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FOREIGN AGRICULTURE ECONOMICS

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LIBYA'S AGRICULTURAL ECONOMY IN BRIEF

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LAND CHARACTERISTICS AND USE

The Kingdom of Libya has been a constitutional monarchy since January 2, 1952. It covers 679,358 square miles and is over four times as large as the State of California, or approximately one-fifth as large as continental United States, excluding Alaska.

Ninety-five percent of the country is classified as desert, with just over 2 percent (mainly a narrow coastal strip along the Mediterranean) presently regarded as agricultural land. Of this 2 percent, about 5.9 million acres are arable, 0.3 million are under permanent crops, and 2.8 million are in permanent meadows and pastures. An additional 2 percent of the country has some agricultural potential. Extensive afforestation is underway, but less than 1 percent of the total area is now covered by forests. The most important are found in the Jebel Akhdar (Al Jabal Al Akhdar) region in Cyrenaica, where 156,350 acres are classified as woods and forests.

The coastal areas receive the heaviest rainfall in Libya--around 13.5 inches annually in Tripoli and between 17 and 24 inches along the Barce Plain in Cyrenaica. Rainfall becomes lighter in the interior and is negligible in the extreme hinterlands. Inland, less than 200 miles from the Mediterranean Coast, rainfall per year is under 2 inches.

No permanent rivers exist in Libya, but the country is covered by a network of dry riverbeds and watercourses which sudden heavy rains--when they come--fill to overflowing, causing heavy flood damage and sweeping valuable topsoil away into the sea.

Temperatures in the nation vary from 40° F. in some areas in winter to 130° F., or more, in summer.

The country is divided into three Regions. Tripolitania, consisting of some 136,000 square miles, occupies the northwestern area; Fezzan lies in the interior to the southwest and covers about 213,000 square miles; and Cyrenaica makes up the eastern half of the country with a total area of about 330,000 square miles (fig. 1). Libya has co-capitals, Tripoli and Benghazi (Bengase), with a third administrative capital under construction at Baida (Zawiyat at Baydā) in Cyrenaica.

Two-thirds of the nation's cultivated acreage is found in Tripolitania, where about 260,000 acres are under irrigation. The main crops in this area are cereals, vegetables, peanuts, grapes, olives, figs, dates, almonds, and citrus fruits.

There are three climatic zones in Tripolitania. The Coastal Mediterranean zone consists of a broken line of oases reaching from Zuara (Zuwārah) in the west to Misurata (Misrātah) on the northwest cape of the Gulf of Sirte (Gulf of Sidra). The subtropical steppe zone is to the interior of the Mediterranean zone and contains the 50-mile-wide Gefara Plain and a mountain plateau which varies in height from 2,000 to 3,000 feet. The tropical desert zone lies to the east and south of the mountain plateau and is almost completely barren except for one large oasis at Gadames (Ghudāmis).



Figure 1

Cyrenaica has about one-half as much arable land as Tripolitania, and the area suitable for sedentary farming is roughly one-eighth as large as that in Tripolitania. Underground water sources here are deep and difficult to find, lessening the possibilities for irrigation; however, about 27,000 acres are irrigated. Grazing of livestock and the raising of cereals are the dominant agricultural pursuits.

Cyrenaica has a combination of Mediterranean and subtropical steppe climate along its coastal region and hot, dry weather in the south. Its principal agricultural area is 1,000 feet above sea level on the Barce Plain, which follows the coast for about 165 miles and in some places is 30 miles deep. Behind this lies the Green Mountain (Jebel Akhdar), which supports cereal crops and considerable vegetation. Beyond this mountain, the southern portion of Cyrenaica is composed of desert and oases, as is the Region of Fezzan, and is of little economic significance at the present time.

A tropical desert climate prevails throughout Fezzan. About 70,000 acres are arable, with not much more than 15,000 acres--exclusive of palm groves--under cultivation. Approximately 11,000 acres are irrigated. Dates are most important agriculturally but winter cereals--wheat and barley--are also grown, in addition to a variety of vegetables.

POPULATION

The Kingdom of Libya reported a total population in 1964 of 1,559,399 persons. The combined total of Berbers, Arabs, Tuaregs, and Trebbu nomads represented roughly 95 percent of these.

