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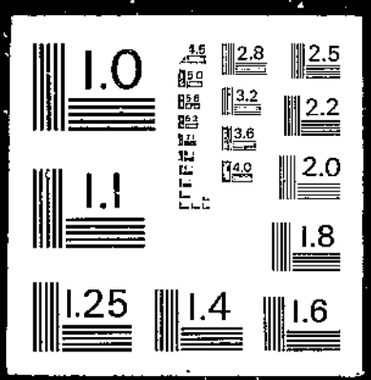
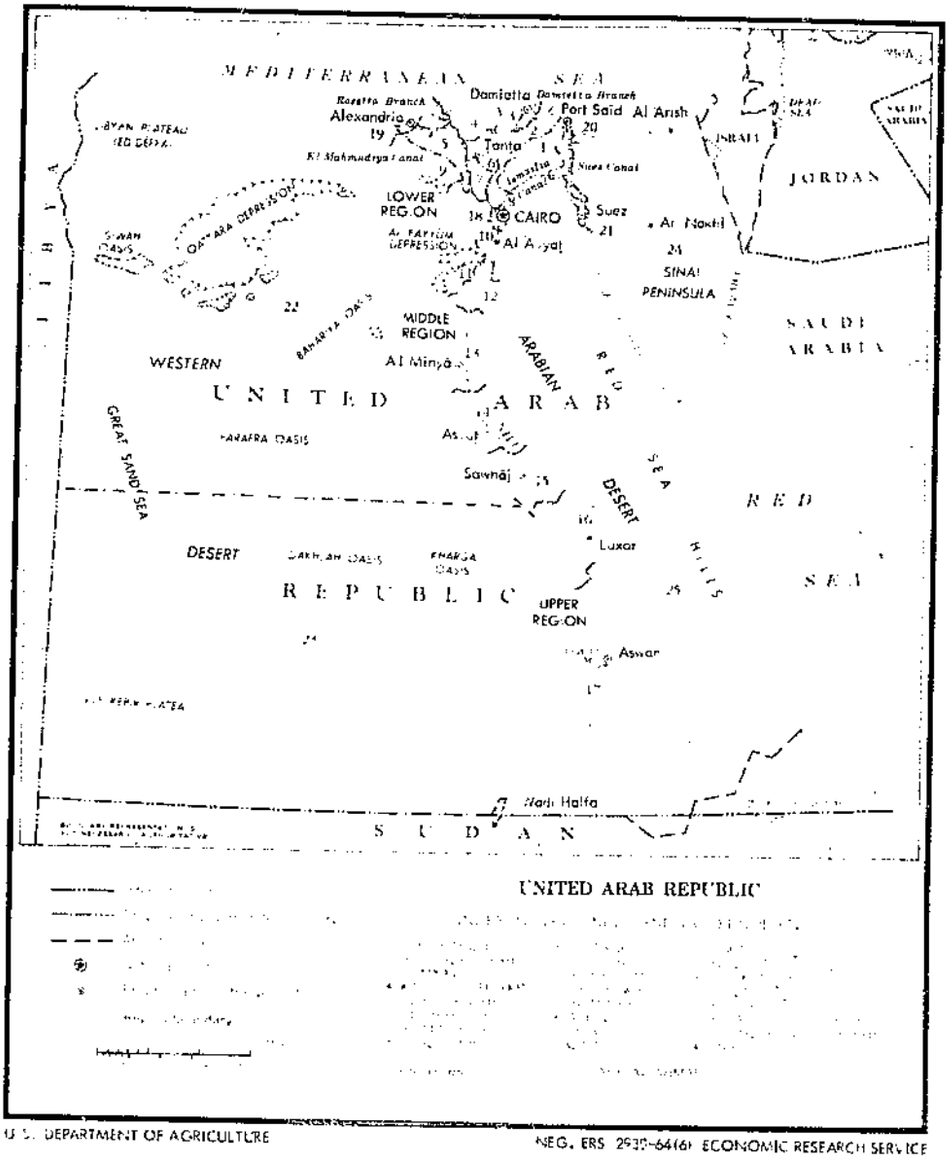


The Agricultural Economy of the United Arab Republic (Egypt)

FOREIGN AGRICULTURAL ECONOMIC REPORT NO. 21
U.S. DEPARTMENT OF AGRICULTURE/ECONOMIC RESEARCH SERVICE
FOREIGN REGIONAL ANALYSIS DIVISION



U. S. DEPARTMENT OF AGRICULTURE

NEG. ERS 2930-64(6) ECONOMIC RESEARCH SERVICE

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Egypt merged with Syria (presently the Syrian Arab Republic) in February 1958 to form the United Arab Republic. Although Syria withdrew from the union in September 1961, Egypt continues under the official title of "UNITED ARAB REPUBLIC." The abbreviation UAR is used extensively as a matter of convenience in this report.

Washington, D. C. November 1964

SUMMARY

Although industrial gains were made in the last decade, the economy of the United Arab Republic (UAR) remains predominantly an agricultural one. Agriculture accounts for approximately two-fifths of the national income and between 80 and 85 percent of total exports. Three-fourths of the people are classified as rural dwellers and depend upon agriculture for a livelihood; the majority of the urban dwellers are engaged in processing or trading agricultural products.

The UAR's agricultural economy depends heavily on one crop--cotton--which accounts for 70 percent or more of all export earnings and occupies close to one-fifth of the total acreage planted annually. The UAR has concentrated on the production of long and extra-long-staple cotton (see breakdown of staple length under section on cotton production), which is required for certain specialized uses. Because of the special characteristics of Egyptian cotton, many countries, including the United States, have traditionally imported it. Cotton occupies such a dominant role in the Egyptian economy that it is impracticable to disassociate it from any consideration of the UAR's future development, political or economic.

In recent years, a number of factors have encouraged development of the textile industry in the UAR. Cotton has become harder to export than the other crops. There have also been greater efforts to reduce foreign exchange expenditures for textiles and to provide employment for more workers.

Other important cash crops include rice and onions. The UAR has experienced no difficulty in exporting the surplus of these two crops. Indications are that their production will go higher in the next few years. With some changes in the rotation pattern expected as new land becomes available, rice and onions, along with other vegetables and citrus, will likely figure more significantly in future crop planning.

The critical relationship between expansion of agricultural production and population growth is the dominating factor of the

UAR's economic problem. Some idea of the magnitude of this problem is shown by the less than one-third acre of cultivated land per person in the UAR in 1960. Even though the Government has taken measures to relieve population pressure on the extremely limited farming area, the problem has grown more acute. The country's population has increased over 60 percent since 1940. Yet, during the same period, the area of cropland has increased very little and grain production has expanded only 40 percent. As a result, larger quantities of agricultural products are imported each year. These import needs are principally bread grains, vegetable oils, coarse grains, tallow, meat, tobacco leaf, and dairy products. The greatest shortages are in wheat and wheat flour. On a wheat-equivalent basis, wheat and wheat flour imports during 1962 totaled over 1.4 million metric tons, an amount nearly equal to local production. During the first 6 months of 1963, these imports had already reached 1.1 million metric tons.

Much of the imported food is received from the United States under special Government programs. Aside from small amounts of tallow, tobacco, and minor miscellaneous items, the UAR provides a small dollar market for products of United States agriculture. Low per capita production, low income, limited natural resources, overpopulation, growing trade deficits, and increasing tendency for trade with soft currency countries contribute to this situation.

Governmental goals to increase food production, while at the same time increasing production of crops for export, have resulted in the subjection of Egyptian agriculture to strict price, production, and trade controls. Most of the cultivated land is under private ownership and the number of landowners has increased through an extensive land reform program initiated soon after the overthrow of the monarchy in 1952. Farm production policies and marketing programs are largely carried out through cooperatives, membership of which is compulsory for farmers.

The Government of the UAR is dedicated to improving the economic position of its people. It is to this end that efforts are being made to expand production through the development of new lands. Also, more intensive farming practices are being encouraged, so that greater production will be obtained from the present

cultivated area. Projects to bring more land under production include construction of the Aswan High Dam, desalting marshy soils, and reclamation of desert land through the use of underground water. Increased use of chemical fertilizers and more intensive control of insects are perhaps the most outstanding development undertaken to improve yields. New varieties of cotton are being developed and seeds distributed. Programs are underway to develop more fully the livestock industry potential.

Progress in these projects and in promoting industry has been accelerated in recent years. However, accomplishments are not likely to be rapid enough to enable the country to meet an ambitious goal of doubling the gross national product within the next decade. After 1970, the scheduled completion date for the Aswan High Dam, water should be available to expand the arable farm land substantially. Even such an increase probably will not be enough to permit self-sufficiency in food production, assuming continuation of the present rate of population growth in the country.

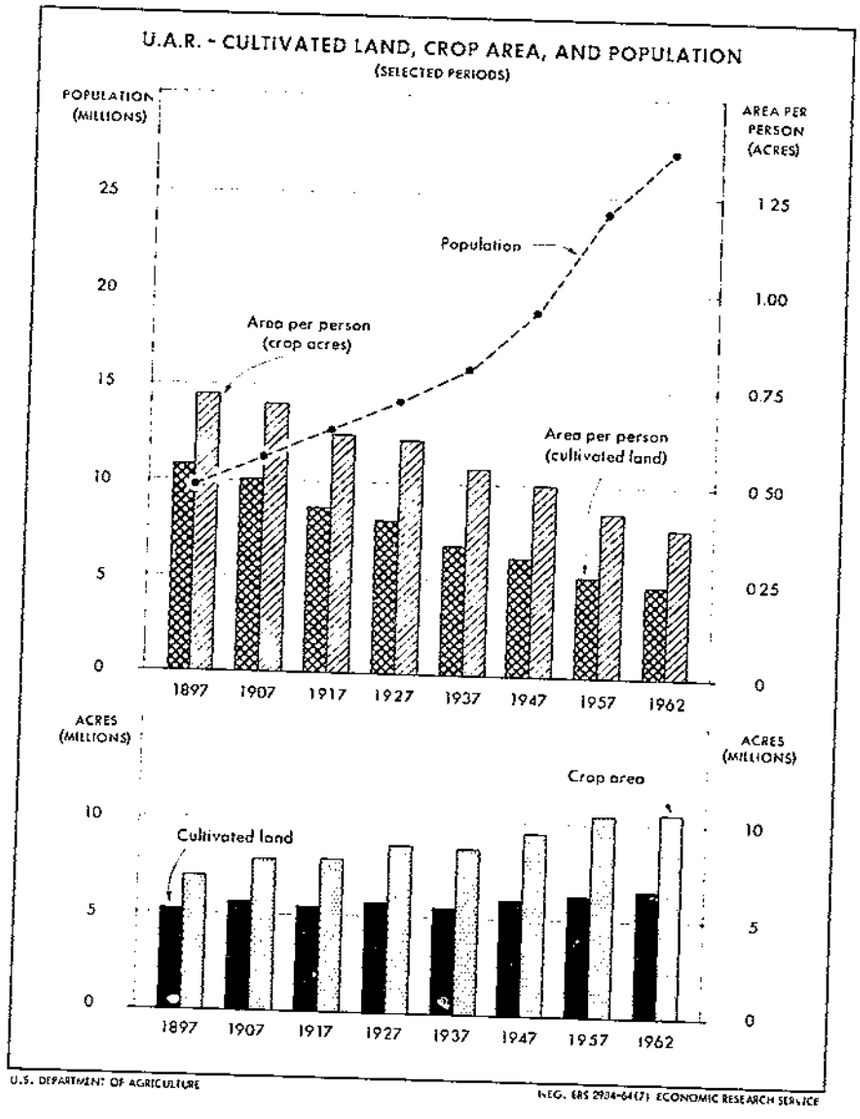
U.A.R. - CULTIVATED LAND, CROP AREA, AND POPULATION
(SELECTED PERIODS)
POPULATION (MILLIONS)
AREA PER PERSON (ACRES)
25
20
15
10
5
0
1.25
1.00
0.75
0.50
0.25
0
Population
Area per person (crop acres)
Area per person (cultivated land)
1897
1907
1917
1927
1937
1947
1957
1962
ACRES (MILLIONS)
ACRES (MILLIONS)
Crop area
Cultivated land
10
5
0
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Figure 1

THE AGRICULTURAL ECONOMY OF THE UNITED ARAB REPUBLIC (EGYPT)

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POPULATION AND PHYSIOGRAPHY

Population

An official census taken in 1960 placed the United Arab Republic population at 25,775,000, and indicates a rate of growth of about 2.7 percent annually (fig. 1). Of this total, it was estimated that 92 percent are Moslems and 6.5 percent Copts; the remainder comprise non-Egyptian minorities.

