1.70	5.94	0.95	19.31	4.19	1.71	0.68	1.76	1.20	6.10	11.74	65.76
1970-74	81.40	12.95	49.44	19.01	12.03	1.16	5.94	1.08	18.89	4.73	1.73	0.57	1.61	1.23	6.86	12.00	67.83
1975-79	78.77	12.51	47.18	19.08	11.64	0.78	5.02	1.37	18.96	4.71	1.63	0.44	1.33	1.05	7.41	11.56	65.90
1980-81	81.25	14.55	46.50	20.20	13.53	0.87	5.20	0.83	19.89	5.28	1.64	0.35	1.26	0.94	7.80	12.30	69.89
Area (million ha)																	
1965-69	31.81	4.67	19.85	7.29	4.24	0.69	2.40	0.38	7.81	1.70	0.69	0.28	0.71	0.49	2.47	4.75	26.61
1970-74	32.94	5.24	20.01	7.69	4.87	0.47	2.40	0.44	7.64	1.91	0.70	0.23	0.65	0.50	2.78	4.86	27.45
1975-79	31.88	5.06	19.10	7.72	4.71	0.32	2.03	0.55	7.67	1.91	0.66	0.18	1.54	1.42	3.00	4.68	26.67
1980-81	32.88	5.89	18.82	8.17	5.47	0.35	2.10	0.34	8.05	2.14	0.66	0.14	0.51	0.38	3.16	4.98	28.28
Share of world total (%)																	
1965-69	100.0	14.7	62.4	22.9	13.3	2.2	7.6	1.2	24.6	5.3	2.2	0.9	2.2	1.5	7.8	14.9	83.7
1970-74	100.0	15.9	60.7	23.4	14.8	1.4	7.3	1.3	23.2	5.8	2.1	0.7	2.0	1.5	8.4	14.8	83.3
1975-79	100.0	15.9	59.9	24.2	14.8	1.0	6.4	1.7	24.1	6.0	2.1	0.5	1.7	1.3	9.4	14.7	83.7
1980-81	100.0	17.9	57.2	24.9	16.7	1.1	6.4	1.0	24.5	6.5	2.0	0.4	1.5	1.2	9.6	15.1	86.0
Area index (1965-1969 = 100.0)																	
1965-69	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970-74	103.5	112.1	100.8	105.6	114.8	68.2	100.0	113.7	97.8	112.9	101.2	83.8	91.5	102.5	112.5	102.2	103.1
1975-79	100.2	108.3	96.2	105.9	111.1	45.9	84.5	144.2	98.2	112.4	95.3	64.7	75.6	87.5	121.5	98.5	100.2
1980-81	103.6	126.0	94.8	112.2	129.1	51.2	87.5	87.4	103.0	126.0	95.9	51.5	71.6	78.3	127.9	104.8	106.3

Source: ICAC

Appendix Table 9 World Cotton Yield, by Countires

(lb/acre)

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developed countries																		
North America	USA	527	480	447	516	435	438	438	507	520	441	453	465	520	420	547	404	543
	Canada	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9 EC countries	France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Germany, FR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	UK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EC 5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Western Europe a)		408	413	488	472	496	630	648	589	554	627	750	666	670	762	663	767	830
Other developed countries	Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Australia	916	757	1,003	972	798	696	984	659	880	875	785	771	1,124	958	1,058	1,055	1,065
	S. Africa	178	178	191	306	215	203	220	196	411	406	239	506	574	448	483	418	385
Total		514	482	436	515	433	447	439	512	532	450	476	478	534	439	561	428	558
Developing countries																		
Central America	Mexico	638	618	562	655	646	692	723	688	689	760	779	846	807	882	787	887	798
	Other Central America	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North and Central America	Subtotal b)	545	510	481	546	464	471	484	534	551	487	496	505	550	472	575	452	563
South America	Brazil	217	196	235	244	209	183	228	235	207	212	183	226	203	242	247	265	262
	Argentina	210	234	233	248	287	206	194	251	239	303	302	276	323	231	228	269	367
	Colombia	363	470	523	532	405	463	523	439	468	460	430	388	315	413	513	520	501
	Peru	492	416	541	469	568	517	569	557	542	484	515	464	575	672	539	561	648
	Other South America	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South America	Subtotal c)	242	233	267	274	247	222	257	269	252	266	246	267	260	260	281	300	303
Asia	ASEAN countries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Newly industrializing countries in Asia																	
	Rep. of Korea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Taiwan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hong Kong	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 9 (cont'd.)

