APRIL 1959

Guatemala

ITS AGRICULTURAL PRODUCTION AND TRADE

ERS-Foreign-14
Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

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Effective April 3, 1961, the responsibility for the work in the Regional Analysis Division was transferred from the Foreign Agricultural Service to the Economic Research Service.

This report, originally issued as FAS-M-51, is now reissued, without change in text, by the new agency.

August 1961

GUATEMALA: ITS AGRICULTURAL PRODUCTION AND TRADE

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SUMMARY

Agriculture is the most important economic endeavor in Guatemala--the third largest of the Central American Republics. According to the 1950 census, about 70 percent of the people were engaged in agricultural pursuits. Also, agriculture supports most of the industries, since they are concerned with the processing, transportation, or exploitation of farm products. And more than 90 percent of total exports, on a value basis, are of agricultural products, of which coffee and bananas are the most important.

Manufacturing is of some importance and forest industries, particularly in hardwoods, mining, petroleum, and fishing offer promising economic development potentials. The large timber resources are only partly developed, and the chief export from the forests is chicle gathered from wild trees.

Conditions for agricultural production in Guatemala are matched in few other countries of similar size. Altitude and climate vary widely, and soils range from deep fertile volcanic ash to acid forested soils at low elevations.

Most of the farms, however, are small. According to the 1950 census, over 88 percent of all farms were less than 17 acres in size, but included only 14 percent of all farmland. Farms of 110 acres or more represented only 2 percent of all holdings but 72 percent of all farmland.

The census also showed that about one-third (9.2 million acres) of the total land area of more than 42,000 square miles was used for agriculture and of this only 2.6 million acres were in cultivated field crops or tree and vine crops.

The population, the largest of any Central American country, is made up of about 53 percent Indians, 45 percent ladinos (mixed Indian and Spanish blood), and about 2 percent of European descent. The population is increasing at almost 3 percent annually and in 1958 was estimated at 3.61 million. Guatemala is self-sufficient in most agricultural products, and is working toward an even higher degree of self-sufficiency; still the expansion of agricultural production has scarcely kept pace with the rapidly growing population. The country still depends to some extent upon imports of beef, wheat, dairy products, and fats and oils. Per capita calorie intake of about 2,300 daily is comparable to that in neighboring countries. But the diet is lacking in some essential elements and malnutrition is evident in many areas.

To maintain its present per capita output, the country needs to put more of its area into crops and to increase yields. If the livestock industry is to challenge effectively the growing dependence on imports of meat and dairy products, then more pasture must be provided for cattle. More emphasis needs to be placed on supplemental feeding, as well as refrigeration and other meat handling facilities.

The Government of Guatemala, through its five-year (1956-60) economic development program is trying to step up agricultural production and exports. It is encouraging foreign investments for both agricultural and nonagricultural purposes, and efforts are being made to improve agricultural credit facilities.

Most of the recent expansion in production has been on the western slopes of the central mountain range. However, there are still rather large areas in the tropical lowlands of Guatemala that are suitable for agricultural expansion, and production could be further boosted through better production practices and improved livestock management.

*For most of the information in this report the author drew heavily upon material gathered by Clarence M. Purves, FAS Director of Statistics, when he visited Guatemala in 1956.

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BACKGROUND FACTORS

Physiography

Marked variations in altitude and climate largely determine the agricultural areas and activities of Guatemala. A high mountain range crosses the country from northwest to southeast, approximately parallel to and about 30 miles from the Pacific Coast. Several spurs extend from this range toward the Caribbean coast, gradually descending to the sea. This rugged mountainous region, exclusive of the high peaks, is called the Central Highlands. Toward the southeast, the mountains are lower, the terrain less rugged, and farming less difficult.

Three areas of Guatemala are classed as tropical lowlands: The Pacific coastal lowlands, the Caribbean lowlands along the Gulf of Honduras, and the Petén. The Pacific coastal lowland is a graduated slope, level enough for the use of mechanical farm equipment and for irrigation. It is the best area in the country for agriculture, and most large-scale commercial farming, except coffee, is here. The Caribbean lowland is a small flat region, with alluvial soils and with some areas capable of agricultural development. The Petén, a large plain between Honduras and Mexico, is almost completely covered by dense forests which contain some very good timber. There is also a possibility that petroleum exists in this area.

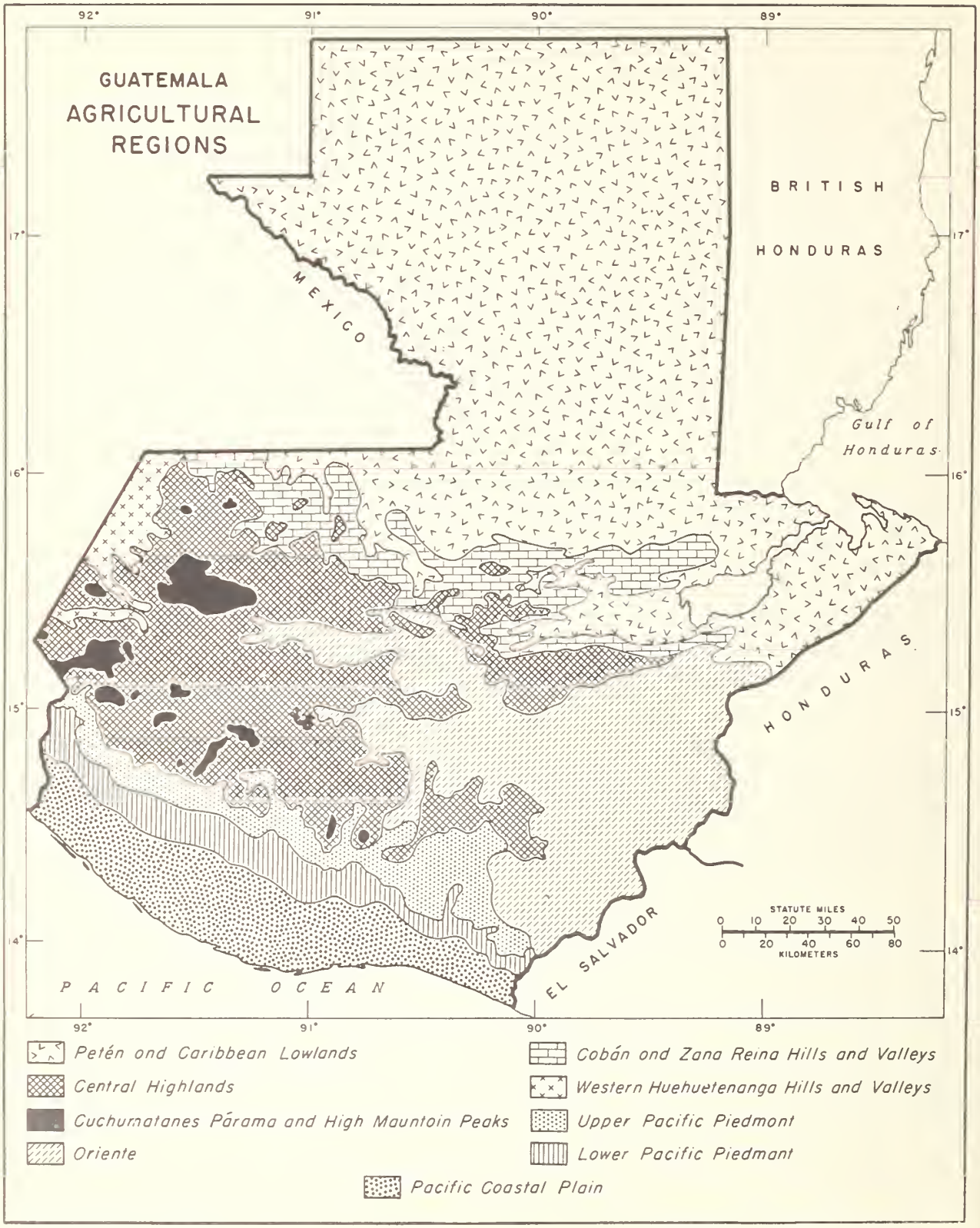
The rivers of the Pacific slope are short swift streams that are of little value for transportation but do provide water for small irrigation projects. Rivers flowing from the Central Highlands drain much of northern Guatemala into the Gulf of Honduras.