Between 60 and 65 percent of the population is rural and depends directly upon agriculture for a living; the majority of the urban population is engaged in processing and trading agricultural products. The largest segment of the rural population lives in compact villages throughout the main agricultural areas. Unlike in neighboring countries, only a few follow a nomadic way of life because of the limited water supply and grazing land in the UAR.

Agricultural Regions

The United Arab Republic occupies the northeastern corner of the African Continent with an extension across the Gulf of Suez encompassing the Sinai Peninsula. Administratively, the UAR is divided into 16 provinces. The uniformity of the country's physical features makes it practical for agricultural purposes to divide the country into three basic zones: Lower, Middle, and Upper Regions.

(a) The Lower Region consists of the delta proper, from Cairo northward to the Mediterranean. The bulk of berseem (a clover), cotton, corn, wheat, and nearly all rice is produced in this area. In addition, it contains most of the country's livestock.

(b) The Middle Region includes the narrow cultivated strip along the Nile from Cairo to Asyut. Basin irrigation is practiced to a limited extent. The main crops are berseem and cotton.

Cattle and buffaloes are of lesser importance than in the lower region, but are in greater number than in the area to the south.

(c) The Upper Region includes the narrow cultivated strip along the Nile from Asyut southward to the Sudanese border. Little water is available for crops. Nevertheless, this region grows most of the country's onions, grain sorghum, and cane sugar. Cotton, berseem, and wheat occupy important places in crop rotation. Although there are a substantial number of sheep and camels in this area, goats are more important since they can survive better on the extremely scanty vegetation.

Topography

The UAR covers an area of 386,000 square miles--almost the size of Texas and New Mexico combined. Approximately 97 percent of the area is classified as desert or mountains. Except for the coastal plain along the Mediterranean, the section of the UAR west of the Nile is a plateau known as the Western Desert. Its nearly flat to rolling surface is interrupted in places by steep escarpments, extensive areas of sand accumulation, and depressions. Most of the area east of the Nile ranges from flat to rolling and is bordered on the north by coastal plains. This area parallels the Gulf of Suez and the Red Sea and it has numerous isolated peaks and ridges with crest elevations between 2,000 and 7,500 feet above sea level.

With the exception of the Nile Valley, topography is not an important factor in Egyptian agriculture. The Nile Valley between the southern boundary of the UAR and the Delta is 10 to 15 miles wide for most of its extent but in places it is less than 3 miles and in others, as much as 25 miles wide. The Delta fans out from Cairo and reaches a width of nearly 150 miles at the Mediterranean end.

Rainfall and Temperature

Insufficient rainfall is the major physical limitation of Egyptian agriculture. With the exception of a small area farmed by nomads of the desert, all crops depend entirely upon irrigation. The average annual rainfall of the Delta along the coast of the Mediterranean is about 8 inches. Inland, the amount falls off

rapidly until at Cairo it averages just over 1 inch a year. In the Middle Region, a light shower may fall occasionally but in the Upper Region rain is practically unknown. The rain in the UAR falls mostly in the winter. It is generally believed that high relative humidity and heavy early morning fogs are of some importance to crop production in the Delta. The humidity has seasonal aspects; from a minimum in the spring, the early growing months of cotton, it increases throughout the growing season to a maximum in the fall months.

The United Arab Republic is characterized by a 2-season year: A mild winter from November to April; a hot summer from May to October. Spring and fall, as experienced in more temperate lands, are unknown. Practically no trees shed their leaves in winter, and crops ripen in April and May as well as in July and August. Except for variations in temperature, there is little difference between the seasons.

During the summer, the highest temperature occurs in the desert areas south of Cairo, often reaching 100° to 115° F. In the coastal region, temperatures range between a mean maximum of 100° F. and a mean minimum of 45° F. Owing to the large extent of the desert, hot dry sand-winds called Khamsin are frequent, particularly in spring, and much damage can be caused to crops.

Soils

The only significant agricultural soils in the United Arab Republic are confined to the narrow valley and the fan-shaped Delta of the Nile. Almost without exception, the other soils throughout the country are predominantly sandy and almost entirely without organic matter. Some of these sandy soils, however, are potentially productive if only water were available.

For years, the soil fertility of the Nile Valley has been greatly publicized. These extremely rich soils are of alluvial origin and were deposited before the Nile River was placed partially under control. These soils are usually rich in potash and phosphoric acid, but deficient in nitrogen. However, they are not uniform throughout and can be classified into four broad groups. The largest portion of the Delta is of a heavy black soil with over 50 percent clay. This soil is very fertile and deep. It

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becomes stiff and quite hard to work when overirrigated but produces high yields even if too much water is applied. The second group of soils, found in the Upper Region, differs from the heavy clays of the Delta in that it is not as deep and has a lighter sandy subsoil. These black clay soils are commonly called "cotton soils" and are, by far, the most productive in the UAR. A third group of lighter loamn soils is found in the extreme northeastern part of the Delta. Because of location, parts of this soil group have become salty and are in need of drainage. In areas where it is free from salt, soil of this type grows fair crops of grains and cotton. Along the edges of the desert a much lighter sandy loam, the fourth group of soil, is found. These soils are the result of mixing, by winds, the desert lands with the clay soils of the valley. They are not as fertile as the clay but have excellent drainage and produce fair crops.

ORGANIZATION OF AGRICULTURAL RESOURCES

Land Utilization

As a result of an extremely high population pressure, the small area of arable land in the United Arab Republic is intensively cropped and irrigated. Less than 3 percent (6.5 million acres) of the UAR's total land area of 247 million acres is under cultivation; less than 1 percent of the remainder is considered to be potentially productive. Since the Egyptian farmer can produce one to three crops a year on the same acreage, the annual total cropped area is actually equivalent to about 10.6 million acres. Forest and pasture lands are of no importance and the remaining 97 percent of the total is classified as desert or wasteland. The economic situation is further aggravated since approximately 20 percent of the total arable land is of poor quality; productivity is affected by a number of adverse factors including salinity, alkalinity, and inadequate drainage.

The general pattern of land utilization in the UAR is indicated by the division of land among three basic crops (table 1). A relatively large portion (close to 20 percent in 1961) of the cultivated area is allotted to cotton, an even larger portion to grain, and a third major portion to clover, which provides fodder for livestock, and at the same time helps maintain soil fertility. Since 1955, the Government has specified the annual acreage that is to be planted in cotton and wheat. Likewise, the area allotted to rice is specified on an annual basis.

Table 1.--UAR: Land use, 1961

Use	Acres	Percentage of total area
	Thousands	Percent
Crop area 1/	10,630	
Cotton	2,060	
Wheat	1,435	
Corn	1,665	
Sorghum	475	
Barley	125	
Rice	555	
Onions	2/ 60	
Sugarcane	115	
Clover	2,540	
Other field crops, fallow, and orchards	1,600	
Cultivated area	6,480	2.6
Potentially productive land	1,270	.5
Forest	2	3/
Pasture and meadow	4/	3/
Wasteland and other	239,250	96.9
Total area	247,002	100.0

1/ The United Arab Republic's cultivated area produces an average of 1 1/2 crops annually.
2/ 1960 figures.
3/ Less than 0.5 percent.
4/ Insignificant.

Source: Yearbook of Food and Agricultural Statistics, 1962, vol. XVI, Rome, 1963.

Irrigation

The economic importance of the Nile to the United Arab Republic is inestimable. It is practically the only source of water for plant and animal life as the country is almost totally lacking in rainfall, and the use of underground water by wells is in its infancy. However, the Nile Waters Agreement of 1959 between the UAR and the Sudan, superseding the agreement of 1929 between Egypt and the United Kingdom, delimits the total amount of the Nile waters available to the UAR. The Agreement sets the

UAR's water supply for irrigation each year at 55.5 billion cubic meters of the Nile's annual average flow of 84 billion cubic meters at Aswan. Present dams and barrages are inadequate to care for the total volume of the Nile and, therefore, some water is lost to the sea during the river's annual flood each summer. The Government is now constructing the Aswan High Dam, which is scheduled for completion by 1970, to make the maximum use of the total water supply.

The most important dam in the UAR at present is at Aswan in the Upper Region. Its reservoir has a capacity of over 5.0 billion cubic meters. The Jebel Aulia Dam, located in the Sudan on the White Nile just south of Khartoum, stores water for Egyptian agriculture and has a capacity of 2.5 billion cubic meters. Five important barrages, three in the Upper Region and two north of Cairo, supplement the work of the dams by raising the water level. On January 9, 1960, work was officially begun on the new Aswan High Dam. It is being constructed 5 miles upstream from the present Aswan Dam and will have a capacity of about 130 billion cubic meters. In addition to expanding the country's supply of hydroelectric power, the UAR Government estimates that the new dam will make water available for over 1 million acres of new land for agricultural production. It is also thought that the dam will provide water to convert nearly 730,000 acres to more intensive cultivation through perennial irrigation.

Both basin and perennial irrigation are practiced in the UAR. Due to the urgent demand for additional land for cultivation, however, the basin irrigation system, where water is supplied by a single flooding during the high-water period of the Nile, is gradually giving way to the more prevalent system of perennial irrigation. The limited area under basin irrigation is confined mostly to the Middle and Upper Regions; to a limited extent, a system of combined basin and perennial irrigation is also practiced in the Upper Region.

Total irrigated area as of 1960 was reported at 6.4 million acres. The breakdown of this total by the methods of irrigation is:

	Thousand acres
Perennial	5,570
Basin	380
Combined (basin and perennial)	450

Although the more primitive water-lifting devices are widely used, the Egyptian irrigation system is highly developed and operated in a very efficient manner (fig. 2). The saqiya, or Persian water wheel, worked by cows, water buffaloes, or other animals, the shaduf (counterbalanced dipper) worked by man, and the Archimedes screw-wheel worked by man, are used extensively but are gradually being replaced by mechanically driven pumps. All dams, barrages, regulators, and canals are owned and maintained by the Government, which also controls the distribution of water.

Figure 2.--Irrigation of cotton.

Land Tenure

Most of the cultivated land in the United Arab Republic is under private ownership; less than 5 percent is state domain, or dedicated to religious or charitable purposes. Prior to 1952, 94 percent of all landowners held less than 5 feddans 1/ (5.2 acres)

1/ One feddan = 45,215 square feet = 1.038 acre.

each; as a group, they possessed less than 36 percent of the cultivated land (table 2). At the same time, a minority, mostly absentee landlords, representing 0.4 percent of the total landowners, possessed 34 percent of the country's cultivated area. According to the Agrarian Reform Distribution Department, under Egyptian conditions and with the use of local tools, 3 feddans (3.1 acres) are the minimum necessary to keep an average-size farm family employed. This supposedly will provide that family with a moderate, but sufficient, living. Yet, as of 1950, approximately two-thirds of all farms reported were less than 3.1 acres in size.

Land values have risen enormously since World War II. In some cases, the rents charged are actually higher than the net output from the land. These rental payments absorb part of the supplementary income the peasant farmer earns as a day laborer. This has accelerated the movement of persons from a farm tenant into a landless laborer category. The Agrarian Reform Program was initiated to help correct this situation.

Unrealistic tenancy agreements and the steadily rising price of land have been major factors in impeding the full development of Egyptian agriculture. According to the 1950 census, as much as 60 percent of the total agricultural land was in some form of tenancy. Some form of share-rental arrangement is generally practiced throughout the country. Cash tenancy prevails on a small scale in the immediate vicinity of the larger cities where truck farming is carried on. Through the Agrarian Reform Program, efforts are being made to standardize all forms of tenancy.

With only a few exceptions, all land owned by foreigners was nationalized in 1961; the present policy requires that all landowners must be citizens of the country.