(lb/acre)

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developing countries (cont'd.)																		
Asia (cont'd.)	Southwest Asia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	India	112	114	128	125	122	112	144	135	141	152	139	139	140	149	151	145	153
	Pakistan	221	259	257	270	272	279	322	312	318	279	248	208	278	223	312	302	303
Middle East	Iran	352	261	352	438	386	430	425	543	514	574	427	471	502	421	400	367	327
	Iraq	287	239	277	261	207	207	188	207	223	257	329	318	382	308	333	247	373
	Israel	1,120	1,027	865	981	1,081	974	1,042	1,136	1,060	1,157	1,132	1,178	1,120	1,191	1,180	1,206	1,282
	Turkey	424	478	492	544	559	676	680	637	676	637	640	729	660	653	695	663	666
	Yemen	-	-	-	-	-	-	-	-	287	239	319	279	319	319	319	319	319
	Yemen P.D.R.	191	261	311	359	366	355	319	335	255	335	319	207	263	271	239	239	239
	Syria	542	497	473	492	446	535	560	609	695	630	678	766	721	760	741	760	823
	Subtotal d)																	
Africa	Egypt	581	520	570	633	709	664	710	703	650	640	603	675	595	783	859	903	932
	Sudan	332	354	358	417	416	428	431	366	426	397	241	343	366	296	247	223	382
	Uganda	82	79	63	85	89	76	59	63	62	56	37	31	31	23	30	27	32
	Tanzania	269	291	239	171	225	239	208	242	205	225	164	165	116	110	119	112	109
	Mozambique	95	100	100	105	118	82	128	141	109	143	76	110	121	120	112	120	137
	Subtotal e)	229	227	220	250	272	247	244	242	252	263	222	246	232	262	293	296	310
Total		221	219	226	248	237	226	255	255	259	271	235	249	252	252	268	269	272
Planned economy countries																		
Europe	USSR	707	743	742	728	674	761	768	806	783	823	769	790	821	774	814	873	837
	Others	270	394	345	299	246	299	278	346	297	280	325	291	271	277	319	359	335
Asia	China	241	259	357	339	334	370	406	387	466	458	430	416	389	412	435	502	516
Total f)		399	421	484	469	450	508	534	534	577	590	558	558	555	548	586	646	635
Grand Total g)		313	302	315	336	316	327	350	362	376	375	350	361	370	354	393	390	415

a) Average for Western Europe
b) Average for North and Central America
c) Average for South America
d) Average for Asia (incl. China), Middle East and Oceania
e) Average for Africa (incl. South Africa)
f) Average for countries with planned economies
g) World average