About 66 percent of the people live in the northwestern Region of Tripolitania where average density is estimated to be 8 persons per square mile; density drops to less than 1 person per square mile in Cyrenaica and Fezzan.

In 1964, approximately 21 percent of the population lived in urban areas and 37 percent in settled rural sections. The remainder led a basically nomadic existence. In recent years, there has been a noticeable shifting of population from rural to urban areas, which are enjoying greater financial benefits from the petroleum industry. This migration has produced some unemployment problems. The total labor force in 1964 was roughly 360,000 to 380,000 persons, including 200,000 to 250,000 agricultural workers.

AGRICULTURAL SITUATION

With the growth of the petroleum industry, agriculture, which in the past provided the main source of employment, is losing labor rapidly as many Libyans either flock to the towns or seek highly paid work in the oilfields. The Government is attempting to stem this flow by various agricultural improvement programs and by improving the living conditions in rural areas.

Primitive farming methods are still applied by the majority of Libyan farmers, and the resulting system of subsistence agriculture annually produces basic crops which fall short of national needs. Consequently, large quantities of agricultural products must be imported yearly.

Both irrigated and dryland farming are important in Tripolitania; most of Cyrenaica's crops are grown under dryland conditions; and cultivation in Fezzan proceeds on a small scale with the aid of irrigation, largely in the vicinity of the oases.

Libyan agriculture is further characterized by the continuation of tribal land ownership (strongest in Cyrenaica) and by nomadic customs.

Livestock raising is the leading profession of the tribal and nomadic people. Much of their food, most of their income, and their means of transportation depend upon their livestock. Although the tendency to sell livestock is increasing, most of the animals are used by this groups for their own needs.

As part of its program to discourage nomadism, the Libyan Government has initiated a settlement program through which it is parceling out agricultural land to farmers near Tripoli. The average size of farms under this program is 10 to 13 acres. In the national picture, farms average 72 acres in Tripolitania, 74 acres in Cyrenaica, and 13.3 acres in Fezzan. Foreign ownership of agricultural land is not prominent in Libya.

Libya had a total of 82 general agriculture cooperatives in December of 1964; Tripolitania and Cyrenaica each had over 40 percent of the total. Membership totaled 12,386 persons. The number of cooperatives has grown in recent years but their influence and activities are not as substantial as the Government would like them to be.

Increased use of modern farming techniques would sizably improve Libya's agricultural picture, but, given present limitations on arable land, water supplies, and other agricultural resources, the country will have a continuing need to import substantial amounts of agricultural products in the foreseeable future.

FARM TECHNOLOGY

Subsistence farming with its primitive methods is yielding somewhat to modern technology in Tripolitania and Cyrenaica, where the use of agricultural machinery has increased during the last few years. Both individual farmers and cooperatives in these provinces have bought, with Government assistance, tractors and other agricultural equipment. The Government has also made machinery available for hire. The result has been that a number of large cereal areas are now worked by machine. Table 1 gives the 1960 machinery census for Libya.

The Libyan Government has also been assisting farmers with the drilling of wells and in the construction of irrigation canals. This assistance has led to an increase in the output of fruits and vegetables. In Cyrenaica in years past, many of the ancient water control works were permitted to decay or remain unused because of the lack of interest in tillage agriculture. Recently, a major effort has been made to rehabilitate and extend these and other storage and supply systems throughout Libya. By 1963 the country had repaired 300 small reservoirs, drilled 160 wells,

cleared and renewed 3,000 ancient rainwater cisterns, and increased the attention given to the construction of dikes across the wadis. The 1960 Libyan census reported irrigation and water supply figures as shown in table 2.

Dry farming may also enjoy an interesting benefit of modern technology if the present experiments in dune stabilization are successful and economical. Petroleum-base mixtures are being sprayed over the dunes to prevent the sand from shifting.

PRODUCTION

With the exception of Tripolitania, for which agricultural statistics are relatively accesible, Libya's production figures for most agricultural products after 1961 must be estimated.

The leading agricultural products are grains, tomatoes, dates, potatoes, nuts, citrus fruits, grapes, olives (and olive oil), esparto grass, and animal products.

Wheat and barley are the main grains produced. Also grown, but on a much smaller scale, are corn, sorghum, millet, and oats. Trial cultivation of rice is underway, but farmers are somewhat reluctant to grow it, preferring wheat and barley which are customary to their diets.