Land Reform

Agrarian reform along with the various development programs now being undertaken to expand the crop area is designed to improve the prevailing land tenure system. To correct maldistribution of land, a Land Reform Law was put into effect during the last quarter of 1952. It provided that with a few

Table 2.--UAR: Land ownership before and after Agrarian Reform 1/

Size of holdings	Owners		Land owned	
	Number	Percentage of total	Area	Percentage of total
Acres	1,000 persons	Percent	1,000 acres	Percent
Before Agrarian Reform:				
Less than 5.2	2,642	94.3	2,204	35.5
5.2 -- 10.4	79	2.8	546	8.8
10.5 -- 51.9	69	2.5	1,341	21.6
52.0 -- 103.4	6	.2	446	7.2
103.5 -- 207.6	3	.1	454	7.3
over -- 207.6	2	.1	1,222	19.6
Total	2,801	100.0	2/ 6,213	100.0
After Agrarian Reform (1961) 3/:				
Less than 5.2	2,919	94.1	3,293	52.1
5.2 -- 10.4	80	2.6	546	8.7
10.5 -- 51.9	91	2.9	1,511	23.9
52.0 -- 103.4	6	.2	446	7.1
103.5 -- ---	5	.2	519	8.2
Total	3,101	100.0	2/ 6,315	100.0

1/ The first phase of the Agrarian Reform Program began in 1952 and the second phase was initiated in 1961. Under the second phase, individual holdings could not exceed 100 feddans (103.5 acres). 2/ Totals do not include cultivated land owned by the Government, and religious or charitable organizations. 3/ Reflects the land distribution after both phases of the Agrarian Reform Program have been implemented.

Source: Annual Report, Ministry of Agrarian Reform, Cairo, 1962.

exceptions no person could own more than 200 feddans (208 acres) of agricultural land. Later this was reduced to 100 feddans. The number of landowners was increased by nearly 10 percent, or by some 200,000 new owners during the first phase of the program. Simultaneously, the land held by large holders--those with over 200 feddans--was reduced from 20 to 6 percent of the total cultivated area; other sources report that about 150,000 families have benefited under this phase of the program.

Compensation for the requisitioned land was established at a rate equal to 10 times the rental value of the land, which was estimated at 7 times the basic land tax. To this was added the value of any construction, machinery, installation, and trees on the land. Compensation for the land was made in the form of Government bonds bearing interest at 3 percent per annum, redeemable in 30 years. Correspondingly, payment by the new owners for land distributed to them was initially fixed on the basis of compensation and interest paid to expropriated owners, plus 15 percent for the expenses of expropriation and distribution. In 1958, the 30-year redemption period was extended to 40 years, while the rate of interest was lowered to 1.5 percent and the administrative charge to 10 percent. In 1961, payments due on the purchase price of the land were cut by half and the interest charges on such payments were abolished.

In addition to redistributing large land holdings, the Agrarian Reform Law of 1952 fixed the maximum rent ceiling at 7 times the basic land tax. For sharecropping rents, the law decreed that the landlord's share shall not exceed one-half after allowance is made for all production expenses. This provision effected a large reduction in rents; it is generally held that a larger segment of the rural population benefits from this section of the program than under the redistribution phase.

The Reform Program also promoted cooperatives to handle problems of small holdings and fragmented farms. The law provided for the organization of cooperatives and made membership in them compulsory for those who received land under the program.

Despite the progress that has been made through the Reform Program, large numbers of farmers still hold uneconomic units.

In addition to large groups of below-subsistence owners, much of the UAR's rural population is small tenants or sharecroppers, and wage laborers.

Farm Practices

It is not uncommon in the United Arab Republic to see laborers using ancient methods and tools along with some of the more modern farming techniques. There is great dependence on use of manpower and chemical fertilizers, but little on the use of cultivating or harvesting machinery. Regardless of the method of production, farming is very intensive with irrigation being essential. The use of modern agricultural machinery is limited chiefly to the large cooperative farms under Governmental supervision.

Short-handled hoes are used for many cultivation jobs (fig. 3). Plowing is done largely with wooden plows pulled by cattle. A leveling board pulled around the plowed field by one or two animals supplements the work of the plow by breaking up small clods. Planting and harvesting is done mostly by hand. The largest share of the cereal crop is cut with hand sickles. Much of the threshing is done by flailing, by a threshing board drawn by animals (the norag), or by the animals treading on the grain

Figure 3.--Cultivating with hoe.

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(fig. 4). Of growing use in the UAR is the application of modern technology to ancient methods. For example, as the grain is harvested, it is threshed by being placed on highways and run over by passing cars and trucks. This method is often preferred over traditional ones, as much of the winnowing is also done simultaneously with the threshing.

Figure 4.--A grain threshing area.

Some 17,967 tractors were reported to be in use during 1960, mostly the wheel-type. Crawler tractors are used mainly for land reclamation, leveling, and sugarcane cultivation. Only 23 combines were reported in use in 1960. Within the last few years, there has been an increase in the number of pumps used for irrigation purposes. Plans to begin production of modern machinery have been announced, but only simple plows, pumps, spades, hoes, and similar farm tools were being manufactured as of 1961.

The average farmer generally owns one donkey for carrying farm implements, manure, and for some light field work, and one milk buffalo (gamoosa) or cow for milk production, pumping, and field work. He owns a large and small digging hoe, a sickle for each working member of the family, a wooden fork and shovel, a transportable water drum or shadoof, and either owns or shares the use of a plow and a threshing roller.

The Egyptian farmer has adopted a system of regular crop rotation to help maintain soil fertility and yields. Most rotations are built around cotton, and berseem (a clover), and may include corn, wheat, barley, millet, rice, sugarcane, onions, or vegetables. Generally, cultivators follow a 3-year rotation, but a 2- or a 4-year rotation is not uncommon in some areas.

Manure, pigeon droppings, silt from canals, and commercial fertilizers are used intensively by Egyptian farmers. Table 3 gives the reported use of commercial fertilizers for a series of years. Nitrogen fertilizer use averaged 40 pounds per acre of cropland in 1961. However, since the UAR's agricultural area produces an average of 1 1/2 crops annually, approximately 60 pounds of nitrogen were available for each acre of cultivated land. Much of the commercial fertilizer used in the UAR is imported; local production accounted for slightly over one-half of total consumption in 1961. If present and planned projects are completed, however, the country will be producing most of its fertilizers in the near future.

Table 3.--UAR: Production and consumption of commercial fertilizers

	Production		Consumption		
	Nitrogenous	Phosphate	Nitrogenous	Phosphate	Potash
	--Metric tons--		----Metric tons----		
1938	---	3,300	76,000	8,700	200
1948-52 av.	17,800	11,400	98,200	16,700	600
1955	29,590	20,558	122,586	20,558	120
1956	26,660	23,680	115,210	23,688	112
1957	32,240	27,515	157,345	27,494	1,507
1958	34,302	27,688	177,074	27,676	2,264
1959	38,077	24,990	105,733	24,990	---
1960	55,100	31,500	176,600	36,044	3,200
1961	106,500	29,700	191,900	48,400	---

Source: Fertilizers: An Annual Review of World Production, Consumption and Trade, FAO, 1962.

Egyptian farmers often suffer heavy crop losses from attacks by pests. Until recently, use of insecticides and pesticides was limited to combating locusts and various pests attacking the cotton crop. For the most part, pest control measures were largely picking insects from the crop by hand, and burning cotton and corn stalks. Lately, several control units have been established to procure insecticides and spraying equipment, and to make them available at no cost, or at a reasonable rate to growers (fig. 5). Just as for fertilizers and farm machinery, most insecticides are now imported. Imports of insecticides, fungicides, disinfectants, and similar preparations for all purposes averaged 12,400 metric tons per year during 1958-60. A small quantity of DDT is locally produced by a Government-owned plant.

Figure 5.--Workers spraying cotton.

MARKETING AND PROCESSING

Transportation

Agricultural areas in the UAR are served by a rather complete network of railroads, roads, and waterways. However, instead of serving as feeders, most roads and waterways provide

competition for the railways in that all three run parallel throughout much of the country. For the most part, the traditional camel caravan has become a thing of the past as more country busses and trucks link villages. Movement of supplies and commodities in the village is still almost solely by human head, donkey, or camel. The horse or donkey cart is important as a connecting link between the assembly points at the village and the district or terminal markets. Domestic livestock are generally driven to the local market on hoof.

The Upper Region is served by a double rail track as far south as Aswan. The Delta has a rather dense rail network but is lacking in lines running east to west. Construction is now underway to increase the lines in this area. However, increasingly larger quantities of farm products have been carried by trucks and busses in recent years. In many parts of the country, it has become a common practice for the peasants to market garden products, eggs, and live poultry by bus.

Inland waterways total approximately 2,000 miles and are divided almost equally between the Nile and the canals. (The other major waterway in the UAR is the Suez Canal, which is more important internationally than nationally). At one time, river steamer service was the most important means of transportation for agricultural commodities in the country and it is still a vital means of transport. The waterway network is a byproduct of the development of the irrigation system.

Port Facilities

Progressive cargo-handling facilities are found along the Suez Canal and at the country's two major ports along the Mediterranean--Alexandria and Port Said. Port Said is maintained and operated as part of the Suez Canal and is not only important locally, but also provides services to transit shipping. It has about 25,000 linear feet of quayage, limited to small craft. Larger ocean voyage vessels are accommodated at approximately 80 offshore moorings. The port at Alexandria also has modern equipment, but its activities are limited only to the UAR's international trade.

No modern inland waterway ports are found in the UAR. The type of cargo moved over the inland waterways can be generally manhandled by the plentiful supply of labor, and there has been

little investment in mechanized equipment. There has been no great need for inland berthage or docking facilities, as much cargo is moved by relatively small-capacity, shallow-draft craft. The general practice is for the craft to stop along the banks of the Nile or along the canals at a convenient spot to discharge cargo.

Marketing and Storage

Most of the terminal and district markets in the UAR for fruits and vegetables are now operated by the Government. However, at the local level fruits and vegetables are often sold off pushcarts (fig. 6). Within recent years, major efforts have been made to improve these marketing facilities, but most are still substandard in space, organization, and essential facilities. Livestock slaughtering establishments are confined mostly to the larger cities; the adequacy of these facilities varies greatly, with many being primitive and defective in sanitation and health.

Storage facilities are limited. In the UAR, grain is stored two ways--depending on whether it is consumed locally by the grower, or shipped for milling in urban centers. At harvesttime, the producer stores the annual requirements of his family on the roof of his house, or nearby in sealed clay jars. The rainless, sunny climate helps to keep the grain dry and in good condition; ashes are usually mixed with the grain to help prevent deterioration. The portion not needed for consumption by producers is purchased by the Government and placed in a storage lot (shouna), which consists of an open space enclosed by a wall or wire fence. The grain is usually stored in jute bags. Considerable amounts are usually lost by damage from insects, rodents, and birds. Open storage is also the general practice at mills in the cities and few have adequate enclosed storage facilities. The Government now has two modern grain elevators under construction--in Alexandria and in Cairo--with a capacity of 48,000 and 58,000 metric tons, respectively. An elaborate system of silos is now being constructed with the assistance of AID (Agency for International Development). Similar plans are envisioned for refrigeration and slaughtering facilities.

Processing

The bulk of all industrial activities in the UAR is centered around the processing of agricultural products. These industries

Figure 6.--Tomatoes sold off pushcart, Cairo.

are largely ginning cotton, manufacturing textiles, milling bread grains, processing oilseeds, canning fruit, and manufacturing sugar, soap, alcohol, and dehydrated onions.

After the textile industry, milling bread grains is the second most important industry. All types of milling methods, from the hollowed pounding mill of the Pharaonic time to the most modern pneumatic mill, with up-to-date cleaning machinery and conditioner, are in use. In 1957, there were over 2,300 mills in the country; most were the small stone-type and were used in villages. The largest percentage of the grain milled for the people in the cities is done by some 246 commercial mills controlled by the Ministry of Supply.

Sugar manufacturing is one of the oldest, and probably the best developed, of all food industries in the UAR. Sugar is manufactured by one company operating four plants and one refinery. The total capacity of these plants in 1960 was rated at 385,000 tons of raw sugar; the actual output amounted to 370,000 tons. In addition to a new plant, projects are being planned to improve present facilities so that their capacity would be increased by some 25,000 tons, thus making the country practically self-sufficient in sugar.

Since livestock numbers and products are limited, the processing of dairy products is a minor activity. The bulk of the milk is produced by individual proprietors. A small portion of it is consumed fresh, locally. Another small portion is made into yoghurt, and the remainder is used for the production of butter and cheese.