The Motagua is the longest river in the country, and its valley contains many fertile plains. The Polochic provides transportation for the region around Lake Izabal and for some of the coffee-producing areas of southern Alta Verapaz. The Sarstun drains the southeast part of El Petén but is of little significance as a means of transportation. Several other rivers, rising in the northern departments, flow northwestward into Mexico but are of no significance for transportation.

Climate

Since Guatemala is situated in the Torrid Zone, with the Caribbean on the east and the Pacific on the west, it has fairly uniform temperatures all year. However, there are three temperature zones determined by altitude: The "Tierra Caliente," with an average annual temperature ranging from around 79° F. at sea level to about 72° at 3,300 feet; the "Tierra Templada," with a range of 72° to 63° at 6,200 feet; and the "Tierra Fría," where temperatures range from 63° to 41° at higher altitudes.

The mountains also have a pronounced effect on rainfall. The higher slopes catch the moisture-laden clouds blowing in from the east or northeast, resulting in heavy rainfall at the higher altitudes. Distinct wet and dry seasons prevail on both coasts, but the east coast receives some rain every month, whereas the west coast may have short dry spells even during the rainy season. The wet and dry seasons each last about 6 months, according to elevation. The rainy season begins in April in the lowlands and about a month later in the Central Highlands, ending in late October or early November. Rain occurs almost daily during the rainy season on the Pacific Coast. Rainfall ranges from about 55 inches at the port city of San José to as much as 200 inches along the lower mountain slopes. North and east of the cordillera, rainfall drops sharply, although the higher slopes approaching the Central Highlands receive fairly heavy rainfall. The Petén area receives well-distributed rainfall amounting to from 40 to 60 inches a year. Eastern Guatemala, the Oriente, is the driest region in the country and supplemental irrigation is required for successful large-scale commercial farming.



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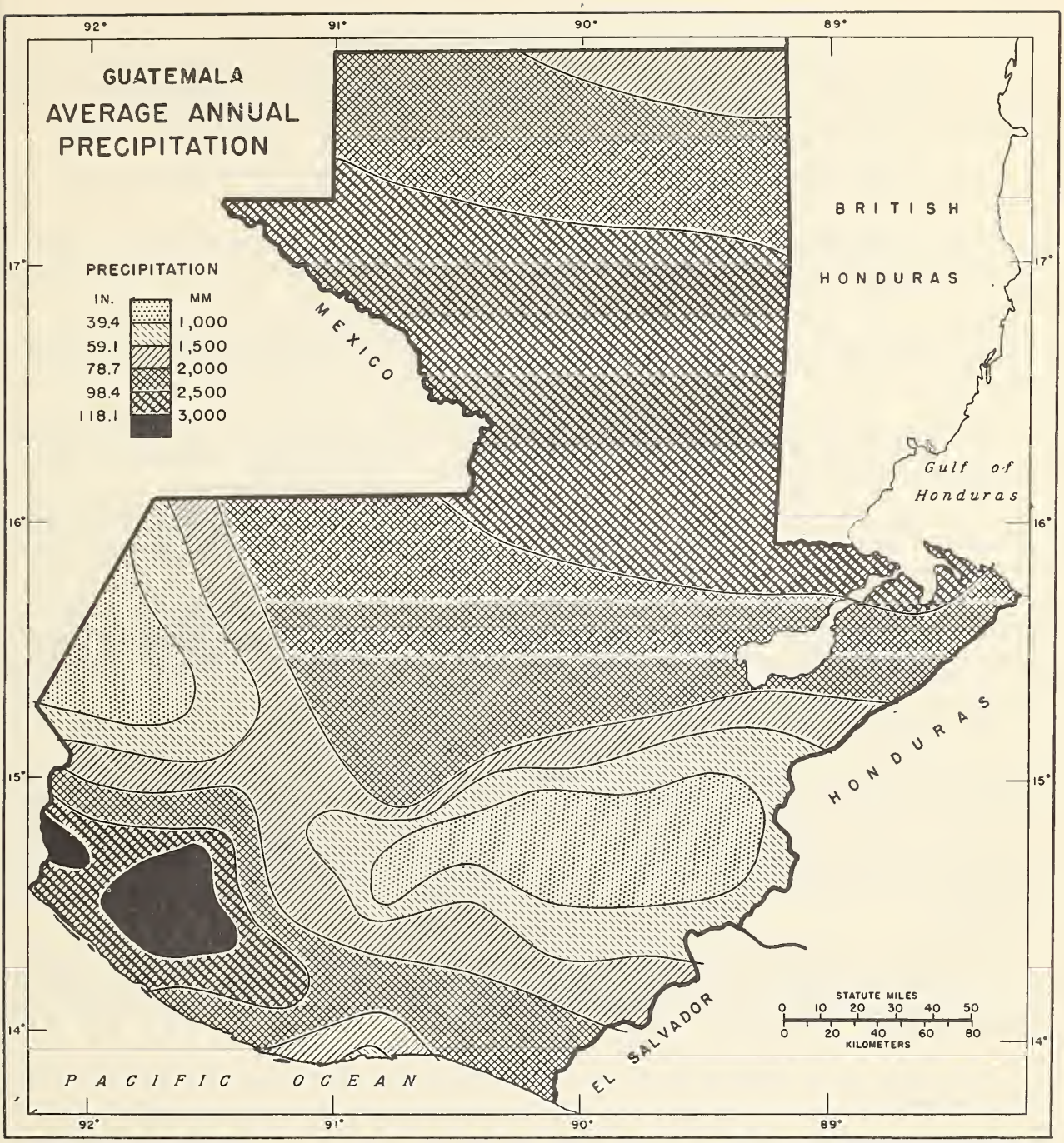

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Soils

The soils of Guatemala may be classified into eleven broad categories, based principally on geographical associations but also on climate and geology. This classification is the result of a soil survey conducted by the National Agricultural Institute and is summarized as follows:

(1) Limestone soils, which occupy all of El Petén and some other nearby areas. These soils are neutral, or nearly so, in reaction.

(2) Soils developed on marine deposits near the Gulf of Honduras. These are agriculturally unproductive and, when cleared and burned, will produce only one crop, after which they return to forest.

(3) Rocky soils at medium altitudes. They have little fertility and are rarely cultivated. Most of these soils are in pine or pine and broadleaf forest but may be used for pasture.

(4) Limestone soils at 1,600 to 6,600 feet. These occupy some of the more densely populated areas of northern Guatemala. The deeper soils are strongly acid and are used for coffee production; thinner soils are used for corn or for grazing.

(5) Limestone soils at high altitudes. They are similar to those at medium elevations except that they have a covering of volcanic ash. The shallow valleys are quite fertile and are densely populated and intensively cultivated.

(6) A band of thin gravelly loam. This runs through central Guatemala at medium altitudes. Although much volcanic ash has poured over these soils, most of it has washed down to the foothills and along streams where corn may be grown. Generally, the region is dry, hilly, and sprasely populated.

(7) Volcanic soils at medium altitudes.

(8) Volcanic soils at high altitudes. Many areas have been overcultivated, and crops range from poor to complete failure.

(9) Soils of relatively recent origin, which cover the upper Pacific slope at medium altitudes and extend downward from the volcanoes in the Central Highlands to meet the coastal plain. These soils are young, deep, and fertile and are highly favored for growing coffee.

(10) Soils of relatively recent origin, which cover the Pacific coastal plain at elevations of less than 600 feet. This area is suitable for largescale mechanized farming but has not been exploited to capacity, except in a few places. Large parts are still occupied by brushy pasture.