The plowing season for grains starts in October, after the season's initial rainfall, and continues for 2 months. Depending upon climatic conditions during the growing season, wheat production can vary from 20,000 to 40,000 metric tons and barley from 50,000 to 120,000. In 1964, hot ghibli winds destroyed most of Cyrenaica's wheat and barley crops and greatly reduced those in Tripolitania. However, late-harvested crops of olives and peanuts realized good yields in 1964--111,000 and 16,000 metric tons, respectively. Olive production normally follows a 3-year cycle with 1 excellent year followed by 2 poor to fair harvests.

Table 1.--Number of selected agricultural machines and equipment, Libya, 1960

Region	: : Wheel : tractors	: : Track- : laying : tractors	: : Stationary : threshers	: : Harvester : threshers	: : Seed : drills	: : Milking : machines	: : Trucks	: : Pickups, : jeeps, : landrovers	: : Garden or : horticulture : trucks
Total	2,040	468	470	1,061	<u>Number</u> 135	8	599	898	20
Tripolitania	1,881	315	364	889	108	6	509	832	10
Cyrenaica	119	62	33	133	24	2	83	60	10
Fezzan	40	91	73	39	3	-	7	6	0

Table 2.--Number of irrigated holdings, area irrigated, and number of wells, springs, and cisterns, Libya, 1960

Region	: : Holdings : using : irrigation	: : Area irrigated : Total	: : By : dalu	: : By : pump	: : Other	: : Wells	: : Springs	: : Cisterns
Total	<u>Number</u> 31,553	297,857	<u>Acres</u> 69,053	203,397	25,407	87,882	<u>Number</u> 2,977	41,492
Tripolitania	24,460	259,698	44,089	193,705	21,904	53,689	1,884	35,411
Cyrenaica	4,653	27,360	18,552	6,560	2,248	23,928	843	6,067
Fezzan	2,440	10,799	6,412	3,132	1,255	10,265	250	14

The tomato crop was estimated at 102,000 metric tons in 1964, slightly lower than the 150,000 metric tons of 1963. Most tomatoes are utilized by Libyan factories for paste, juice, and conserve production.

Yearly date production ranges between 40,000 and 50,000 metric tons; potato yields are about 25,000 to 30,000 metric tons; and total nut production is approximately 20,000 metric tons. The citrus crop also totals between 20,000 and 25,000 metric tons, annually. Grape production hovers close to 6,000 metric tons. Yields of esparto grass reach 40,000 to 50,000 metric tons per year.

LIVESTOCK INDUSTRY

Nomadic flocks constitute much of the nation's animal wealth. The 1960 Census of Agriculture in Libya provided the following livestock and poultry figures:

	<u>1,000 head</u>		<u>1,000 head</u>
Sheep.....	1,255	Cattle.....	111
Goats.....	1,196	Horses.....	29
Poultry.....	305	Rabbits.....	23
Camels.....	255	Mules.....	3
Donkeys.....	122		

There were also 5,000 beehives reported for the country.

Figures available for 1962 indicate that sheep totaled 1,718,000 head; goats had increased to 1,551,000 and cattle to 147,000, whereas, camels had decreased to 228,000 head.

Table 3.--Estimated production of principal agricultural commodities, Libya, average 1960-62, annual 1963 and 1964

Commodity	1960-62 average	1963	1964
	<u>1,000 metric tons</u>		
Wheat	37	38	27
Corn	2	2	2
Barley	101	113	87
Oats	1	1	1
Sorghum and millet	4	5	5
Beans and peas	5	6	6
Olive oil <u>1/</u> <u>2/</u>	9	3	15
Peanuts, unshelled	8	16	16
Castor seed	5	5	6
Potatoes	26	28	27
Onions	6	6	6
Tomatoes	64	150	102
Peppers	3	3	3
Figs, dried	1	1	1
Dates	40	45	46
Grapes	6	6	6
Oranges <u>3/</u>	6	6	6
Tangerines <u>3/</u>	2	2	2
Tobacco	1	1	1
Milk <u>4/</u>	43	50	45
Meat <u>5/</u>	11	12	12

1/ Excludes sulphur oil. 2/ Oil pressed in marketing season beginning November 1.

3/ Harvest extends a few weeks into the following year. 4/ Goat's milk equals over 40 percent, sheep's milk about 30 percent, cow's milk 20 percent, and remainder is camel's milk. 5/ About two-thirds sheep and goat. Remainder largely from camels and cattle.