Most of the crushing and processing of oilseeds is done by plants with rather modern equipment. Several such plants are now in operation; they are capable of crushing, processing, and refining between 90,000 to 100,000 metric tons of oil annually. This, however, is substantially below total vegetable oil requirements.

Other food-processing industries include the canning of vegetables, fruits, fish and meat, the dehydration of onions and garlic, and the production of starch from rice and corn.

One of the major obstacles confronting the food industries is the lack of adequate refrigeration facilities.

AGRICULTURAL INSTITUTIONS

Agricultural Research, Extension, and Education

The United Arab Republic has maintained a corps of well-trained agriculturists and for years has been the main source of qualified agricultural technicians for other Arab countries. As of 1959, limited agricultural research and experimentation work was being conducted in 27 centers in the UAR. The Ministry of Agriculture, although deeply concerned with promoting all types of research, has largely confined its activities to applied research. Research of a basic nature has been left largely to the colleges of agriculture and science, and the National Research Center. As might be expected, much of the UAR's agricultural research is orientated toward developing and maintaining high-quality cotton. In addition, increased attention is being given to land reclamation. Notable progress has been made in improving vegetable and fruit culture and developing superior varieties of cereals. Likewise, research for livestock improvement has been accelerated, as well as work on pest and disease control.

The extension service is the weakest link between the limited research being carried on in schools and in experiment stations and the logical beneficiaries of this work--the farmers. For years, agricultural extension services were largely restricted to directives and control measures; however, in the past 10 years a new trend has begun to develop, based on the principle of extension as a cooperative educational activity between the Government and the farmers.

In cooperation with other agencies, the Ministry of Agriculture has embarked on a long-range project to establish an agricultural center for every 15,000 acres of cultivated land; some 67 such centers were in operation by 1959. Each center has a resident staff and the necessary equipment to promote the general improvement of agricultural activities in its locality. This is being done mainly through the following subunits: a general demonstration farm, fruit and vegetable nursery, plant for agricultural industries, stud farm, veterinary clinic, and a slaughterhouse. Each center has an advisory council, which includes representatives of the farmers and Government agencies concerned with rural welfare.

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In the agricultural fields some training is provided at the elementary level. The UAR has 18 agricultural secondary schools located in the various provinces; higher training in the various fields of agriculture is offered in 5 colleges of agriculture and 2 colleges for veterinary medicine. Agricultural training is also provided through 6 institutions which differ from colleges in that they place major emphasis on practical training and graduate skilled agricultural laborers and foremen.

Cooperatives

Egyptian farmers have taken an interest in the development of cooperative agricultural societies. In 1959, there were close to 4,600 cooperatives in operation; of this total, 70 percent were established to assist farmers. The majority of all societies are of the general-purpose type, rendering to members such services as the supplying of agricultural requirements (fertilizers, seed, feed, and machinery), the purchase of consumer goods, and the sale of produce. Probably the most important service, however, is the extension of credit.

With the execution of the Agrarian Reform Law of 1952, the rural cooperative movement was given new emphasis. Governmental supervision and guidance of all cooperative activities were made available at this time. The law provided for organization of the beneficiaries of land redistribution into cooperatives; membership became compulsory. In addition to making credit facilities available for production and marketing purposes, cooperatives were given authority to organize the cultivation and exploitation of the land in the most efficient manner. In some areas, this has meant that cooperatives have been responsible for seed selections, varieties of crops, pest control, and digging canals and drains. Other cooperatives have extended their services to selling the principal crops on behalf of their members--after deducting Government taxes and payments on land and other loans.

A basic difference between the supervised agrarian cooperatives of UAR and collectives in Eastern Europe is the way the income is distributed. In contrast with the experience of Eastern Europe, a rise in the UAR's total agricultural production occurred during the period when large land holdings were being redistributed.

Agricultural Credit

The Agricultural Credit and Cooperative Bank (ACCB) is the most important agricultural financial institution. The Agricultural Mortgage Bank, the general purpose Agricultural Cooperative Societies, landlords, merchants, and village money lenders, however, all provide some credit to agricultural operators.

The ACCB is authorized to grant loans to individual farmers and to cooperative societies (agricultural and nonagricultural) for reloaning to their members for any purpose other than the purchase of land. Most of its credit is granted through short-term loans for a period not exceeding 14 months. Medium-term loans are provided for livestock, machinery, and land improvements. Those involving livestock are limited to 3 years, while those for the purpose of machinery and for land improvement may have a maturity up to 10 years. Long-term loans with maturities up to 20 years are made to owners, cooperative societies, or institutions rendering useful services to agriculture for land reclamation and development of waste areas. The rate of interest on short-term advances is fixed at 5 percent for individual farmers and 3 percent for cooperatives. On loans for longer periods, rates are set at 7 percent to individual farmers and 5 percent to cooperatives.

In 1958, along with its head office in Cairo, the ACCB had 23 main branches and 94 subbranches scattered throughout the country at the district level. This allowed it to keep in close contact with small farmers. At that time, the bank was also operating 480 granaries and numerous fertilizer stores. Total loans granted by the ACCB for agricultural purposes amounted to about $92 million in 1960 (table 4).

AGRICULTURAL PRODUCTION AND TRADE

A variety of crops are grown in the UAR. With the exception of cotton, they are grown principally for domestic consumption. The rate of overall production has increased an average of close to 4 percent annually during the last decade. During the same period, population was increasing approximately 2.7 percent annually. Consequently, per capita output showed an average gain of about 1 percent annually. The relationship between population growth and increased production is illustrated in table 5.

Table 4.--Loans made by the Agricultural Credit and Cooperative Bank for agricultural purposes, 1952-60

Year	Type			Total
	Short term	Medium term	Long term	
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
1952	4,497	210	19	4,708
1953	45,957	122	34	46,113
1954	48,397	177	26	48,600
1955	52,326	252	32	52,610
1956	46,692	523	80	47,295
1957	52,573	390	28	52,991
1958	62,491	578	16	63,085
1959	72,384	1,642	25	74,051
1960	88,212	3,144	273	91,629

Table 5.--UAR: Indices of agricultural production, total and per capita, and population, average 1952-54, annual 1958-63

	Average 1952-54	1958	1959	1960	1961	1962	1963
Total	100	118	126	128	114	139	141
Per capita	100	105	110	108	98	112	111
Population	1/ 100	112	115	118	121	124	127

1/ Midyear 1953 estimate or 22,003,000.

Tables 6 and 7 give the area and production for principal crops over a number of years. While there is some variation from year to year in the area planted to any given crop, the total cropped area remains almost unchanged. Thus, the continued increase in overall agricultural production is due largely to higher yields resulting from intensified cultivation practices.

Table 6.--UAR: Area of principal crops, average 1935-39, 1950-54, annual 1955-63

Commodity	Area										
	1935-39 average	1950-54 average	1955	1956	1957	1958	1959	1960	1961	1962	1963 1/
	1,000 acres										
Cotton	1,821	1,832	1,885	1,715	1,888	1,977	1,827	1,944	2,060	1,720	1,689
Wheat	1,464	1,631	1,581	1,628	1,572	1,479	1,531	1,512	1,436	1,610	1,634
Corn	1,596	1,819	1,903	1,905	1,836	2,030	1,930	1,890	1,664	1,901	1,759
Rice, rough	463	539	623	714	759	539	756	733	557	862	950
Sorghum	385	455	455	497	467	440	485	470	474	472	539
Barley	277	136	141	136	138	141	146	153	126	135	125
Peanuts	22	27	35	37	37	40	42	42	35	54	55
Lentils	82	80	84	84	86	86	77	89	65	86	3/
Cottonseed	---	---	---	---	---	---	---	---	---	---	---
Sugar, cane	69	99	116	114	114	116	116	116	116	116	120
Berseem (a clover)	1,705	2,265	2,441	2,408	2,456	2,474	2,491	2,508	2,538	2,538	3/
Onions	37	42	52	47	52	52	59	59	67	74	78
Broad beans	409	2/ 408	371	351	368	373	368	375	341	346	3/
Oranges	---	---	---	---	---	---	---	---	---	---	---
Limes	---	---	---	---	---	---	---	---	---	---	---
Dates	---	---	---	---	---	---	---	---	---	---	---

1/ Preliminary.
2/ For 1948-52.
3/ Not available.

Table 7.--UAR: Production of principal crops, average 1935-39, 1950-54, annual 1955-63

Commodity	Production										
	1935-39 average	1950-54 average	1955	1956	1957	1958	1959	1960	1961	1962	1963 1/
	1,000 acres										
Cotton	411	370	335	325	406	446	458	479	336	457	439
Wheat	1,248	1,318	1,451	1,541	1,467	1,417	1,443	1,499	1,436	1,593	1,714
Corn	1,605	1,568	1,714	1,652	1,495	1,758	1,500	1,691	1,617	2,003	1,675
Rice, rough	684	830	1,244	1,495	1,624	1,027	1,535	1,486	1,142	1,700	2,000
Sorghum	456	519	537	595	566	543	630	603	631	657	675
Barley	233	106	127	129	131	135	141	156	133	146	134
Peanuts	15	21	28	29	31	33	34	35	49	49	50
Lentils	55	47	49	48	43	42	48	50	34	47	50
Cottonseed	735	700	648	639	777	852	850	888	666	897	883
Sugar, cane	2,273	3,301	4,145	4,091	4,137	4,230	4,329	4,555	4,350	4,850	5,000
Berseem (a clover) 2/	3/	38	38	35	38	35	37	41	39	33	3/
Onions	243	309	415	403	481	462	558	544	474	550	565
Broad beans	296	4/ 269	269	214	262	217	295	300	310	325	340
Oranges 5/	202	291	327	295	278	316	261	278	302	3/	3/
Limes	43	35	34	43	39	49	44	47	50	3/	3/
Dates	202	305	329	369	364	335	232	335	340	400	410

1/ Preliminary. 2/ Production of seed only. 3/ Not available. 4/ For 1948-52.
5/ Includes production of tangerines.

Source: Based largely on official statistics of the Government of the United Arab Republic and estimates by U.S. agricultural attache stationed in Cairo.

Field Crops

Cotton.--Cotton is by far the most valuable cash crop grown in Egypt, in both the income generated locally and the foreign exchange earned. In 1962, some 457,000 tons of cotton were produced on 1.7 million acres. Approximately 30 percent of this crop was consumed within the country; the rest was available for export.

The UAR's cotton production is limited almost solely to G. Barbadense, and any major efforts to produce American upland cotton, or G. Hirsutum would most likely lead to serious contamination problems as there are genetical differences between the two types. Generally, in official reports and estimates by the Egyptian Ministry of Agriculture, Egyptian cotton varieties are classified into three groups by staple length:

(1) Extra-long staples (over 1 3/8 inches), (2) medium-long staples (1 1/4 to 1 3/8 inches), and (3) ordinary-to-medium-long staples (1 1/8 to 1 3/16 inches). Karnak and Menoufi are the most common of the extra-long staple group and accounted for approximately 47 percent of total production from 1950 through 1960. However, planting of Karnak is to be discontinued in 1964 in favor of other improved varieties of extra-long staple. Ashmouni, a variety of the ordinary-to-medium-long staple group, has accounted for 30 to 40 percent of the country's total production. The acreage allotted to each variety is annually fixed by the Ministry of Agriculture. By law, each farmer may plant only one-third of his total farm area to cotton each year.

Cultural practices are standardized over the entire producing area. The crop is planted after fallow or a clover crop. After having received a thorough plowing, the land is ridged and irrigated approximately 2 weeks prior to the planting date. Planting is done on the south side of the ridge to protect the plants from the prevailing winds during the early stanges of growth. The time for planting is usually between mid-February and April in the Lower Region and throughout the month of February in the Middle and Upper Regions. The latest date for crops to be planted in a given area is regulated by law. The purpose for setting a deadline date is to allow the crop to mature early enough to escape the attacks of various insects, and to give ample time for tillage and seedbed preparation for the successive winter crop.

The crop is hoed two or three times. After the first or second hoeing, thinning is usually done, since five seeds are planted in one hill. The number of waterings given during the growing period varies according to climatic conditions, but generally is 8 to 10 applications. Cotton picking, done mostly by women, starts in August and is completed by November (fig. 7).

From 1956 to 1960, the average yield for all varieties amounted to about 490 pounds per acre but ranged between 418 and 551 pounds. The long-staple cottons have relatively lower yields than shorter staple types.