Source: ICAC

Appendix Table 10 World Cotton Yield, by 5-Year Averages

5-year average	World total	Developed countries	Developing countries	Planned economy countries	Major producing countries												
					USA	Mexico	Brazil	Argentina	India	Pakistan	Turkey	Syria	Egypt	Sudan	USSR	China	Total
Yield (lb/acre)																	
1965-69	316	476	230	445	481	624	220	242	120	256	499	490	603	375	719	306	335
1970-74	358	476	253	549	469	710	213	239	137	302	661	606	673	410	788	417	373
1975-79	366	498	251	561	481	820	220	272	144	254	675	733	703	299	794	416	380
1980-81	403	493	271	641	474	843	264	318	149	303	665	792	918	303	855	509	416
Yield (kg/ha)																	
1965-69	354	534	258	499	539	699	247	271	135	287	559	549	676	420	806	343	375
1970-74	401	534	284	615	526	796	239	268	154	338	741	679	754	460	883	467	418
1975-79	410	558	281	629	539	919	247	305	161	285	757	822	788	335	890	466	426
1980-81	452	553	304	718	531	945	296	356	167	340	745	888	1,029	340	958	571	466
Share of world total (%)																	
1965-69	100.0	150.6	72.8	140.8	152.2	197.5	69.6	76.6	38.0	81.0	157.9	155.1	190.8	118.7	227.5	96.8	106.0
1970-74	100.0	133.0	70.7	153.4	131.0	198.3	59.5	66.8	38.3	84.4	184.6	169.3	188.0	114.5	220.1	116.5	104.2
1975-79	100.0	136.1	68.6	153.3	131.4	224.0	60.1	74.3	39.3	69.4	184.4	200.3	192.1	81.7	216.9	113.7	103.8
1980-81	100.0	122.3	67.2	159.1	117.6	209.2	65.5	78.9	37.0	75.2	165.0	196.5	227.8	75.2	212.2	126.3	103.2
Yield index (1965-1969 = 100.0)																	
1965-69	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1970-74	113.3	100.0	110.0	123.4	97.5	113.8	96.8	98.8	114.2	118.0	132.5	123.7	111.6	109.3	109.6	136.3	111.3
1975-79	115.8	104.6	109.1	126.1	100.0	131.4	100.0	112.4	120.0	99.2	135.3	149.6	116.6	79.7	110.4	135.9	113.4
1980-81	127.5	103.6	117.8	144.0	98.5	135.1	120.0	131.4	124.2	118.4	133.3	161.6	152.2	80.8	118.9	166.3	124.2

Source: ICAC

Appendix Table 11 Cotton Yield in Major Producing Countries, by Groups

(1) High-yield group (500 lb/acre and above)

(lb/acre)

5-year average	USSR	USA	China	Mexico	El Salvador	Guatemala	Nicaragua	Colombia	Peru	Greece	Spain	Syria	Turkey	Israel	Australia	Egypt
1965-69	719	481	306	624	700	719	631	459	497	562	391	490	499	1,015	889	603
1970-74	788	469	417	710	783	907	690	471	534	734	479	606	661	1,074	819	673
1975-79	794	481	416	820	715	1,097	558	412	553	757	629	733	675	1,160	939	703
1980-81	855	474	509	843	655	998	657	511	605	777	892	792	665	1,244	1,060	918

(USA: 543 lb/acre in 1981, and 605 lb/acre expected in 1982.)
Countries which belong to this group but produce less than 100,000 bales: Productivity increasing - Honduras, Equador

(2) Medium-yield group (300 - 499 lb/acre)

5-year average	Pakistan	Iran	Thailand	Cameroon	Ethiopia	Ivory Coast	Mali	South Africa	Zimbabwe	Sudan	Argentina
1965-69	256	358	311	209	168	324	202	212	N.A.	375	242
1970-74	302	497	357	160	236	339	277	287	325	410	239
1975-79	254	444	347	344	409	404	383	450	422	299	272
1980-81	303	347	382	390	460	396	374	402	423	303	318

N.A.: Not available

Countries which belong to this group but produce less than 100,000 bales:
Productivity increasing
- Bolivia, Costa Rica, Bulgaria, Morocco
Productivity leveling off
- Venezuela

(3) Low-yield group (299 lb/acre and below)

5-year average	India	Afghanistan	Brazil	Paraguay	Chad	Mozambique	Nigeria	Tanzania	Upper Volta
1965-69	120	296	220	189	130	104	134	239	123
1970-74	137	344	213	219	132	121	83	224	133
1975-79	144	342	220	268	162	108	78	135	244
1980-81	149	295	264	266	152	129	52	111	271

Countries which belong to this group but produce less than 100,000 bales:
Productivity increasing
- Yugoslavia, Ghana, Malawi, Niger, Senegal, Zaire
Productivity leveling off
- Rep. of Korea

Source: ICAC

Appendix Table 12 World Cotton Consumption, by Countries

(1,000 bales (478 lb net))