(11) Alpine soils. Most of these are in forested areas where pine, fir, cypress, and oak predominate.

Land Use and Tenure

A detailed classification of the total land area of Guatemala, according to use, is not available. But total cropland has probably increased significantly since 1950 when the last agricultural census was taken, owing to the upward trend in the area of corn, cotton, and sugarcane. Total land in farms, however, has probably increased little.

In addition to the Petén forest area, some of the land in farms includes forested areas, and a large part of the unused area as well is covered with forest. It has been estimated that forests cover about 62 percent of the land area, or 16.2 million acres, and that about 12.4 million acres are commercially productive.

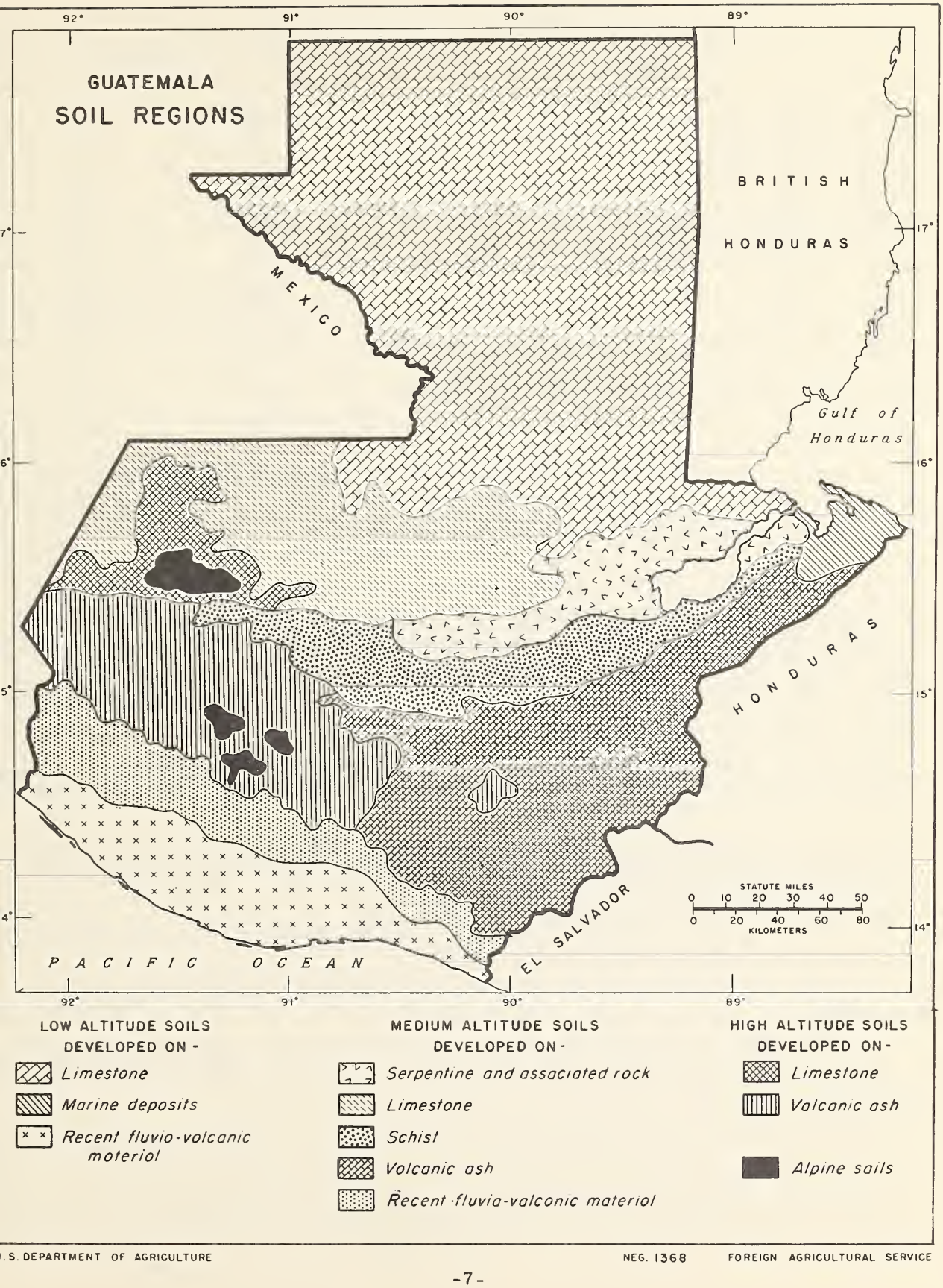
GUATEMALA
SOIL REGIONS
92°
91°
90°
89°
17°
16°
15°
14°
7°
6°
5°
4°
BRITISH
HONDURAS
MEXICO
Gulf of
Honduras
HONDURAS
EL SALVADOR
PACIFIC OCEAN
STATUTE MILES
0 10 20 30 40 50
0 20 40 60 80
KILOMETERS
LOW ALTITUDE SOILS
DEVELOPED ON -
Limestone
Marine deposits
Recent fluvio-volcanic
moteriol
MEDIUM ALTITUDE SOILS
DEVELOPED ON -
Serpentine and assaciated rock
Limestone
Schist
Volcanic ash
Recent fluvia-valconic materiol
HIGH ALTITUDE SOILS
DEVELOPED ON -
Limestone
Valcanic ash
Alpine sails

TABLE 1.--Land use, Guatemala, 1950

Use	Area	Percent of total
Land in farms:	*1,000 acres*	
Cultivated land[1]	2,187	8.1
Abandoned cropland	141	0.5
Coffee & fruit trees & vines	393	1.5
Fallow	917	3.4
Natural pasture	1,438	5.3
Forest, brush and mountain land	3,289	12.3
Other farmland not cropped	813	3.0
Total farmland	9,178	34.1
Forest areas of Petén	7,811	29.0
Underdeveloped land and land in roads, cities, lakes.	9,919	36.9
Total area	26,907	100.0

[1] It cannot be determined definitely how much of the cultivated land was in improved pastures or how much of the reported fallow land was in brush, forest, or mountain lands. Large areas of brush are pastured, and it is not clear whether this land is included in natural pastures or in forest, brush, or mountain land.

Agricultural census, 1950.

The land use pattern in the Central Highlands is fairly stable because most of the population live on farms and the area is devoted largely to a self-sufficient type of agriculture. On large farms outside the coffee area there is some shift in cropland use, linked to changes in income opportunities. For example, in 1957 there was a significant shift from cotton to corn and pastureland because of low yields and decreasing prices of cotton, and the shortage and high price of corn in 1956.

Small farms far exceed large farms in number, but most of the farmland is in large holdings. While many of these large farms are included in the National Farms a significant number are held by private families.

In 1950 there were at least 1.7 million persons on farms, most of them farm operators and their relatives. Eighty-one percent of the farms reported employed workers, of which 21 percent were children under 14 years of age.

Most small farms in the Central Highlands are operated by Indians, and these people usually need to supplement their income by working elsewhere. Nearly all farms of over 110 acres are operated by "ladinos" (people of mixed Indian and Spanish blood). Most farms of this size are along the Pacific coast and in El Petén, Izabal, and Zacapa Departments.

It is a custom for plantation owners to assign small plots of ground to their permanent laborers (colonos). These laborers may own some land but work on the plantation for additional income.

TABLE 2.--Type of tenure by size of farm, Guatemala, 1950

Size of farms (Acres)	Number of farms	Type of tenure					
		Owners[1]	Renters	Permanent laborers	Occupants	Administrators	Others
Under 1.7.....	74,269	34,861	13,953	14,600	5,142	109	5,604
1.7 - 3.4.....	91,581	38,154	23,600	15,338	9,609	89	4,791
3.5 - 8.6.....	99,779	54,061	17,580	10,437	13,577	173	3,951
8.7 - 17.3.....	42,444	31,400	2,846	2,346	4,405	152	1,295
17.4 - 55.3.....	26,916	22,689	913	551	1,789	210	764
55.4 - 110.7.....	6,125	5,060	226	22	361	184	272
110.8 - 1107.2.....	6,488	4,764	68	4	78	1,034	540
Over 1107.2.....	1,112	406	6	0	3	561	109
Total.....	348,714	191,395	59,192	43,298	34,964	2,512	17,326
Percent of total...	--	54.9	17.0	12.4	10.0	.7	5.0

[1] Includes part owners who are also renters, "colonos", or occupants.