As of 1959, some 101 ginneries were in operation throughout the cotton area. Ginning is a seasonal industry, usually beginning in late August and must be terminated by mid-March in the Upper Region, and by the end of March, in the remainder of the country. Such deadlines are imposed so as to finalize the ginning operation before the emergence of the first generation of pink bollworm moths, which lay their eggs on the new crop in May. After the seeds have been removed, the crop is pressed into bales ranging from 800 to 900 pounds. All cotton is later forwarded to Alexandria, where it is stored and sold. When sold, various types are blended to meet the demands of individual buyers. The cotton is then repressed into bales weighing about 746 pounds each for export. Within recent years, the Government has greatly extended its controls over all phases of cotton marketing.

Figure 7.--Harvesting Egyptian cotton.

Pests such as grasshoppers, cutworms, thrips, aphids, red spiders, and bollworms are often the cause of low cotton yields. Use of insecticides to control these pests is increasing rapidly. In some years, the crop also suffers considerable damage from various diseases, among which cotton wilt (Fusarium) causes the greatest damage. It infests the highly fertile soil in the northern part of the country. However, considerable progress has been made in developing wilt-resistant varieties since the 1930's.

Grains.--Grains normally account for 45 to 50 percent of the UAR's total crop acreage. Principal grains grown are wheat, corn, rice, barley, and sorghum. Of these, only rice has some importance as an export crop.

Wheat is grown in all agricultural areas of the country. In fact, the geographic distribution of wheat is the most uniform of all crops grown in the UAR. In part, this is because each farmer is required by law to plant one-third of his total crop acreage to wheat each year. In 1960, some 1.5 million tons of wheat were grown on 1.5 million acres. Approximately the same area was planted to wheat in 1962, but production was up 100,000 tons. In fact, total wheat acreage has remained at about this level since prewar years. Yields are rather constant from year to year and have averaged close to 35 bushels per acre.

Wheat grown in the UAR is of the spring type and belongs almost exclusively to Tr. vulgare. Only small quantities of Tr. durum and Tr. pyramidale are grown. The crop is broadcast by hand from October through December and is ready for harvest by late May or early June.

Wheat is the most important bread grain in the cities. All surplus quantities produced by farmers are purchased by the Government at a fixed price. Also, the Government is in charge of all wheat and wheat flour imports.

Corn normally accounts for an area equal to that for cotton. As a food grain, it is more important than wheat. Corn is the principal staple food in the rural areas and is produced mostly for home consumption with relatively small quantities entering into commercial trading channels. About 70 percent of the crop is produced in the Lower Region (the Delta). The area planted to

corn decreases as one goes south, and is of relatively little importance in the farming areas south of Asyut. During the last decade, annual average yields have ranged between 30 to 35 bushels per acre.

Corn is planted in July or August and is harvested from late October through December. The principal varieties planted are American early and American dent. In addition, large numbers of mixed varieties are in use, including strains of Turkish and Italian origin. Only a small acreage of hybrid corn was being grown. However, the growing need for increased bread grain production has served to stimulate interest in hybrid seed. Total annual corn production normally amounts to approximately 1.6 million metric tons. This is not adequate to meet local requirements and substantial quantities must be imported annually. Total imports in 1962 amounted to 265,000 tons.

It is widely believed that corn yields could be greatly improved if the grain were allowed to fully mature before the fodder was removed from the stalk as is now done in many areas. The maturing date for corn comes at a time when the supply of other forage crops is extremely limited. Thus, there is the general tendency to strip the corn stalk of its fodder for feeding purposes.

Rice production is confined to the more northerly areas of the Delta. The total rice area in the country varies more from year to year than the acreage of any other crop, because of variations in the availability of water for irrigation. Rice requires large amounts of water between April and August, when the Nile is at its lowest, and the water supply must be shared with other crops. Therefore, the Government has found it necessary to limit the acreage planted to rice. Confronted with these conditions, the Government has recently undertaken programs to breed drought-resistant varieties. Likewise, efforts are underway to breed improved varieties for high yields as well as high tolerance to saline conditions.

All rice varieties grown in the UAR belong to the "Japonica" group. Most of the crop is sown in nurseries during April or the first of May, and the seedlings are then transplanted to fields some 35 to 40 days later. About 2 weeks after transplanting, it is

a general practice to broadcast 200 to 220 pounds of ammonium sulphate fertilizer per acre. Yields have continued to increase in recent years and averaged 4,470 pounds of rough rice per acre for 1959 and 1960. In good years, the country has had close to 300,000 metric tons of rice available for export. On the other hand, local requirements must be partly met from imports during seasons of inadequate water supply as was the case following the small crops of 1958.

Besides wheat, rice is the only grain that is milled commercially in moderately large volume. To promote rice exports, consideration is being given to improving milling facilities. Farm prices for rice, like those of cotton and wheat, are supported by the Government, which will buy all rice offered at a guaranteed minimum price.

Grain sorghum, locally called durra, is the fourth most important food grain. However, large quantities are also generally used for feed. It occupies about 4 percent of the total crop area. Production is especially important in the Upper Region, where irrigation facilities are not as abundant as in the Delta. Planting takes place in April and May and the grain is ready for harvest by late August. Yields are reported at 1.3 tons per acre. Total production is used for local consumption and amounted to 657,000 tons in 1962.

Barley is of minor importance as a food grain, but is largely used for feed. It is not unusual, however, for it to be mixed with other grains and used as a food in times of shortages. Some 143.000 acres were planted to barley in 1962 and yields averaged about 1 ton per acre. Small quantities are generally imported from European countries.

Sugarcane is grown in varying amounts throughout the length of the Nile in the United Arab Republic. However, about 75 percent of the area, and a slightly higher percentage of the production, is concentrated in the extreme southern part of the country. The largest part of the crop is used for sugar production, which averaged 320,000 tons per year from 1955 through 1960. Small quantities are chewed for its sweetness or made into syrup. Bagasse, the fibrous residue of the cane after the juice has been extracted, is used as fuel in the sugar mills.

The crop is planted during February and March. Cutting starts in December. Second and third crops are gathered from the same roots, after which the plants are uprooted. Before being planted again to cane, the area is either left fallow, or planted with clover or wheat for one season.

The sugar industry is highly controlled by the Government. Prices received by the producers as well as paid by the consumers for sugar are all determined by the Government. The sugar is manufactured by one company, which operates 4 plants and a refinery. In recent years, the country has been practically self-sufficient in sugar, with imports surpassing exports by only 20,000 to 25,000 tons annually. But in order to maintain this position, production must continue to increase. The outlook, however, is not very good for expanded sugarcane acreage in the immediate future. Thus, efforts are being made to increase production through the adoption of improved cultural practices. Growers are urged to follow recommended planting dates. Supervision is given to assure a more judicious use of water and fertilizer. Experimental work is being undertaken to develop improved varieties that will give higher yields. Also, the Government is attempting to develop a sugarbeet industry. Within the past few years, a small acreage was planted to sugarbeets on a trial basis in the Tahrir (Liberation) Province southwest of Alexandria.

Oilseed production in the United Arab Republic centers mainly around cottonseed and peanuts. Cottonseed is an important byproduct of the cotton industry. Cottonseed oil supplies 85 percent or more of the country's total edible oils, and comprises more than half of the vegetable oils used industrially. Although cottonseed production has increased in recent years, due to larger acreage planted to cotton and higher yields per acre, the supply has not kept pace with the country's growing requirements. As a result, vegetable oils and oilseeds are being imported in increasing quantities. Much of the vegetable oils, mainly cottonseed and soybean oils, have recently come from the United States under special Government programs.

Several other oilseeds, though of minor importance, play a definite role in the general economy. Peanuts are especially useful, both as a raw or cooked food, and for oil. Peanut oil is

second in importance to cottonseed oil for cooking purposes. Despite the country's vegetable oils deficit, about one-third of the total peanut production is usually exported.

Other oilseeds produced are sunflower, sesame, pumpkin, castor, and gourd. Soybeans have been tried in various parts of the country but with little success thus far. Small quantities of flaxseed are produced as a byproduct of the flax industry. The crop is grown mainly for fiber, although linseed oil is used for industrial purposes.

Fruits

Climatic conditions in most of the United Arab Republic are suitable for fruit production. Approximately 135,000 acres (excluding palm date acreage) were devoted to fruit production in 1960. While citrus is becoming of growing importance, the date is the common fruit of most Egyptians and it is grown in all inhabited parts of the country.

Citrus accounts for the largest share of the expansion in fruit acreage in recent years. Oranges alone account for 60 percent or more of the area planted to citrus. Next in order of importance are lemons, grapefruits, limes, and tangerines. The expansion in citrus production has been of such magnitude within the past decade that sizable quantities are now exported annually. Several other fruits--such as grapes, figs, mangoes, and bananas--are grown to a small extent in several sections of the country. Apple production is of minor importance.

Vegetables

The UAR grows a large variety of vegetables. Among the ones most commonly seen are: onions, potatoes, squash, eggplant, tomatoes, okra, beans, cucumbers, melons, strawberries, and long leaf lettuce. Most of these are consumed in urban centers. Only onions and potatoes are of importance to the UAR's export trade. In addition to being important food items among the rural population, large quantities of both are exported annually, mostly to European countries.

Potato production is limited to the Delta and the immediate area south of Cairo. An average of less than 10,000 acres was

planted to potatoes annually during the 1935/39 period, but acreage increased rapidly after 1941 and reached approximately 40,000 acres for the 1955/59 period. In prewar years, production amounted to only 50,000 metric tons; in 1961 it was 392,400 metric tons. Production reportedly is restricted by climatic conditions in the UAR that are unfavorable for the development and maintenance of seed stock. Good varieties for planting purposes must be imported annually. There are two potato crop seasons: the main or summer crop, which includes 60 to 70 percent of the total crop, and the winter crop, which is planted during August and September. Yam or sweetpotato production is of little importance.

The area planted to onions amounted to 67,000 acres in 1961, surpassing that of any other vegetable crop. This figure does not cover that portion of the onion crop interplanted with other crops. In addition to being important in the Egyptian diet, onions have been a major item in the country's foreign trade for years. They compete with rice for second place among the agricultural products exported. A small portion of total production is dehydrated at one of the country's eight plants before entering foreign trade; the remainder is consumed locally or exported as fresh onions. Total exports of fresh and dehydrated onions amounted to 148,500 metric tons in 1961. Indications are that the 1962 exports may well exceed 165,000 metric tons. The crop is likely to become of even greater significance in the immediate future.

Pulses constitute an important supplement to cereals, although they are unimportant in the United Arab Republic's foreign trade. One of the most important pulses is the horsebean, which like corn, is a staple food among the peasants. Fenugreek is grown mainly for its forage, but its seeds are used in food and medicine. Other pulses commonly grown are lentils and chickpeas.

Forage

Crops grown in the UAR exclusively for use as forage are limited almost entirely to a single crop--berseem (Egyptian clover). In addition to being the staple livestock feed, berseem aids in maintaining soil fertility, and occupies an important place in the cropping rotation followed in all parts of the country. Berseem is used sparingly as a green manure, however, due to the

great demand for it as livestock feed. After being planted in September or October, the crop grows very rapidly and is ready for cutting 7 weeks later. Yields are reported at between 6 to 8 tons of green fodder per acre. Livestock are not normally allowed to graze freely over the fields planted to berseem. Instead, they are usually tethered near the edge of the field and the crop is cut and carried by hand to the animals. In this way, livestock least interfere with the growing of other crops; fences are not used by Egyptian farmers. In addition, such practices make it possible to control the quantity of feed available to the animals at all times.

The supply of forage available during the spring and summer months is extremely limited. During this time, production of forage crops is forbidden; it is believed that they serve as host to insects which attack the cotton crop. To remedy these conditions, experimental work with several forage crops is now underway on reclamation projects in the Western Desert, a good distance from the main cotton-growing areas. Rather favorable results have been obtained with alfalfa. Even so, acreage planted to alfalfa remains very small.

A very small part of the large area classified as desert or semidesert provides enough plant life to be of any value for grazing purposes. Small portions of the Western Desert, mainly along the coast of the Mediterranean Sea, are regularly grazed by domestic livestock. But natural vegetation is fairly sparse in these areas, as centuries of misuse have reduced their forage production to a fraction of its potential.