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developed countries																		
North America	USA	9,497	9,485	8,982	8,242	7,991	8,068	8,039	7,800	7,500	5,885	7,300	6,702	6,514	6,374	6,533	5,916	5,300
	Canada	420	425	390	390	360	350	365	345	325	235	260	220	240	260	270	275	200
	Subtotal	9,917	9,910	9,372	8,632	8,351	8,418	8,404	8,145	7,825	6,120	7,560	6,922	6,754	6,634	6,803	6,191	5,500
9 EC countries	France	1,232	1,236	1,120	1,123	1,143	1,095	1,085	1,064	1,077	932	935	961	850	825	850	770	760
	Germany, FR	1,301	1,177	1,189	1,177	1,170	1,078	1,109	1,074	1,096	962	1,022	966	810	780	792	795	760
	Italy	1,003	1,112	1,028	1,021	1,021	925	924	862	898	828	901	923	841	979	1,051	956	925
	UK	1,012	900	831	816	792	741	638	650	560	510	494	491	415	449	402	221	220
	EC 5	728	670	647	640	630	591	559	515	516	415	387	374	301	297	346	321	310
	Subtotal	5,276	5,095	4,815	4,777	4,756	4,430	4,315	4,165	4,147	3,647	3,739	3,715	3,217	3,330	3,441	3,063	2,975
Other European countries		2,067	2,037	1,889	2,025	2,035	2,039	2,157	2,260	2,322	2,253	2,400	2,573	2,514	2,623	2,709	2,622	2,515
Western Europe Subtotal		7,343	7,132	6,704	6,802	6,791	6,469	6,472	6,425	6,469	5,900	6,139	6,288	5,731	5,953	6,250	5,685	5,490
Other developed countries	Japan	3,215	3,255	3,350	3,476	3,392	3,541	3,614	3,724	3,650	2,900	3,250	3,150	3,000	3,300	3,400	3,270	3,100
	Australia	129	127	142	140	140	140	130	135	145	106	125	107	105	95	100	100	95
	S. Africa	200	220	200	210	210	225	235	250	260	240	260	240	225	250	285	310	315
	Subtotal	3,544	3,602	3,692	3,826	3,742	3,906	3,979	4,109	4,055	3,246	3,635	3,497	3,330	3,645	3,785	3,680	3,510
Total		20,804	20,644	19,768	19,260	18,884	18,793	18,855	18,679	18,349	15,266	17,334	16,707	15,815	16,232	16,738	15,556	14,500
Developing countries																		
Central America	Mexico	650	670	710	685	685	675	750	800	830	820	835	760	740	760	760	760	800
	Other Central America	199	204	220	209	229	222	236	240	263	282	301	314	304	314	315	307	342
	Subtotal	849	874	930	894	909	897	986	1,040	1,093	1,102	1,136	1,074	1,044	1,074	1,075	1,067	1,142
South America	Brazil	1,200	1,250	1,250	1,330	1,350	1,380	1,500	1,700	1,800	1,900	2,050	2,100	2,250	2,450	2,600	2,500	2,600
	Argentina	519	491	433	475	477	492	500	465	520	515	540	540	480	505	470	380	390
	Colombia	290	300	300	310	325	345	360	405	450	300	280	365	405	325	380	380	225
	Peru	92	82	77	80	90	120	140	145	165	140	150	190	230	260	265	275	250
	Other South America	314	304	307	319	319	333	343	340	405	373	378	345	332	349	304	270	257
	Subtotal	2,415	2,427	2,367	2,514	2,561	2,670	2,843	3,055	3,340	3,228	3,398	3,540	3,697	3,889	4,019	3,705	3,722
Asia	ASEAN countries *	410	507	525	560	605	665	745	822	980	1,000	1,115	1,160	1,235	1,348	1,420	1,470	1,435
	Newly industrializing countries in Asia																	
	Rep. of Korea	335	375	415	445	480	540	530	525	740	720	900	1,000	1,165	1,290	1,560	1,510	1,550
	Taiwan	296	348	440	455	510	630	610	530	720	740	970	1,000	920	1,000	1,155	1,125	1,100
	Hong Kong	662	734	774	776	771	801	694	689	831	798	1,086	935	975	990	1,035	790	650
	Subtotal	1,293	1,457	1,629	1,676	1,761	1,971	1,834	1,744	2,291	2,258	2,956	2,935	3,060	3,280	3,750	3,425	3,300
	ASEAN + Newly industrializing countries in Asia	1,703	1,964	2,154	2,236	2,326	2,636	2,579	2,566	3,271	3,258	4,071	4,095	4,295	4,628	5,170	4,995	4,735

Appendix Table 12 (cont'd.)