Agricultural census, 1950.

Transportation, Marketing, and Storage

The highway system in Guatemala is showing some improvement, and the contribution of the highway program to more rapid, more convenient, and lower-cost transportation is becoming evident. The construction of a network of highways has received high priority in the U. S. aid programs since 1948, and in 1954 a government program with the immediate purpose of providing work and contributing to economic stability gave further emphasis to highway construction, particularly of secondary roads.

Expenditures for the road system have averaged $37 million per year since 1955 and reached a record level of $46 million in 1957. These expenditures will add to or improve Guatemala's 4,000 miles of roads. About 2,500 miles of this total are now all-weather roads but of these only about 200 miles are paved.

A total of over 700 miles of highways are planned, and include about 250 miles from Guatemala City to the Atlantic coast, an all-weather link of about 180 miles connecting the Guatemalan and Mexican sections of the Pan American highway, an improved section of the Pan American Highway from Guatemala City for about 100 miles to the border of El Salvador, and an all-weather 180-mile highway from Guatemala City through the rich agricultural belt along the Pacific coast, to the Mexican border.

Already, substantial trucking operations have sprung up between points along the partly completed section of the Pacific coast highway, and truck traffic is increasing along the section to the Atlantic coast. But a network of secondary roads to connect potential agricultural areas to the main highways will also be necessary for maximum agricultural development.

Guatemala's railway system consists of about 720 miles of track, of which 180 miles are operated by one of the fruit companies to move bananas to port. The largest line is the International Railways of Central America, which passes from Puerto Barrios on the Caribbean through Guatemala and on to the Mexican border. This railway has branch lines connecting with the Pacific ports of Ocos, San Jose, and Champerico, and a branch extending to the border of El Salvador. The Verapaz Railroad, with 29 miles of track, connects a highway terminal at Panajche with a river terminal at Panzos, thus providing

a link between the agricultural areas of Alta and Baja Verapaz and the Caribbean ports. However, a parallel road reduces somewhat the importance to agriculture of the railroad.

Methods of marketing farm products, aside from the major export crops, have not changed much in many years. Limited facilities both for marketing and for storage of food crops are a serious problem. And with increasing urban population, the movement of food crops to market and their storage until needed grows more important.

Drying and storage facilities for more durable food crops are inadequate, while perishable crops are marketed in poorly organized central markets. Grades and standards are almost nonexistent. Most livestock is driven long distances to market or to feeding areas.

Improvements in the road system are beginning to bring some change in the marketing system. Where small producers formerly took their products to market or sold them to local merchants, they now take them to the nearest highway and sell them to truckers. However, a large number of middlemen still operate between producer and consumer, keeping prices high but limiting benefits to the producer.

The government has been concerned over the lack of marketing facilities and has taken measures to prevent speculators from creating scarcities in order to increase prices. The Economic Emergency Law prohibits storage of commodities except by the government or by farmers, but the law's effectiveness is hampered by lack of facilities and technical knowledge. A modern grain elevator with a capacity of 13,000 short tons was built in 1953 in Guatemala City, but it is not nearly large enough to take care of supplies that should be stored. The Production Development Institute is establishing additional elevators in producing and consuming areas, thus reducing transportation costs.

Farmers' cooperatives have improved marketing condition for cotton, essential oils, and cattle. Some of their services are: Receiving products for sale in rural areas, fumigating and transporting them to consuming centers or warehouses, and handling the exportation of these commodities. In addition, the cotton cooperative processes cottonseed and promotes markets for the oil and meal.

The Association of Essential Oil Producers markets all lemongrass and citronella oils. Oil is tested at the warehouse for purity and quality and the producers are paid accordingly. The association advises members on methods of production and distribution, advances funds to producers, and publishes statistics on production and consumption.

Functions of the Cattle Cooperative are to operate slaughterhouses and export meat, to import feed, breeding stock, fertilizer, and grassseed for pastures, to regulate the marketing of cattle in order to prevent oversupply, and to supply meat to the domestic market.

AGRICULTURAL DEVELOPMENT

Although coffee is the principal money crop, there is considerable crop diversity on farms in Guatemala. The agricultural industry is made up of primitive, self-sufficient farming on very small plots and of plantation agriculture producing cash crops. The Indians have small holdings in the Central Highlands. Some of them live in villages while others live apart as family units on their own plots. Land held in common is assigned to individuals, who may farm it as long as they stay with the tribe. Upon their death, or if they leave the tribe, the land reverts to the community. The Central Highlands have become so thickly populated that many families have too little land to provide them with food. Consequently, the people supplement their own production by working for hire on coffee, sugar, or banana plantations. Wages are low, and payments in kind (corn, beans, etc.) are more important to the laborer than cash.

Many of the larger holdings are held by descendants of the Spanish conquerors who were given large tracts of land by the Spanish crown. These early settlers developed the land and produced export crops. Sugarcane, wheat, and domestic animals were their first enterprise; later they added cacao and indigo. About the middle of the 19th century, coffee was introduced, and it quickly became the major cash and export crop of the country.

Production Practices

Methods of production vary widely, depending on fertility of the soil, size of holdings, and density of population. In the Central Highlands the machete and the azadón, a heavy, short handled hoe, are the chief agricultural implements used. Plots of land are farmed continuously as long as any fertility remains, then are allowed to return to brush for 15 or 20 years.

In the southeastern mountains and valleys the hoe and machete are important tools, but horse or ox-drawn equipment is commonly used, especially for plowing. Tractors are found on some of the larger holdings producing commercial crops.

On northern and southern mountain slopes where plantation agriculture is more common, most operations are by hand, especially on coffee plantations; but mechanization is increasing rapidly on cotton, sugar, and banana plantations. However, farming by the permanent plantation laborers is still primitive. Forest or brush cover is cut and burned, corn is planted for 2 or 3 years and then the land returns to brush.

Use of commercial fertilizer is increasing gradually. In 1950 only about 1,200 of the larger farms used commercial fertilizer, but nearly 93,000 small farms used some kind of natural fertilizer. Imports of commercial fertilizer shown below indicate the country's rising consumption:

	Short tons
1937-39 average	2,555
1952	9,222
1953	8,743
1954	11,248
1955	12,566
1956	18,751
1957	30,740

Although the fertile volcanic soils can be farmed for many years without serious declines in yield, banana plantations are now applying urea as fertilizer through spra irrigation equipment. Plantations producing coffee, corn, and cotton are also using m commercial fertilizer. Farmers in the Central Highlands use little commercial ferti lizer but do use animal manure and humus gathered from the forests.

The use of both horse-drawn and mechanized power equipment is increasing. Th rapid development of cotton production has been facilitated by use of tractors, plows cultivators. Power equipment is used almost exclusively on banana plantations, but sugarcane and rice producers are also using power machinery increasingly. Outside the relatively level lowlands, machinery is being introduced much more slowly.

Banana producers irrigate extensively in order to harvest fruit all year; some sugarcane, and pastures are also irrigated. Most irrigation projects are located o large farms of the Pacific slope. Drainage practices are given most attention in ar where permanent settlement is being encouraged.

Most plantation owners realize more and more the importance of controlling i and diseases. No compulsory controls are imposed, but the government has remo restrictions on imports of insecticides to encourage their use.

Improved seeds and disease-resistant, higher-yielding varieties of the various crops are being introduced and it is believed that research and extension under the Inter-american Cooperative Service for Agriculture (SCIDA) will hasten the benefits to be gained from such a program.