Among other roughages fed are wheat straw, barley straw, horsebean stalks, green corn stalks, leaves from dry corn stalks, peanut vines, and grass and weeds cut along roads and canals. Cottonseed cake, corn, barley, and pulses furnish some concentrated feed.

Livestock and Livestock Products

Forage production in the United Arab Republic is a limiting factor in the livestock population. Both buffaloes and cattle are kept for work and most male buffaloes are usually slaughtered at an early age for meat. A larger percentage of the male cattle calves is kept for draft purposes.

Livestock are concentrated along the Nile River and the Delta region in the north. For the most part, animals depend on feed produced in the irrigated sections of the Nile. Most of the forage crop is given to cattle and buffaloes as cut feed. Sheep and goats are allowed to graze roadways and ditch embankments.

Land limitation precludes significant expansion of livestock numbers and the country is continuously and increasingly dependent on imported meat or slaughter animals to meet its small demand for livestock products. Some idea as to the small change that has taken place in livestock numbers within the last four decades can be obtained from table 8.

The water buffalo is the most popular farm animal in the UAR. Hardy, resistant to disease, well-adapted to local conditions, and docile, it works well at the plow or the water wheel. Milk production among buffaloes is reported to range from 1,500 to 4,000 pounds per year, with a fat content of 6 to 8 percent. Within the last few years, projects have been undertaken to increase milk production through selective breeding. The buffalo population has shown a slight increase during the postwar period and is now estimated close to 1.6 million.

Cattle are about equal in number to buffaloes and are used for the same purposes. The two main types of cattle are the Minufi and the Damietta. The Minufi, the most common breed, are large, rangy, muscular, and have a small hump. Although the cows are poor milkers, they are good draft animals. The Damietta is smaller and less muscular than the Minufi. It is a better milker, but inferior in draft and meat qualities. Several attempts have been made in recent years to introduce superior Holstein-Friesian breeds into the country, to upgrade the native cattle and to develop pure lines adapted to local environment. Some progress has been made; however, future achievements in this area will depend upon increased mechaniza.ion of field operations that are now done by animals.

Sheep are the third most important livestock by number. They are bred principally for mutton and milk, as their wool is coarse and not of good quality. The fat-tailed type predominates. The two leading breeds are the Osimi, with white fleece, and the red-brown Rahmani.

Table 8.--UAR: Livestock numbers, selected years 1/

Livestock	1927	1937	1945	1954	1958	1961	1962
	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head	1,000 head
Cattle	739	983	1,265	1,344	1,390	1,588	1,609
Buffaloes	757	956	1,064	1,262	1,395	1,524	1,579
Sheep	1,232	1,919	1,385	1,216	1,259	1,578	1,596
Goats	622	1,311	732	735	723	833	848
Camels	179	155	162	161	157	2/	2/
Horses	37	31	34	40	45	48	49
Mules	21	23	15	9	11	10	11
Donkeys	570	1,142	851	880	950	1,011	1,027
Swine	20	36	40	19	17	2/	18
Chickens	2/	2/	2/	63,518	62,067	3/ 63,500	2/

1/ Reported on an October to September year. However, the livestock censuses were taken at a different time of the year with different administrative arrangements. Thus, there is some question as to the degree of comparability among the various years.

2/ Not available.

3/ For 1959.

Source: Egyptian National Census, 1947, and Food and Agriculture Organization Yearbook.

The goat population has remained at about three-quarters of a million since 1945. Most goats are found along the banks of the Nile in the Upper Region, where feed is available over a greater part of the year. It is estimated that approximately 13 percent of the total is distributed in the various oases scattered throughout the Western and Eastern Deserts. The Nubian type is kept mainly for milk, while other common types are used mostly for meat.

The donkey thrives in all sections of the country. It is used as a pack animal and is used to pull two-wheeled carts. For the most part, the donkey is the choice transport animal for short hauls. In addition, it is used for draft purposes on many farms.

Other animals found on farms throughout the agricultural areas include camels, mules, horses, a small number of hogs, and chickens. For years, the camel population has remained at about 160,000. Some horses are used for carting but probably even more are used for riding. Few hogs are grown, since Islamic forbids the raising as well as the consumption of pork.

In comparison to other livestock, the UAR has a large population of chickens, geese, turkeys, pigeons, and ducks. The few birds kept by most families along the river banks run free about the village and eat what they can pick up for themselves. It is also a common practice for poultry to be kept about the home of many city dwellers. The meat of these birds is stringy and tough, and their eggs small. Egg production is low, averaging between 100 to 120 eggs per year per hen. A Government program of selection and breeding is beginning to make some improvement in the poultry industry.

Meat and milk production is supplemented by imports. Large numbers of cattle, sheep, and, in some years, camels, are received from Libya and Sudan. While data are not available on the number of sheep and camels received from other countries, in 1961 some 47,300 cattle were imported mainly for slaughtering purposes. Likewise, the largest portion of all animal fats is also imported, as local production is small.

Domestic dairy products are in more nearly adequate supply in the rural areas than in cities. In only a few districts

are there creameries and cheese factories to cater to urban areas; as a result, the largest share of the deficiencies in cities has to be filled by imports. Total milk production in 1961 was reported at 1.6 million metric tons. Only a relatively small portion of this total was consumed as fresh milk, as large quantities were made into butter. Most of the skim milk from making butter is used for making cheese and yoghurt. Local milk production has been supplemented by nonfat dry milk shipments under special governmental programs from the United States.

International Trade in Agricultural Products

The United Arab Republic's export policy mainly emphasizes the foreign sale of cotton, as the total production of most food crops is needed domestically. The country is a member of the Inter-Arab Trade and Payments Agreements, under which most domestically produced agricultural commodities receive duty-free entry into member countries. The UAR is also a member of the International Wheat Agreement. Even though admitted to provisional membership in GATT in 1962, the UAR, in search for new cotton markets, has mainly sought to increase trade through the use of bilateral or barter agreements.

High import duties are one form of trade barrier in the UAR. As custom collections are relied upon for a large percentage of the Government budget, the rates of duty tend to be perpetuated by necessity. Since the balance of trade is very unfavorable, only equipment and material considered essential for industry and agriculture are exempted from these duties (fig. 8). In some cases, no imports are allowed for commodities competing with locally produced items; the origin of all imports is kept under strict control through the use of trade licenses or exchange control devices.

Exports are subjected to rather high taxes. However, various export incentives have been used to promote cotton sales to desired currency areas. These have included currency manipulation, variable exchange rates (depending on the country involved), and financing the shipment of cotton to United States ports to be held in bond until quota opening.

During the recent trend of nationalization, the functions previously performed by private trading firms have been largely replaced by Government agencies.

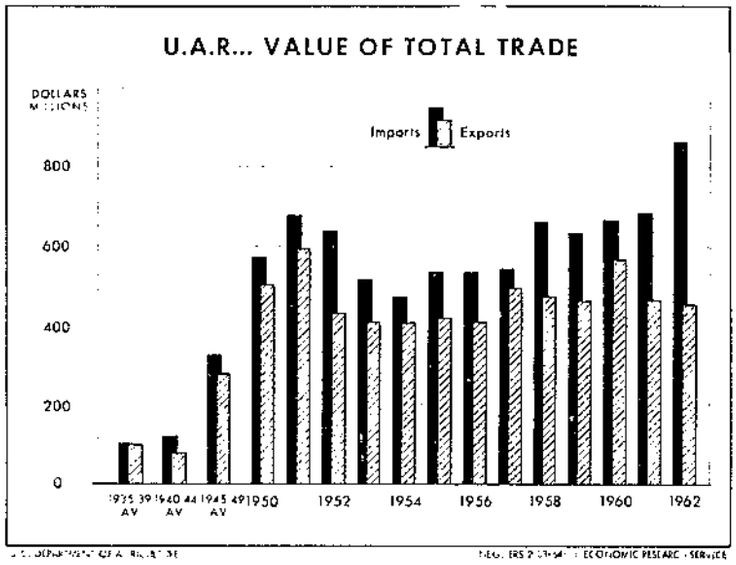

Figure 8

By value, about 80 percent of all exports are agricultural products--mainly cotton, rice, and onions. The agricultural portion of the total has generally declined during the postwar period as more manufactured and semimanufactured goods are being produced for foreign markets. The volume and value of principal agricultural exports for selected years are given in table 9.

The UAR's trade pattern has changed considerably in recent years. Prior to 1956, India, France, and Great Britain had traditionally provided the largest export markets for Egyptian cotton. Italy, West Germany, the United States, and Japan were next in importance. From 1957 through 1960, Russia, China, and Czechoslovakia provided the largest market outlet. The largest percentage of rice exports for 1960 went to West Germany and Lebanon. Onions have an established market in Western Europe, especially in the United Kingdom and West Germany. The relative importance of various destinations for Egypt's exports and some indications of how the export trade pattern has changed since 1954 are presented in table 10.

The UAR is self-sufficient in fibers, but imported close to one-fifth of its food requirements during the 1959-61 period. Principal agricultural imports are wheat, wheat flour, corn, tea, tobacco, tallow, and dairy products. These commodities were

Table 9.--CAR: Principal agricultural exports, 1954, 1959-1962

Commodity	Quantity					Value				
	1954	1959	1960	1961	1962	1954	1959	1960	1961	1962
	1,000 M.T.	1,000 M.T.	1,000 M.T.	1,000 M.T.	1,000 M.T.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
Cotton, raw	287.3	317.8	374.2	295.3	267.8	324.7	316.1	368.7	300.2	240.8
Rice	48.6	49.1	308.4	230.0	143.7	7.7	5.6	31.1	20.7	19.2
Onions 1/	172.2	193.8	173.9	148.5	163.8	6.7	13.9	10.2	11.8	20.4
Sugar, refined	1.3	6.5	47.5	74.1	58.7	.2	.6	4.7	8.3	5.3
Potatoes	35.0	99.3	150.5	58.9	127.3	1.6	5.5	6.3	2.3	8.3
Fruits	---	20.1	29.3	---	n.a.	3/	1.7	3.3	2.3	2.0
Peanuts	5.3	12.2	13.0	7.7	2.4	1.5	4.2	3.7	2.2	.9
Other agricultural	---	---	---	---	---	3.2	7.9	22.8	15.8	15.7
Total agricultural	---	---	---	---	---	345.6	355.5	450.8	363.6	322.6
Nonagricultural	---	---	---	---	---	62.8	104.7	115.9	98.2	129.3
Total exports 2/	---	---	---	---	---	408.4	460.2	566.7	461.8	451.9
Percentage agricultural	---	---	---	---	---	84.6	77.2	79.5	78.7	71.4

1/ Includes shipments of both fresh and dried onions. 2/ Includes trade with the Syrian Arab Republic and Sudan. 3/ If any, included with "other agricultural".

Table 10.--UAR: Value of exports, by destination, 1954, 1959-62

Country	Value					Percentage of total exports				
	1954	1959	1960	1961	1962	1954	1959	1960	1961	1962
	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Pct.	Pct.	Pct.	Pct.	Pct.
U.S.S.R.	5.4	81.3	88.6	72.9	68.9	1.3	17.8	15.7	15.8	15.2
Czechoslovakia	17.3	46.5	37.2	68.4	36.0	4.3	10.1	6.6	14.8	8.0
United States	18.3	5.9	28.5	29.7	26.5	4.5	1.3	5.0	6.4	5.9
India	52.4	19.6	38.6	23.4	18.6	12.8	4.3	6.8	5.1	4.1
Italy	29.9	20.9	20.7	21.6	39.9	7.3	4.5	3.7	4.7	8.8
East Germany	2.1	30.1	28.8	17.4	17.0	.5	6.5	5.1	3.8	3.8
West Germany	32.7	20.3	26.3	15.0	---	8.1	4.4	4.6	3.2	---
China	11.4	33.8	44.5	14.6	22.0	2.8	7.3	7.9	3.2	4.9
Japan	19.6	13.5	15.2	14.4	8.2	4.8	2.9	2.7	3.1	1.8
Sudan	12.0	16.0	13.8	14.4	16.8	2.9	3.5	2.4	3.1	3.7
Rumania	7.7	8.3	10.8	13.1	13.4	1.9	1.8	1.9	2.8	3.0
France	45.5	9.1	10.8	12.7	9.6	11.1	2.0	1.9	2.8	2.1
United Kingdom	41.1	11.6	13.1	11.5	21.2	10.1	2.5	2.3	2.5	4.7
Spain	9.5	5.7	11.4	11.5	2.4	2.3	1.2	2.0	2.5	.5
Poland	6.9	16.5	22.1	9.8	36.0	1.7	3.6	3.9	2.1	8.0
Yugoslavia	3.3	10.2	38.8	3.0	13.1	.8	2.2	6.8	.6	2.9
Others	93.3	110.9	117.5	108.4	102.3	22.8	24.1	20.7	23.5	22.6
Total 1/	408.4	460.2	566.7	461.8	451.9	100.0	100.0	100.0	100.0	100.0

1/ Includes also the value of exports to the Syrian Arab Republic.

valued at about $191 million in 1961 and account for slightly over one-fourth of all imports. This compares with $84 million or 18 percent of total imports for 1954. Table 11 shows the increase in the volume and value of these imports by commodity from 1954 through 1962. The largest expansion has been for bread grains, which amounted to less than 60,000 tons in 1954, compared with 1.4 million tons in 1962. Most ot the wheat shipments have come from the United States (fig. 9).