The herds are very vulnerable to climatic variations. During 1964, adverse pasture conditions produced extensive animal losses, but the Government acted to save the country from a livestock catastrophe by trucking herds to greener pastures and by furnishing feed to sustain breeding stock.

Improvements in the livestock economy have included efforts to cross breed the local sheep with Turkish Barbary or Karaman breeds to develop a better woolled sheep for support of the carpet industry and to increase exports of lamb and mutton. Animals are also seasonally dipped, drenched, and treated with insecticide to reduce the losses from pests and disease.

FOOD SUPPLY SITUATION

It is estimated that between 1959 and 1961 the average Libyan consumed roughly 2,360 calories daily. Half of these were supplied by cereals, principally wheat and barley, with approximately 485 calories derived from fruits and vegetables. The remainder were supplied by sugar, animal products, and vegetable oils. The diet provided about 57.5 grams of protein and 52.5 grams of fat. Slightly over 6 percent of the total protein came from animal sources, compared in the same period with roughly 65 percent in the average U.S. diet of 3,200 calories. The U.S. diet contained a total of 95.3 grams of protein and 146.3 grams of fat.

Although Libya's consumption was below U.S. totals, basically it was nutritionally adequate, with the possible exception of animal protein which was slightly low. However, subsequent improved living standards have resulted in a heavier domestic consumption of animal products, and in 1962, Libya was a net importer of meat instead of a net exporter of animal products.

About 45 percent of Libya's total caloric supply was imported in 1959-61; this percentage will undoubtedly increase as rising incomes produce an effective demand for more and varied food products.

The country produces about one-third of its wheat requirement. In recent years, consumption of pasta has increased, replacing to some extent that of wheat and barley in other forms. Pasta factories have been expanded and modernized. There are about 20 such factories, consuming about 15,700 tons of flour and semolina annually.

TRADE

Libyan exports before the discovery of oil were chiefly agricultural, and total trade was often marked by imbalance and stagnation. However, petroleum investments and subsequent exports have since resulted in an overall favorable balance of payments and trade.

The total value of exports was \$13 million in 1951 and \$11 million in 1960, while imports in these years were \$28 million and \$169 million, respectively. The pattern had changed dramatically by 1964, as shown in table 4.

Most agricultural exports in 1964 were sent to Italy, Netherlands, the U.S.S.R., and Algeria, but West Germany and the United Kingdom took roughly 50 percent of all exports. The United States purchased no agricultural products from Libya in 1964 but did import about \$30 million worth of nonagricultural goods, mostly petroleum.

Libya imported agricultural items valued at slightly over \$43 million in 1964. Major suppliers were Italy, Netherlands, Tunisia, Spain, France, the United Kingdom, and the Sino-Soviet Bloc. The United States supplied agricultural products totaling \$2.5 million, largely grains, tobacco, fruits, vegetables, and meat; wheat at \$496,000 was the outstanding item. Total U.S. exports to Libya in 1964 amounted to almost \$59 million.

The change in nature of the 1963 U.S. agricultural exports to Libya as compared with those in 1964 is symbolic of Libya's economy. In 1963, U.S. agricultural exports to Libya were valued at \$1,919,000, but \$740,000--over one-third--was food for relief or charity, principally wheat flour. But in 1964, only \$160,000 in flour for relief or charity was included in the total of \$2.5 million worth of agricultural products. This was a gain of over \$1.1 million in U.S. exports in 1 year.

AGRICULTURAL AND TRADE POLICY

Libya's Five-Year Plan (1963-1968) has a budget of \$474 million, of which about 18 percent, or \$84 million, is allocated to agriculture. Nearly \$26 million is allocated for agriculture in the period 1965-66, slightly over 10 percent of the total for the period. The plan covers such areas as resettlement, agricultural marketing, water resource improvement, agricultural machinery, forest and pasture development, livestock, horticulture, extension, pest control, research, and agricultural credit. Projects encompassing many of these fields have already been initiated, especially in the Regions of Tripolitania and Cyrenaica. For instance, the Government provides grain producers with improved seed, machinery, and fertilizers on credit and at suitable prices,