Agricultural and Trade Policies

Long-range development goals for agriculture are set forth in the government's five-year plan for economic development. The main objectives for agriculture are: Protecting domestic producers from imports; encouraging expansion of agricultural output; improving living conditions, especially in the Indian communities; return to private enterprise of processing and marketing services performed by government agencies; liberalizing trade and reducing tariffs wherever possible without adversely affecting agriculture or industry to reduce the cost of living; and agrarian reform.

Production and trade policies. --The government encourages farmers to expand their output through price guarantees and trade controls. Price stabilization applies particularly to the major food crop, corn. A guaranteed minimum price for this grain is set at $1.66 per bushel delivered to Guatemala City. But inadequate transportation and high costs render the guaranteed price largely ineffective. It is expected that construction of more storage space in producing areas, with facilities for drying and insect control, will reduce marked fluctuations in corn prices and contribute to an improvement in the general level of living.

In 1955 the government intensified its policy of protecting domestic industries by increasing import duties on competitive items. To stimulate the milling industry, restrictions were placed on further imports of flour, except for special types. Wheat imports, however, continue to increase. Certain textiles, wheat, and flour are subject to "tie in" requirements under which importers must purchase similar domestic products in a fixed proportion to imports. The government encourages further processing in Guatemala by restricting imports of the processed product. It also is encouraging the return to private industry of many services previously performed by agencies of government. For example, the ginning, grading, and sale of cotton are now handled by the cotton cooperatives.

In an effort to reduce the cost of living, import duties are lowered from time to time on certain imported items. Recently, for example, the tariff on cattle imports was eliminated and restrictions on exports of beef were eased. This should encourage cattle feeders to import animals for fattening on domestic pastures. And in 1955, as a result of short supplies of corn and rice, import duties and surcharges on these grains were removed until the shortage ended. Production costs, however, are raised by import taxes and other levies. Practically all imported items which farmers need are subject to extra levies in addition to import duties. Only unmixed fertilizers are free of both customs duties and other levies.

Since more than 90 percent of total exports are of agricultural products the government is trying to expand agricultural exports wherever possible and has entered into trade agreements favorable to the expansion of trade. Trade relations with the Federal Republic of Germany were reestablished by a trade agreement worked out in 1956. Simple, mostfavored-nation agreements have been signed with France, Switzerland, Spain, Denmark, and Italy. Guatemala prohibits trade with the USSR and the satellite countries. It is not a member of the General Agreement on Tariffs and Trade and its bilateral trade agreement with the United States was terminated in October 1955.

At a meeting of the Economic Cooperation Committee of the Central American Isthmus, held in Tegucigalpa, Honduras, in June 1958, a treaty of Multilateral Free Trade and Economic Integration was signed by five Central American countries. Three of the countries--Guatemala, Nicaragua, and El Salvador--have already ratified the treaty. It is too early to determine its effect on existing bilateral agreements between Guatemala and other Central American countries. For example, Guatemala has a treaty

of free trade and economic integration with Honduras and agreements with Costa Rica and El Salvador providing for free trade in certain commodities produced or manufactured in any of the three countries.

In an effort to improve farm productivity and living conditions among the Indians, several programs have been undertaken: Cultural improvement, demonstration of sanitary living conditions, better diets, and introduction of more modern farming practices.

Agrarian policy. --Land reform has long been an economic and social problem in Guatemala because of the many holdings that are too small to provide a livelihood for the operators and for the many landless workers, and of the generous size of a few holdings.

An Agrarian Reform Law was passed in June 1952 under the Arbenz administration. During the following 2 years, 880 private and public holdings containing 865,000 acres of land were expropriated and given out to 83,275 persons. Most of the land, however, went to supporters of the administration rather than to bona fide small holders, but no titles were given to any of the land.

When the administration of Castillo Armas took over in 1954 the Agrarian Reform Law was declared unconstitutional and the office of Agrarian Affairs was given the responsibility of returning expropriated land to its owners and managing state-owned lands that had been divided. Under the land reform program of the Castillo Armas administration titles were given to 698 families on lands donated by the fruit company in Tiquisate; to 5,534 families on lands given voluntarily by owners to the government; and to 2,700 families on government-owned land. The land resettlement program of the current administration includes plans to locate 25,000 families on government land by about 1962. The opinion of officials is that around 50,000 families are in need of new lands for farming operations.

There has been criticism, and some dissatisfaction has been expressed by landless applicants, because of the slow start of the program, the small number of persons actually settled, and the large expenditures of available funds for road building and land clearing. The success or failure of the program is yet to be determined but those in charge maintain that a slow start on a sound basis will produce better results than more rapid assignment of land with no facilities or supervision.

To further encourage land development a tax on idle lands was established by a decree of March 1956. All owners of farmlands having an area larger than 208 acres are required to present a sworn declaration giving data on their farms. Land is divided into 5 classes based on a combination of the following: Soil, topography, water, and accessibility. Following notice of classification, farmers have from 1 to 2 years, depending upon classification, to bring their idle lands into production or be subject to the tax. Many landowners opposed the tax but Agrarian Affairs is continuing with the land classification in hopes that it will force large landowners to either put their idle lands into production or sell it to those who are clamoring for land.

Credit facilities. --The development of agriculture has been restricted to a great extent by a lack of credit. In spite of the recent (1956) opening of the Agrarian Bank the supply of credit available is still inadequate--particularly for transfer of land. Credit is costly and requires a large amount of security; it is seldom available on a long-term basis.

An important source of credit to individuals for agricultural purposes is the National Mortgage Bank. During 1952-55. this bank made crop loans ranging from $4.8 million in 1953 to $3.9 million in 1955. Credit for livestock during this same period ranged from $832,000 in 1952 to $1.9 million in 1955. Almost all loans are short term although some are for as much as 5 years. Loans are equal to 50 percent of the amount of security offered.

A recent move was made by this bank to assist the small vendors in the public markets of Guatemala City. So-called popular credit offices were established in each of the markets for the purpose of changing money and making 3-month loans of up to $25 per vendor at low interest rates. The government hopes, by means of these offices, to eliminate loan sharks who charge as much as $1 per day for a $10 loan.

The National Agrarian Bank, established in 1956, makes only agricultural loans, and its loan policies are more liberal than those of other banks. Although it is privately owned, it is government supervised. An order of the Ministry of Economy, dated September 9, 1957, altered the credit policies of the bank so as to provide small farmers with more credit flexibility, larger loans, lower interest rates, and longer repayment terms. The objectives of the bank's new policies are to facilitate financial and technical assistance to farmers, establish efficient farm operations, increase the country's agricultural output, and improve living conditions in rural areas.

By making available special types of credit designed to help in the development of family-type farms and the purchase of land, machinery, seed, and livestock, the bank hopes to enable small farmers to achieve a level of agricultural development that would permit them to make use of the other credit facilities of the country. Interest rates of 6 percent instead of the customary 8 percent apply to these loans.

The National Agrarian Commercial Bank also makes short-term loans to farmers but requires security amounting to about three times the amount of the loan. Loans on crops are available only for crops in production and cattle loans are limited to 18 months.

One of the functions of the Production Development Institute (INFOP) is to provide credit to farmers with 220 acres or more of land. The main purpose of this service has been to expand cotton production for export, and most INFOP loans have been made to cotton producers.

AGRICULTURAL PRODUCTION[1]

Guatemala's food crops have been produced on small subsistence farms for many years, but its export and industrial crops and beef and dairy products have come from large plantations. Production of food crops by mechanized methods has recently become more attractive to large-scale farmers and they are now furnishing a larger part of the food supply. Some expansion in refined sugar production has occurred and per capita sugar consumption is increasing. The commercial dairy and beef cattle industries are also increasing.

Export Crops

Coffee. --Coffee is Guatemala's main cash crop and contributes more to the country's economy than any other. In recent years the value of coffee exports has amounted to 75-80 percent of the value of all exports. Thus, marked changes in production or prices have an immediate effect on all sectors of the Guatemalan economy.