Tobacco, dairy products, and tallow shipments also are largely imported from the United States. Other important suppliers of grains have been Italy, France, and Russia. Sudan is the main source for livestock and oilseeds; tea has come mostly from India and China. The value of total imports, by countries, is given in table 12.

Egyptian Market for U.S. Farm Products

By value, the United Arab Republic took 3 percent of total U.S. agricultural exports for 1962. The main commodities traded between these countries for 1960 and 1962 are shown in table 13. Because of the dollar shortage, the largest percentage of the UAR's imports from the United States are under special governmental programs. The total market value, excluding the cost of ocean transportation, of all shipments under Title I, Public Law 480, amounted to $710.9 million from the beginning of the program in July 1954, through December 31, 1963. The approximate quantity in 1,000 metric tons of the various commodities received under Title I agreements during this period was:

Wheat and wheat flour	8,897
Feed grains	978
Rice	41
Dry edible beans	1
Tobacco	32
Fats and oils	358
Poultry	4
Dairy products	2

In addition, the UAR receives substantial quantities of food through relief or charity programs (grants under Title III, Public Law 480). For fiscal years 1955 through 1963, these shipments were valued at $122 million.

Table 11.--UAR: Principal agricultural imports, 1954, 1959-62

Commodity	Quantity					Value				
	1954	1959	1960	1961	1962	1954	1959	1960	1961	1962
	1,000 M.T.	1,000 M.T.	1,000 M.T.	1,000 M.T.	1,000 M.T.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.
Wheat	9.6	730.4	630.8	661.1	860.0	.7	48.5	38.6	41.9	69.7
Wheat flour	48.7	423.7	543.9	431.1	510.0	6.2	30.4	37.3	30.4	48.8
Tea	16.3	19.4	20.3	22.8	26.7	23.3	19.1	22.0	24.1	29.4
Tobacco	11.1	11.3	11.2	11.3	11.8	13.4	14.4	14.5	14.4	17.2
Tallow	---	31.9	31.4	33.2	n.a.	1/	6.2	5.6	10.2	1/
Wool, raw	1.9	3.1	4.1	3.4	n.a.	6.2	8.9	11.5	9.5	1/
Corn	2/	106.9	50.7	101.3	264.4	3/	6.7	2.9	6.1	15.9
Dairy products	5.0	3.2	8.5	---	2.4	3.3	1.6	4.6	1/	1.9
Livestock, (1,000 head)	8.0	14.8	12.6	---	26.0	1.4	4.6	4.5	1/	1.9
Meat and meat prep	.7	4.1	4.8	---	5.8	.7	1.9	2.0	1/	1.8
Other agricultural	---	---	---	---	---	28.8	26.4	24.5	54.3	50.5
Total agricultural	---	---	---	---	---	84.0	168.7	168.0	190.9	237.1
Nonagricultural	---	---	---	---	---	388.2	468.9	499.1	492.4	626.5
Total imports 4/	---	---	---	---	---	472.2	637.6	667.1	683.3	863.6
Percentage agricultural	---	---	---	---	---	17.8	26.5	25.2	28.6	27.5

1/ If any, included with "other agricultural". 2/ Less than 50 metric tons. 3/ Less than $50,000.
4/ Includes trade with the Syrian Arab Republic and Sudan.

Figure 9.--U.S. wheat being unloaded at Alexandria, February 1963.

Table 12.--UAR: Value of imports, by origin, 1954, 1959-62

Country	Value					Percentage of total imports				
	1954	1959	1960	1961	1962	1954	1959	1960	1961	1962
	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Mil. dol.	Pct.	Pct.	Pct.	Pct.	Pct.
United States	51.2	86.0	114.7	134.1	207.5	10.8	13.5	17.3	19.6	24.0
U.S.S.R.	6.6	77.0	65.7	79.4	70.5	1.4	12.1	9.8	11.6	8.2
West Germany	51.4	80.1	92.2	77.0	83.0	10.9	12.6	13.8	11.3	9.6
United Kingdom	59.9	44.4	39.0	50.8	72.7	12.7	7.0	5.8	7.4	8.4
India	11.4	15.8	28.6	30.7	31.3	2.4	2.5	4.3	4.5	3.6
Japan	5.7	8.5	11.4	23.6	23.6	1.2	1.3	1.7	3.4	2.7
Italy	36.3	31.2	32.1	23.2	35.4	7.7	4.9	4.8	3.4	4.1
China	.8	23.7	19.5	18.9	22.2	.2	3.7	2.9	2.8	2.6
Yugoslavia	2.1	14.9	18.7	18.0	21.7	.4	2.3	2.8	2.6	2.5
Czechoslovakia	7.8	23.2	23.1	17.1	29.4	1.7	3.6	3.5	2.5	3.4
France	46.5	16.6	25.3	16.9	16.0	9.8	2.6	3.8	2.5	1.9
Saudi Arabia	16.1	16.8	23.0	14.8	21.8	3.4	2.6	3.4	2.2	2.5
Switzerland	13.8	14.9	12.0	12.7	18.6	2.9	2.3	1.8	1.9	2.2
Netherlands	14.7	11.9	16.6	11.6	14.1	3.1	1.9	2.5	1.7	1.6
Belgium	14.5	9.0	9.1	3.9	4.9	3.1	1.4	1.4	.6	.6
Others	133.4	163.6	136.7	150.6	190.9	28.3	25.7	20.4	22.0	22.1
Total 1/	472.2	637.6	667.1	683.3	863.6	100.0	100.0	100.0	100.0	100.0

1/ Includes also the value of imports from the Syrian Arab Republic and the Sudan.

Table 13.--Composition of trade between the United States and UAR, 1960 and 1962

United States exports to UAR				United States imports from UAR			
Commodity	1960	1962		Commodity	1960	1962	
	Value	Value	Percent of total value of exports		Value	Value	Percent of total value of imports
	1,000 dollars	1,000 dollars	Percent		1,000 dollars	1,000 dollars	Percent
Wheat and wheat flour	65,684	90,592	38.6	Cotton	12,911	11,814	51.2
Corn	3,264	19,541	8.3	Molasses	0	886	3.8
Vegetable oils and fats	4,646	17,235	7.4	Hides and skins	89	252	1.1
Tobacco	8,682	8,596	3.7	Bones, hoofs, and horns	196	205	.9
Tallow, ined	3,900	6,117	2.6	Beeswax	88	49	.2
Food for relief or charity	11,059	21,905	9.3	Vegetables and prep	65	12	.1
Other agricultural	1,902	7,232	3.1	Other agricultural	85	64	.3
Total agricultural	99,137	171,218	73.0	Total agricultural	13,434	13,282	57.6
Nonagricultural	51,453	63,167	27.0	Nonagricultural	11,275	9,773	42.4
Total exports 1/	150,590	234,385	100.0	Total imports 1/	24,709	23,055	100.0

1/ Discrepancies between these totals and those in tables 10 and 12 are due to the fact that data for tables 10 and 12 were published by the Egyptian Government and data for this table by the Bureau of the Census, U. S. Department of Commerce.

Since it has extremely limited agricultural resources and a growing population, the United Arab Republic could provide an even larger outlet for American farm products in the future. Prospects of expanding the present small dollar market for U.S. farm products, however, are not good. The country has few dollars and little opportunity for earning them except through the sale of cotton and by tourism. Moreover, any increased dollar earnings might well be used to obtain industrial goods rather than farm products.

Competition between UAR and U.S. for World Market

The UAR offers competition to U.S. farm products in world markets mainly in cotton. Competition between Egyptian and American upland-type cotton is indirect and occurs usually when extra-long-staple cotton prices are severely depressed, as in 1959, when extra-long-staple Egyptian cotton was cheaper on world markets than long-staple upland. Egyptian cotton has a longer staple length than the U.S. upland crop, and thus is usually more expensive. At other times, when the supply of extra-long-staple cotton in Western European markets is extremely tight, spinners use, when possible, the longer staple upland varieties as substitutes. Nevertheless, in the future, if severe difficulties are encountered in the world's cotton markets, the UAR might be encouraged to undersell cotton from the United States, due to the great dependence of that country's economy upon cotton exports.

While little or no Egyptian cotton will have been available for export to Western countries from early in 1964 until the new crop becomes available the following October, the U.S. supply of extra-long-staple cotton is at an all time high of around 350,000 bales, enough for nearly 2 1/2 years. Price increases of around 25 percent for Egyptian and Peruvian and 45 percent for Sudanese extra-long-staple cotton since April 1963 have greatly reduced the competitive advantage of these cottons over price-supported American-Egyptian in domestic and foreign markets. Moreover, the recent reduction of nearly 3 cents per pound in the price support level for 1964-crop American Egyptian cotton could reduce U.S. imports of Egyptian cotton and permit American Egyptian to reenter the export market.

DOMESTIC FOOD CONSUMPTION

The provision of an adequate diet for its people is one of the problems of the United Arab Republic. According to official

Egyptian reports, the average daily food consumption per capita during 1958 through 1960 was 2,540 calories. Studies by other agencies indicate a slightly lower level of consumption. A study made by officials of the U.S. Department of Agriculture showed a daily per capita consumption of close to 2,300 calories for the 1959-61 period. At any rate, food consumption is not likely to vary greatly from year to year as total food production for the country as a whole is generally not subjected to violent fluctuations.

Lacking both variety and abundance, the diet of the majority of Egyptians is largely grains and other starchy foods. Grains alone account for approximately two-thirds of the calories. Pulses, vegetables, and vegetable oils are next in importance. A breakdown of consumption by the various food categories is shown in table 14.

There is growing concern among Government officials as to how to increase the protein content of the Egyptian diet. Reportedly, experiments on adding cottonseed flour to wheat, or corn flour, to raise the protein level in bread are being considered.

Table 14.--UAR: Per capita composition of food consumption, 1959-61 1/

Food group	Consumption per capita yearly in kgs.	Calories per day
Cereals	168.5	1,628
Sugar	13.6	127
Vegetables and fruits	165.0	304
Meat	12.1	51
Fish	4.6	8
Fats 2/	5.7	113
Milk and cheese	22.3	57
Eggs	1.5	6
Total consumption	---	2,290

1/ Consumption per capita is based on a population of 25,964,000, the reported population of mid-1960.
2/ Vegetable oils, slaughter fats, butter, and ghee.

Increased cotton production for export has received major attention during the last three or more decades. Much of the rural population does not raise sufficient food for its own consumption. As a result, increasing quantities of food supplies have to be imported. Domestic production provides most vegetables, fruits, sugar, and oilseeds that are consumed. But substantial quantities of bread grains, meat, and dairy products are imported. The country was estimated at about 80 percent self-sufficient in 1960. However, indications are that this percentage has become somewhat smaller in more recent years.

POLICIES AND PROGRAMS

The United Arab Republic's agricultural policy is incorporated in, and is, an integral part of the country's overall policy to double the gross national product within the next decade. Equal emphases are placed upon industry and agriculture. The objective is to husband all available resources effectively and achieve integrated development.

The basic aim of the agricultural policy is maximization of self-sufficiency and income. To promote this cause, more emphasis is being given to intensified cultivation, increased yields, expanded use of the Nile waters, the development of underground water resources, and agrarian reform.