Table 4.--Foreign trade, Libya, 1964

Commodity	Imports		Exports	
	Quantity	Value	Quantity	Value
	1,000	1,000	1,000	1,000
	metric tons	dollars	metric tons	dollars
Live animals (number)	36,800	1,404	2,053	75
Meat and meat products	1.0	1,065	--	--
Dairy products	7.1	3,076	--	--
Cereals and preparations	140.7	13,878	--	--
Fruits, vegetables, and nuts....	22.9	4,178	3.9	648
Sugar, refined	28.3	6,137	--	--
Coffee, tea, cocoa, spices	6.1	5,548	--	--
Animal feed	8.3	598	--	--
Miscellaneous food	1.3	860	--	--
Tobacco, raw .....	.3	522	.2	189
Hides and skins	--	--	2.2	971
Oilseeds .....	.2	119	11.6	2,756
Natural fibers .....	.5	62	1.2	640
Fats and oils	11.2	4,742	--	--
Other agricultural	3.5	1,229	3.6	160
Total agricultural	--	43,492	--	5,439
Total nonagricultural	--	248,770	--	1/695,027
Total	--	292,262	--	700,466

1/ Of this amount, petroleum exports account for \$694,621.

and supplies livestock breeders with fodder--often free of charge--when needed. In addition, the Ministry of Agriculture and Animal Wealth constructs wells, dams, and reservoirs; provides grain storage facilities; and conducts other activities relevant to agricultural extension service. There are also plans to establish a bank which will grant both real estate and industrial loans and for Libya to participate in the African Development Bank.

Legislation to establish permanent price support programs for major agricultural commodities is under preparation. The Government in recent years has subsidized and purchased surplus quantities of such crops as olive oil, wheat, barley, peanuts, tomatoes, and tobacco on a tentative, yearly basis. However, this has not provided farmers with the advance support information which they desire in order to preplan their production. It is hoped that such supports will raise farm income and decrease the present trend of labor away from agriculture.

Because of the country's growing foreign exchange earnings and its desire to obtain the goods needed to modernize and develop its economy, customs duties on most imports into Libya are light except where local industry is to be protected. Most items can be imported under open general license, but certain foodstuffs, such as tomato paste and all beers and wines, attract a heavy duty. Recently, imports of semolina were suspended as local mills increased their capacity. In August 1962, Libya became a member of the International Wheat Council.

United States products are competitive in Libya in the sense that import duties apply equally to all countries.

Export licenses are required for all goods.

GENERAL ECONOMIC SITUATION

The development of the petroleum industry has changed Libya from one of the economically least favored nations of Africa to one of the richest, in terms of foreign exchange, within the past 5 years. In 1959, roughly one-half of all Libyan public expenditures came from foreign

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grants or loans. At present, the problem facing the nation's development projects is not basically one of low revenues but one of securing necessary men and materials.

Libya's total Gross National Product (calculated in 1962 prices) was \$181 million in 1959 and \$475 million in 1963; corresponding per capita GNP has gone from \$154 to \$379.

Aside from the petroleum industry, mining is primarily limited to local needs for gypsum, chalk, limestone, and marble. Manufacturing activities center around the processing of local crop and livestock products and handicrafts, especially carpet weaving and leatherwork. Two-thirds of such enterprises are located in or near Tripoli and about 25 percent in Benghazi.

The country had about 3,930 miles of paved roads in 1963. The principal highway is a 1,140-mile coastal road from the Tunisian to the Egyptian border. It passes through the leading coastal cities.

Tripoli and Tobruk were the only deep water ports until Benghazi was recently rehabilitated to handle oceangoing vessels. In addition, a new oil port at Marsa Brega (Marsa' al Burayghah)--the termination point for the pipeline from Esso's "Zelten" Oilfield--began shipments in late 1961. There are international airfields at Idris, Benina (Banīnah), and Sebha (Sabhah), aiding the growing tourist industry.

Technological improvements offer the best hope for expansion of Libya's agricultural output on the limited agricultural area available for cultivation. The outlook for advances in agriculture in the near future is not optimistic. Such advances will require, among other things, an extensive educational program to orient Libyan farmers toward modern farming techniques and to persuade them to cease migrating to the cities in search of other occupations. It is held by some experts that Libya could feed itself and have excess for export if agriculture were fully developed, but in reality Libya's booming economy is increasing its reliance upon imports, both agricultural and nonagricultural.