The fertile Pacific slope is considered one of the best areas for high-quality coffee in the Western Hemisphere. Most Guatemalan coffee is grown between elevations of 2,950 to 3,300 feet but it also grows from 980 feet up to 6100 feet.

Although more than 31,000 farms reported coffee production in the 1950 census, 87 percent of the coffee produced came from only 1,744 farms.

[1] Agricultural production statistics before the 1950 census of agriculture were estimates by the trade. New series of data for most crops were estimated, based on the census, but no effort was made to revise the precensus figures. Trade statistics are available for a longer period and show trends in production and trade of the major export crops.

TABLE 3.--Area, production, and net trade in Guatemala's principal crops, 1950

Crop	Planted area[1]	Production[2]	Net trade[2] (+ = imports) (- = exports)	Available for domestic consumption or stocks
Grains:	*1,000 acres*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*
Corn	1,358.8	416.7	[3] +6.0	422.7
Wheat	76.4	18.2	[3] +32.2	50.4
Rice	19.3	8.8	.8	9.6
Other grains	51.4	11.9	([4])	11.9
Pulses:				
Field beans	183.6	25.5	([4])	25.5
Broad beans	49.4	4.1	([4])	4.1
Other pulses	.5	.1	([4])	.1
Potatoes	7.9	9.4	([4])	9.4
Yuca	3.2	3.7	([4])	3.7
Citronella grass (oil)	10.4	.433	-.410	.023
Lemongrass (oil)	2.7	.077	-.074	.003
Coffee beans	313.6	61.3	-60.5	.8
Cacao beans	3.5	.7	-.2	.5
Sugarcane	44.5	37.8	([4])	37.8
Peanuts	1.0	.4	([4])	.4
Cardemom	3.7	.186	([5])	([5])
Tobacco	5.2	1.0	+.2	1.2
Cotton	6.9	.7	+.6	1.3
Bananas	42.0	[6] 153.7	-176.6	([6])
Plantains	2.7	13.6	([5])	([5])
Fruit trees[7]	6.9	([5])	([5])	([5])
Pasture	2,181.4	--	--	--

[1] Includes area double cropped. [2] Production year ending April 30. Net trade for calendar year 1950. [3] Grain equivalent. [4] Insignificant. [5] Not available. [6] Production converted from 6,039,000 stems at 50.9 pounds per stem, which is considerably understated since 6,939,000 stems (176,588 short tons) were exported and large quantities were consumed. [7] Avocadoes, plums, peaches, apples, and oranges.

Official records of Director General of Statistics, FAS Reports.

Yields per tree vary widely under ordinary cultural practices. On many farms yields could be increased by maintenance of the natural ground cover around the trees. Some growers are experimenting with growing coffee without shade, applying fertilizer, and planting new varieties. Planting in new, though less accessible, areas could expand production considerably but shortage of transportation facilities has limited expansion in these new areas. However, this shortage is being gradually overcome by the highway expansion program.

Most owners of coffee plantations are urban dwellers, who leave the operation of the plantation to a manager. They keep a minimum number of laborers as permanent residents on the plantation by giving them living quarters and a plot of land for their own use. Extra labor is supplied by transient workers.

TABLE 4.--Number of coffee farms in Guatemala producing more than 150 bags of coffee, area planted, and number of trees by size of farms, April 1950

Size of farm	Number of farms	Area planted	Number of trees
Acres		*Acres*	*Thousands*
3.4 - 8.6	12	70.6	43.5
8.7 - 17.2	67	701.3	411.8
17.3 - 55.1	264	5,956.4	3,322.8
55.2 - 110.3	190	7,486.4	4,160.3
110.4 - 1102.7	886	142,781.6	70,808.2
1102.8 - 2205.4	153	57,334.5	26,505.1
2205.5 - 5513.6	118	52,723.8	26,717.5
5513.7 - 11,027.2	35	28,548.4	14,100.3
11,027.3 - 22,054.4	13	10,205.3	4,036.3
22,054.5 and over	6	6,962.6	3,179.7
Total	1,744	312,770.9	153,285.5

Coffee Census, 1950.

Coffee requires more hand labor than does any other large-scale agricultural enterprise in Guatemala. A survey made in 1942-43 showed that the labor force on coffee plantations totaled 282,000 resident and 143,000 transient laborers. Plantations are cleaned of brush and undergrowth several times a year by hand. Harvesting is also done by hand, and each tree must be gone over several times, as beans ripen at different times.

The Central Coffee Office, an agency of the Ministry of Agriculture, helps the smaller producers market their coffee; it also issues export permits, levies export taxes, maintains statistics on coffee, and handles registration of contracts between sellers and exporters.

Coffee production is financed principally by banks and exporters. One of the functions of the Agrarian Bank is to provide the type of credit the growers need to finance the harvesting and marketing of their crops.

The United States is the principal market for Guatemala's coffee. Figures of the Central Coffee Office show that 77 percent of the total exports of coffee by volume went to this country in 1957 and 78 percent in 1956. Other important markets are Belgium, Netherlands, Sweden, and Germany. Local consumption is estimated at around 190,000 bags.

Bananas.--The production and export of bananas is Guatemala's second most important industry. Commercial production was started in 1906 by a United States company and by 1939 exports had reached 10 million stems. In 1947, exports reached an alltime peak of 14.9 million stems but disease, wind damage, and other difficulties have since reduced exports somewhat.

The rich volcanic soils and tropical climate of both of Guatemala's coastal plains are well suited to banana culture. The first plantings were made in the Rio Motagua Valley in the Department of Izabal. Production of bananas soon became the leading industry of the area and Puerto Barrios became a thriving port. When disease invaded the area in the 1930's a new plantation was started at Tiquisate in Esquintla Department. Since then most of the export bananas have come from Tiquisate and are shipped across the country to Puerto Barrios.

TABLE 5.--Exports of bananas, Guatamala, 1935-58

Year	Exports	Year	Exports
Average:	*1,000 bunches*[1]	Annual--Con.	*1,000 bunches*[1]
1935-39	8,405	1953	10,018
1945-49	10,429	1954	8,544
		1955	5,011
Annual:		1956	8,212
1950	6,897	1957	7,123
1951	5,265	1958	[2] 6,500
1952	4,689		

[1] 50 lbs. each.
[2] Preliminary, unofficial.

Foreign Crops and Markets, Summary Tables, FAS.

Two U. S. companies export all bananas shipped from Guatemala. One of the companies grows about 70 percent of its exports while the other buys all its exports from local producers. Most private growers raise coffee on the same land, banana plants serving as shade for the coffee trees.

The banana industry requires a large capital investment. Most of the fruit companies' Pacific plantations are provided with overhead irrigation through a permanent pipe system and the others are irrigated by surface methods. Spraying against Sigatoka disease is primarily provided from central spray units and the same pipe system is used to apply fertilizer.

The company provides housing for its laborers and wages are higher than those received in other farming enterprises. The company also maintains commissaries where the laborer may obtain foods at about half of retail prices in the markets.

In 1956 the fruit company agreed to pay a tax of 2 cents per stem on all bananas exported in addition to an annual tax, not to exceed 30 percent, on net income; acquired the right to build a port on Amatique Bay, the port to become government property upon termination of the contract in 1981; agreed to transfer no less than 110,000 acres of its land in Izabal to the government for distribution to the workers and to invest $5 million within the next 5 years for the rehabilitation of 5,000 acres of land in the same Department; and to build a hospital of at least 100 beds in the Department of Izabal for the use of its workers and the public.

Cotton.--Since 1950, cotton production has expanded rapidly, and Guatemala is now a substantial net exporter of raw cotton. Domestic textile mills are providing an increasing part of total textile needs.