The Government has given considerable attention to improving the economic and social conditions of the rural population. These have included the undertaking of the agrarian reform program, establishment of uniform rates of land rent and taxes, and the enactment of legislation defining landowner-tenant relationships and the rights of agricultural workers. To further this cause, credit on liberal terms has been made available to small producers and rural cooperatives. Of equal importance has been the growing support to social and educational centers which are operated in village communities.

Other assistance is given the rural population to improve productivity and living conditions. Irrigation water is supplied by the Government, which provides and maintains the irrigation system. Growers pay no fees for their supply, and no special land taxes are levied. The Ministry of Agriculture has greatly expanded its program of new seed development and distribution.

Each farmer is issued a new supply of cottonseed each year and wheat seed every third year. The Ministry has started a program to distribute seed of hybrid varieties of corn to interested farmers.

Production and consumption are regulated through various devices. Price supports are used both to encourage and adjust production. A system of acreage control is used on two of the country's principal crops, cotton and wheat. Not more than one-third of the total cultivated land may be planted to cotton and not less than one-third to wheat, in any given year. This policy has been in effect since 1955.

Wholesale and retail prices of most food crops are fixed by the Ministry of Supply. The Government fixes the price the sugar monopoly pays to farmers for cane, as well as the prices of sugar at wholesale and retail. The Egyptian Cotton Commission stands ready to buy all cotton at a support price; this price ranged from 32 to 40 cents per pound for the 1961/62 crop. Since April 1963, however, there has been a steady increase in the price received for most varieties. An illustration of this is that in April 1963 Fully Good Grade Menoufi was bringing 39.99 U.S. cents per pound but had increased to 42.40 cents per pound 1 year later. During the same period, official export sales prices of Egyptian cotton were increased 12 times by amounts ranging up to 10 cents per pound or 25 percent for Fully Good Grade.

The Government supported the price of grains by buying part of the crop from producers at $2.09 per bushel for wheat, and $1.83 per bushel for corn.

For years the general policy of the Government has been to maintain the position of cotton as a major export item and consequently, the main earner of foreign exchange. The growing deficit in bread grains, however, has lead to an overall re-appraisal, of this policy within the last few years. In light of this reappraisal, the Government recently announced that in the present development programs no cotton is to be planted on reclaimed land.

Legislation was enacted recently to encourage the investment of private and foreign capital in industrial development and land reclamation projects. More recent action, however, has extended

governmental control and ownership to all major sectors of the economy. These have included banks, insurance companies, and trading agencies. The net result of this action has tended to discourage rather than promote foreign investment.

Financial resources for development purposes have come from budgetary surpluses, contributions from governmental financing agencies, public borrowing, and foreign aid. But the respective share of each is not publicized. In addition to substantial loans from various foreign countries and the International Bank for Reconstruction and Development, economic and technical assistance has come from the United Nations, United States, U.S.S.R., East Germany, West Germany, Japan, and Yugoslavia.

The present 5-year plan (1961 to 1965) calls for an expenditure of approximately $2.4 billion, 47 percent of which is to be used for agricultural purposes. That portion of the plan related to agriculture includes 12 programs covering some 90 specific projects. For the most part, these projects can be grouped under two broad categories: (1) those to develop new lands, and (2) those to improve livestock and crop production on land presently being cultivated.

Developing New Lands: Developing new areas of productive land is primarily dependent upon additional water for irrigation. The Land Reclamation Authority and the Desert Development Authority, both Government agencies created in 1957, are responsible for developing and reclaiming new lands in the Nile Valley and the desert. The program of these two agencies undertakes to reclaim 600,000 acres by 1965. They have also announced a long-range program to reclaim an additional 1.2 million acres, along with the conversion of some 730,000 acres from basin to perennial irrigation. No specific date has been announced for the completion of these projects, although work is now well underway (fig. 10).

Liberation Province, extending along the western edges of the delta from Cairo to Alexandria, is one of the country's major land reclamation projects. It is hoped that some 1.2 million acres of desert land will be reclaimed in this area. Both underground water and water from the Nile are being used. Completion of the project depends upon the availability of water from the Aswan

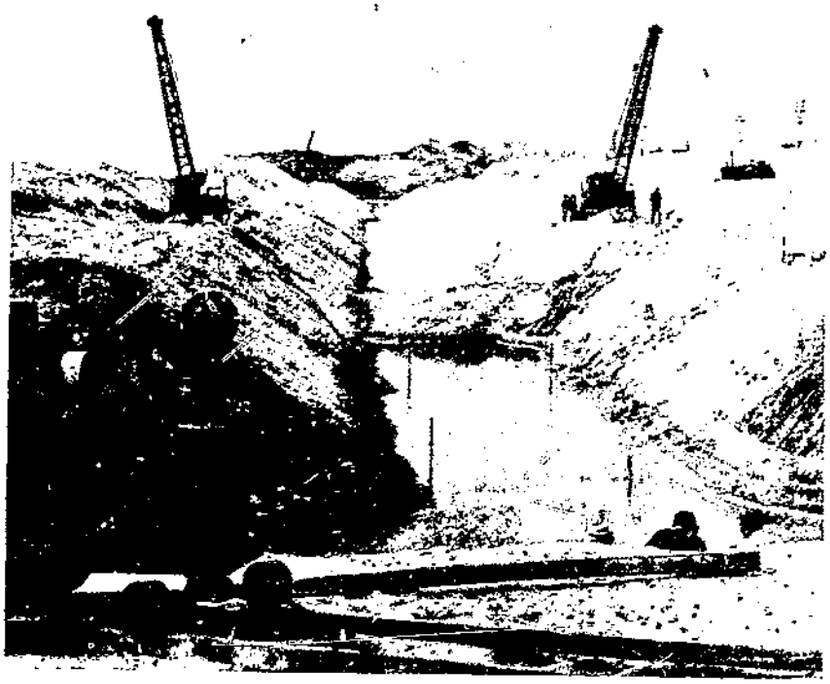

Figure 10.--Desert reclamation project, el-Tahrir.

High Dam. Approximately 40 percent of the 43,000 acres reclaimed as of 1959 was planted to fruits, 25 percent to grains, 20 percent to vegetables, and the remainder to legume and forage crops.

As land is reclaimed, model villages are established (fig. 11). Settlers are brought in from densely populated areas along the Nile. In addition, the project is used as a research and demonstration center for obtaining first-hand information on the techniques of desert land reclamation. It is also used as a training school in land development for technicians and workers that are later transferred to other reclamation projects.

The New Valley Project is an undertaking to reclaim large areas in the vicinity of a series of oases (Kharga Dakhla, Sima, and Farafra) in the Western Desert. The area is to be developed entirely from underground water. Some 40 wells had been drilled as of 1960 and slightly over 10,000 acres reclaimed and planted to grains, pulses, and fruits. Surveys have revealed that the soils over large parts of th area can be economically used for agricultural purposes. While there is a general belief by some authorities that a great subterranean river flows beneath the Western Desert, the exact origin or volume of the underground water supply has not been determined. Thus, the water supply is likely to be the major factor in determining the total acreage that eventually will be developed.

Figure 11.--A typical dwelling in a model village.

Other Desert-Reclamation Developments include work now underway to reclaim some 9.000 acres in Sinai. The Egyptian-American Rural Improvement Society, a joint venture with the United States, has undertaken a project to reclaim 30,000 acres of an old lake bed along the Mediterranean Coast. The marshy area has been drained and efforts are now being made to lower the salinity of the soil. Several varieties of grasses and legumes are being grown on an experimental basis and methods of water conservation are being practiced. Parts of the area are being used for grazing purposes until the soil can be made suitable for truck farming.

Improving Yields: Although crop cultivation is intensive and yields are relatively high in the UAR, it is generally believed that they can be improved and agricultural production increased. Perhaps the outstanding development in this connection has been the growing effort to increase the use and manufacture of commercial fertilizers. A new fertilizer plant, reportedly having a productive capacity of 75,000 tons of nitrogen equivalent, was recently constructed near Aswan to supplement imports.

A second major effort in improving yields is the Ministry of Agriculture's program of selection, breeding, multiplication, and distribution of new varieties of wheat, cotton, hybrid corn, and rice. Only varieties that are higher yielding and more disease resistant are being promoted. Likewise, a program is being conducted to improve livestock. Emphasis is placed on improved feeding, disease control, and upgrading of native breeds of cattle, sheep, and poultry. Insecticides are being made available along with assistance as to their proper use. In the light of heavy losses from insect attacks on the 1961 crop, the Government is considering the possibilities of manufacturing insecticides locally.

Considerable work is being done in the better use of irrigation water. It entails the relocation of many feeder canals and drainage ditches, the lining of a number of feeder canals to cut down on losses through seepage, and the raising of the levels of many canals to permit irrigation by gravity. This is an important part of the program to increase production by making more water available per acre under improved management.

OUTLOOK

Many problems are in the long-range outlook for agriculture in the United Arab Republic. Despite the impressive development

programs planned and now underway, the country lacks the natural resources to improve greatly the economic lot of the masses through increased agricultural production.

Great hopes are put on the Aswan High Dam to effect an improvement in the UAR's agricultural production. The total area that the water from the high dam will irrigate has not been definitely determined. Some studies report that the water impounded by the dam will make it possible to expand the country's total cultivated area by some 1.8 million acres, in addition to converting approximately 730,000 acres, now flooded once a year, to perennial irrigation. Other studies have concluded that the water supply will be adequate to irrigate approximately only 1 million acres, along with the conversion of 730,000 acres from basin to perennial irrigation. There is general agreement, however, that the dam will greatly benefit the country by making water available throughout the year and by providing protection against floods for large areas along the banks of the Nile.

If the Aswan High Dam is completed by 1970, as scheduled, it would seem reasonable to assume that the country's total cultivated area could be expanded nearly 25 percent--the equivalent of approximately 1.5 million acres. Most of this expansion would likely be along the borders of the Nile Valley and Delta, on what now might be considered as marginal land. Thus far, expansion of the cultivated area by the use of underground water has been very expensive and extremely slow. If we were to assume that newly reclaimed land is to be planted solely to food crops, now stated to be the official policy, grain production would still fall short of needs.

It is doubtful that total grain production would be further increased should larger acreages be planted at the expense of berseem (a clover). Berseem now occupies approximately one-third of the total crop area; it maintains the supply of humus in the soil and provides much of the nitrogen needed by other crops. A decline of berseem acreage in the rotation would probably lower the yields of other crops. Furthermore, no significant portion of the berseem acreage could be shifted to food crops because the production of livestock and livestock products depends largely upon this feed crop.

A reduction in livestock numbers, with a view to shifting acreage from feed to food crops, would not be a feasible solution

since there is a minimum of livestock already in relation to the needs of the population. Fewer livestock would certainly result in inadequate draft power on the farms under present cultural methods and a larger deficit of meat and dairy products. It would appear that any relief to be found domestically in this deficit must come from the development of a more efficient livestock industry.

In addition to grains, some increased production is expected for citrus, oilseeds, pulses, and vegetables. But, with the country's growing population, these supplies will likely be inadequate to maintain present levels of consumption without imports, especially for wheat flour and oilseeds. Bread grain requirements are now estimated to be growing at close to 200,000 metric tons per year. They are likely to be even higher in the future; by 1970, wheat and wheat flour import requirements will probably reach 2.8 million metric tons.

Even with the growing need for food, it is considered economically unfeasible for the UAR to reduce cotton acreage. If such should be the case, expansion of local industry would be needed to supplement both the income derived locally and the foreign exchange earnings normally received from cotton. Too, it should be noted that a reduction in cotton would entail a reduction in cottonseed, which in turn would create a greater deficit in vegetable oils than otherwise would exist.

Prospects for improving yields appear best for wheat, corn, vegetables, and citrus fruits. Less promising are cotton, rice, and sugarcane. However, to raise yields of crops commonly grown in the UAR will not be an easy task; progress in this area will depend upon the degree of success in developing an efficient agricultural extension service and a wider use of the more advanced technology practices. However, it is doubtful if increased use of machinery is the answer. The country has a large supply of surplus labor. Furthermore, most farm units are too small for modern machinery to be used economically--except on a co-operative basis.

Continued progress should be registered for Egyptian agriculture as present development plans and policies are carried to completion. Furthermore, if an economical method were to be found for desalting sea water for agricultural purposes or the rate of population growth should decline rapidly, the long-range outlook could change considerably.

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