(1,000 bales (478 lb net))

Countries		Cotton year (August - July)																
		1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82(P)
Developing countries (cont'd.)																		
Asia (cont'd.)	Southwest Asia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	India	5,025	5,075	5,335	5,370	5,520	5,200	5,500	5,700	5,865	5,785	6,100	5,500	5,320	5,650	5,950	6,340	6,000
	Pakistan	1,310	1,400	1,550	1,750	1,950	2,025	2,020	2,500	2,485	2,020	2,150	1,800	1,900	1,950	1,980	2,030	2,150
	Others	216	221	246	238	248	256	385	488	578	587	592	581	588	613	630	601	628
	Subtotal	6,551	6,696	7,131	7,358	7,718	7,481	7,905	8,688	8,928	8,392	8,842	7,881	7,808	8,213	8,560	8,971	8,778
Middle East	Iran	240	250	270	300	300	280	275	340	335	350	365	385	395	370	320	300	325
	Iraq	30	30	35	40	55	55	55	65	85	90	90	90	90	110	110	120	140
	Israel	115	105	112	125	113	100	108	110	95	105	110	110	100	120	110	115	90
	Turkey	650	670	740	785	830	850	900	1,000	970	1,210	1,360	1,460	1,370	1,400	1,230	1,350	1,400
	Syria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Yemen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Yemen P.D.R.	100	95	110	109	110	120	155	170	150	183	171	155	158	145	160	205	250
	Subtotal	1,135	1,150	1,267	1,359	1,408	1,405	1,493	1,685	1,635	1,938	2,096	2,200	2,113	2,145	1,930	2,090	2,205
Africa	Egypt	780	840	850	850	875	935	970	1,000	1,030	1,020	1,090	1,200	1,300	1,325	1,300	1,375	1,450
	Sudan	40	55	65	70	70	60	60	60	70	65	70	65	50	50	70	85	70
	Uganda	40	43	40	50	50	55	55	50	45	34	30	30	25	15	15	20	20
	Tanzania	-	3	20	30	33	35	40	45	55	55	50	45	50	70	60	70	85
	Mozambique	22	22	22	23	24	27	28	35	34	33	25	30	35	35	35	35	35
	Others	318	359	408	473	558	605	627	649	873	941	987	987	910	991	1,013	1,040	1,053
	Subtotal	1,200	1,322	1,405	1,496	1,610	1,717	1,780	1,839	2,107	2,148	2,252	2,357	2,370	2,486	2,493	2,625	2,713
Total		13,853	14,433	15,254	15,857	16,572	16,806	17,586	18,873	20,374	20,066	21,795	31,147	21,327	22,435	23,247	23,353	23,295
Planned economy countries																		
Europe	USSR	7,150	7,500	7,800	7,900	8,100	8,500	8,800	8,850	8,600	8,700	8,750	8,750	8,800	8,900	9,000	9,100	9,200
	Others	2,610	2,652	2,632	2,620	2,687	2,757	2,785	2,800	2,770	2,700	2,742	2,752	2,772	2,805	2,870	2,850	2,780
	Subtotal	9,760	10,152	10,432	10,520	10,787	11,257	11,585	11,650	11,370	11,400	11,492	11,502	11,572	11,705	11,870	11,950	11,980
Asia	China	8,000	9,000	8,800	8,700	8,700	9,300	10,600	11,300	12,000	11,800	10,700	11,400	12,100	12,900	13,800	15,300	16,000
	Others	65	55	30	55	85	100	110	110	90	70	90	110	150	175	180	180	180
	Subtotal	8,065	9,055	8,830	8,755	8,785	9,400	10,710	11,410	12,090	11,870	10,790	11,510	12,250	13,075	13,980	15,480	16,180
Total		17,825	19,207	18,962	19,275	19,572	20,657	22,295	23,060	23,460	23,270	22,282	23,012	23,822	24,780	25,850	27,430	28,160
Grand Total		52,482	54,284	53,984	54,392	55,028	56,256	58,736	60,612	62,183	58,602	61,411	60,866	60,964	63,447	65,835	66,339	65,955

* The Philippines, Malaysia, Singapore, Thailand, Indonesia

Source: ICAC