High prices during and after World War II led the Production Development Institute to encourage cotton production on the National Farms in the Pacific coastal area. Production by private growers also increased but output still did not meet domestic requirements. The government set minimum prices the Institute could pay and prices it could receive for cotton it sold to the mills, and under this support program production expanded until it exceeded domestic requirements in 1953-54. Expansion continued even after the fixed minimum price program was abandoned in 1954. Area planted in 1955 reached 52,000 acres and 47,000 bales were produced in spite of losses from insect damage. The next year area planted was reduced to 32,000 acres but favorable weather resulted in a slightly larger crop than the previous year. Area and production increased substantially again in 1957 and 1958.

TABLE 6.--Area and production of cotton, Guatemala, 1935-58

Year	Area	Production
Average:	*1,000 acres*	*1,000 bales*
1935-39	--	2
1945-49	8	5
Annual:		
1950	6	4
1951	20	11
1952	22	16
1953	27	27
1954	39	40
1955	52	47
1956	32	46
1957	43	61
1958	68	90

Foreign Crops and Markets, Summary Tables, FAS.

There are two cooperatives of cotton growers, both of which provide marketing facilities for cotton and cottonseed, replacing the Development Institute in cotton marketing. They also operate gins; spray the crop by air; provide grading facilities; import insecticides, seed, and fertilizer; and operate a machinery pool for use of members. They serve as intermediary in obtaining credit for members, conduct research, and maintain statistics. Funds for the operation of the cooperatives are secured from a charge of small fees assessed on the ginned cotton.

Cacao.--The 1950 census reported cacao production at 1.2 million pounds from 3,570 acres of land. Since then production has expanded to 2.5 million to 3.0 million pounds. Most of the cacao is grown in Guatemala, Suchitepequez and Escuintla Departments.

Area and methods of production of cacao are quite similar to those for coffee, and the two crops compete for land and labor. However, cacao thrives at lower elevations, and plantation owners in the Pacific lowlands are becoming interested in its production.

Exports have expanded sharply since the prewar years. Beans for export are closely graded and are of better quality than those for domestic use. Most of Guatemala's cacao goes to the United States.

Essential oils.--Citronella and lemongrass oils became important export products when favorable prices during and after World War II stimulated production. These oils are produced mainly by large plantations on the Pacific coastal plain and Lower Pacific Piedmont. Under normal conditions about four crops of the grasses are harvested annually.

Distillation of the oil is mostly carried on by the producers right on the plantation. The oil produced is of high quality, and all oil sold for export must be marketed through the Association of Essential Oil Producers. The association guarantees quality, establishes prices, and arranges for oil deliveries. It has also investigated the possibilities of producing other oils, such as vetiver, cardamon, peppermint, and eucalyptus, but none of these has developed into a significant industry.

Chicle.--Chicle is obtained almost entirely from the forests of El Petén, the sparsely settled northern third of the country. It is taken from sapodilla trees by cutting spiral grooves just through the inner bark from about 1 foot above ground to the lowest large branch. A forestry law prohibits tapping trees of less than 16 inches in diameter, cutting of the growth layer between bark and wood, and tapping more than once in 7 years.

TABLE 7.--Production and exports of citronella oil and lemongrass oil, Guatemala, 1949-56[1]

Year[2]	Citronella oil		Lemongrass oil	
	Production	Exports	Production	Exports
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
1949	688.1	640.7	118.5	108.2
1950	867.0	819.8	155.3	146.7
1951	1,207.6	1,167.9	211.6	229.1
1952	1,257.6	1,283.2	532.4	373.6
1953	207.6	364.0	573.2	681.4
1954	195.2	226.0	554.8	509.6
1955	321.6	327.0	338.0	424.4
1956	629.2	669.0	416.8	598.8

[1] Exports of both for calendar years 1957 and 1958 were 2,882,000 and 809,000 pounds, respectively.
[2] Crop year ending April 30.

Semi-Annual Report of the Association of Essential Oil Producers, May 1956.

TABLE 8.--Exports of chicle, Guatemala, 1937-39 average and annual 1952-57

Year	Exports	
	Quantity	Value
Average:	*1,000 pounds*	*1,000 dollars*
1937-39	1,731	532
Annual:		
1952	1,503	1,193
1953	5	3
1954	776	398
1955	2,379	1,350
1956	1,548	1,022
1957	1,720	1,084

Memoria de las Labores del Ejecutivo en el Ramo de Hacienda y Crédito Público, and Comercio Exterior.

In spite of these precautions at least 5 percent of the trees die after the first season. The area of operable trees is shrinking and becoming more and more remote. The chicle is flown from the nearest airstrip to Puerto Barrios for shipment, almost exclusively to the United States.

The Production Development Institute controls the leasing of chicle concessions and contracts for sales to the two United States companies which purchase the greater part of the crop.

Food Crops

Corn is by far the most important grain produced in Guatemala. In the 1950 census, corn occupied 90 percent of the total area in grains and 60 percent of the cultivated area. Small quantities of wheat, rice, and feed grains are also grown.

Corn is consumed daily by most Guatemalans but little is fed to their livestock. Most of it is produced in Departments where the hoe and machete are about the only tools of cultivation, though animal-drawn plows supplement these in a few areas.

TABLE 9.--Area and production of corn, Guatemala, average 1935-39 and 1945-49 and annual 1951-58

Crop year	Area	Yield	Production
Average:	*1,000 acres*	*Bushels*	*1,000 bushels*
1935-39	1,000	15.7	15,700
1945-49	1,208	14.9	17,991
1951	1,375	13.1	18,000
1952	1,375	13.1	18,000
1953	1,380	13.8	19,000
1954	1,355	12.6	17,030
1955	1,380	12.8	17,660
1956	1,450	13.1	19,020
1957	1,564	11.3	17,750
1958	1,597	11.9	19,000

Foreign Crops and Markets, Summary Tables, FAS.

Although yields as high as 40 bushels per acre have been obtained from the best lands, average yields for the country as a whole are low. In the hot lowlands, corn matures in about 4 months, and a second corn or other crop often follows in the same crop year. An increase 1,000 feet in elevation adds 3 or 4 weeks to the time required to mature a crop.

Corn is marketed in several different ways. About 50 percent is sold to buyers who come to the farms with trucks, and haul it away. They sell it to coffee plantations, where it is used as food for the laborers, to grocers in cities and towns, or directly to consumers and merchants in the markets. About 15 to 20 percent of the corn sold goes to dealers, who place orders at a fixed price before the corn is harvested. At harvesttime they take the corn to consuming centers. Another 10 to 20 percent is marketed by contract between the producers and coffee plantations. The remainder is taken to nearby villages by the producers and sold directly to consumers.

During the Arbenz administration, from 1950 to 1954, most landlords stopped providing land for their workers to grow corn, and the amount of land rented for corn production also declined. Uncertain political conditions discouraged cultivation of corn by large commercial growers, and, with high coffee prices, plantation owners did not encourage their laborers to grow corn. Below average crops in 1954 and 1955 resulted, and the new administration of Castillo Armas was confronted with a food shortage and high prices.

The government took action to try to step up corn production. It set minimum prices, offered to buy corn delivered to the Guatemala City elevator if it was of acceptable grade and moisture content, and secured additional storage space to accommodate all supplies offered. It also imported seed from Mexico and El Salvador so that seed would be available for a second crop in 1955.

A combination of guaranteed minimum prices, improved seed, and better production techniques is encouraging corn production on the large farms of the Pacific coastal plain. It is believed, however, that any material increase in corn production in the Central Highlands must come through improved cultural methods, rather than expansion on to new areas.

Wheat consumption has tripled in Guatemala since the prewar period; by 1957, imports (including flour in terms of grain) reached 1.8 million bushels compared with 441,000 in 1937. The government is encouraging wheat production but the area suitable for wheat is limited and production has expanded little in recent years. Soft wheat is the only type produced.

Guatemala's initial import quota under the International Wheat Agreement was 367,000 bushels. This was later increased to 918,000 bushels and again in 1956-57 to 1.5 million. Since the urban population, principal consumers of wheat products, is increasing rapidly, it is believed that the trend in imports will continue upward.

There are 80 small mills in Guatemala, which produce less than 5 percent of the flour milled, and 15 commercial mills, one of which is in Guatemala City. The present trend is toward importing more wheat and less flour and the Minister of Economy limits flour imports by setting quotas.

At one time Guatemala was nearly self-suficient in rice but after a sharp decline in 1947 the upward trend in production has been irregular. A large part of the crop is produced by small farmers, but since 1949 an increasing amount has been grown commercially with the use of modern machinery.

Nearly all rice is of the upland variety, and the main producing areas are in the eastern part of the Pacific coastal plain. In some lowland areas, two crops a year can be grown because of the longer rainy season. There are soils suitable for rice-growing around Lake Izabal in the Atlantic coastal area but at present little is grown there.

Rice is an important part of the "ladino" diet, but the Indians prefer corn. Some city dwellers turn from rice to wheat as their income increases. Guatemala may become a small exporter of rice in years when the crop is good; when the crop is poor, prices advance sharply and imports are necessary. In most years, however, foreign trade is insignificant in relation to the supply but recently the country has been on a small net import basis.

The small quantities of other grains Guatemala produces are fed to animals. The growing dairy industry is demanding more grains for feed and silage. In the semiarid eastern part of the country where it is too dry for corn, about 37,000 acres are planted to grain sorghum most of which is fed to hogs and chickens. It is also used for human consumption when corn is scarce. Small amounts of oats, barley, and alfalfa are used as green feed for dairy cattle.

The National Agricultural Institute has tried to introduce improved varieties of grain sorghum and to promote the growing of more feed grains, but with little success. Beef cattle and hogs are fed grain only occasionally but there are several chicken farms around Guatemala City that use properly balanced feed.

Pulses are the second most important item in the Guatemalan diet. Dry field beans make up 85-90 percent of total pulse production, with broad beans, chickpeas, peas, and lentils making up the remainder.

It is a common practice to interplant beans with corn, which makes it almost impossible to obtain reliable area and production data. Practically every farmer between 1,600 and 8,200 feet elevation produces beans, largely for his own use. Many farmers at lower elevations in the eastern Pacific slope area also produce them. Rainfall in this area is more uniform and three or four crops of beans per year can be grown.

The country is usually self-sufficient in beans, and trade is negligible. Since beans are an important source of protein in the average Guatemalan diet the National Agricultural Institute has attempted, through experiments, to obtain disease-resistant and better-yielding varieties. Native varieties have proved to have more tolerance to disease than introduced varieties and a few selected types of native beans give promise of helping to increase production.

Sugarcane can be grown in nearly every Department of Guatemala, but most commercial cane is produced in the Pacific coastal plain. There are 10 sugar mills in this area, three of which are government owned; the others are on large plantations.

TABLE 10.--Production of centrifugal and noncentrifugal sugar; average 1935-39 and 1950-54, annual 1954-58

Crop year	Centrifugal sugar	Noncentrifugal sugar
	1,000 short tons	*1,000 short tons*
1935-39	18	31
1950-54	43	43
1954	56	55
1955	63	51
1956	69	48
1957	71	46
1958	73	47

Foreign Crops and Markets, Summary Tables, FAS.

With the exception of cutting the cane, which is done by hand, all operations connected with the production of sugar are highly mechanized.

During recent years there has been a marked increase in the amount of cane processed into white sugar. Consumption has increased more rapidly than output. The 1957-58 crop amounted to 71,000 short tons, or almost four times prewar. Before the war, Guatemala was a small net exporter of sugar, as it has been in the last few years. After the war it became a small net importer.

There are large areas of land suitable for further expansion of cane acreage and the capacity of the mills has been increased, so that domestic production can be expanded to take care of increasing consumption for some time.

Panela, a hard brown sugar, is consumed in rural areas. Production amounts to around 50,000 short tons per year. In addition to its use in place of white or centrifugal sugar, panela is used in making alcoholic beverages. The government encourages this use of panela by placing heavy restrictions on the use of blackstrap molasses for the same purpose. The home consumption of panela is slowly declining.

Per capita consumption of fats and oils in Guatemala is very low, probably only 20 percent of that in the United States. Domestic production accounts for 50-60 percent of total fats consumed. Vegetable oils make up about half of total annual production, and lard, tallow, and butter make up the remainder. The rapid rise in the output of cottonseed has increased domestic sources of vegetable oils, and the manufacture of margarine and cooking oils is expanding. In early 1956 and again in 1958 the government raised import duties on fats and oils to protect domestic vegetable oil industries. However the masses of the people still prefer lard.

Cottonseed crushing has grown under the program of the cotton cooperatives and probably will continue to expand as long as supplies exceed domestic utilization, and the present high tariff continues in effect.

The census of 1950 reported sesame production on 972 farms, amounting to 440 short tons. The total apparently was underestimated since exports of seed totaled 973 short tons in 1953 and 618 tons in 1954. The producing area is close to El Salvador, and much of the seed goes across the border to crushing mills in that country; the oil is then shipped back into Guatemala.

Oil palm kernels gathered from wild palms, the most important of which is the corozo, and coconuts were the main source of vegetable oils before the expansion in cottonseed production. The soft-shelled corozo kernels could be of value but are not used much because of distance of growing areas from markets. Native oil palms grow well in Guatemala and yield high-grade oil, but separating the meat from the shell is a difficult job,, at present done by hand.

Industrial Crops

Tobacco production in Guatemala is not sufficient to meet domestic requirements. The 1950 census reported tobacco grown on 1,462 small farms with a total area of 5,073 acres. Area in 1958 was estimated at 7,000 acres.

Dark air-cured tobacco predominates, but the proportion of flue-cured and burley is increasing. Most of the dark air-cured is used in making cigarettes and the remainder in making cigars; flue-cured and burley are for cigarettes.

The two cigarette companies contract with the farmers for tobacco supplies. Buyers from the companies instruct the farmers in cultural practices, grade and buy the tobacco, and keep the manufacturer supplied with the type he needs. Tobacco may be imported without restriction. Most imports come from the United States.

Another industrial crop grown in Guatemala is rubber; it has never been a major industry, but may be in the future. Rainfall is sufficient for production, and climatic conditions are such that disease is held at a minimum.

Production is centered in the Departments of Suchitepequez, Retalhuleu, and Quezaltenango and in 1955 totaled almost 175,000 pounds. At that time it was estimated that there were 1.8 million trees 5 years old and over and that as much as 880 short tons of rubber could be produced.

The government has announced that it will encourage increased rubber production by providing technical and financial assistance. The objective is to increase production enough to take care of an expected increase in consumption by the new tire factory and to assure enough for export. This is part of the overall program to increase production of export crops which would bolster sagging revenue from coffee, the principal exchange earner.

Pastures and Forage Crops

Livestock feeding in Guatemala is mostly limited to grazing, and improved pastures have been planted to Paragrass, Jaragua, and Guineagrass.

Recent experiments with ramie have shown that it has possibilities as a high-protein forage crop throughout the Tropics. It grows well in Guatemala and if pastured or harvested before it matures has more protein and less fiber than alfalfa, which has not proved satisfactory in Guatemala.

Livestock and Products

Most of the country's cattle are kept on the Pacific slope, an area well adapted to the fattening of cattle on grass. In the Central Highlands, cattle production is limited to a few scrub cows used for both beef and dairy production. A few pigs are also produced, but the area is just barely self-sufficient in meat. On the other hand, the Oriente, or southeastern mountain and valley region, produces a surplus of both cattle and pigs. Some of these surplus cattle, along with imported cattle, are fattened on the Pacific coastal plain. The dairy industry is expanding in the Esquintla-Guatemala City area and there are several large dairies producing fairly high-quality milk. In spite of moderately favorable conditions for livestock production, Guatemala is a net importer of both cattle and meats, and meat consumption is lower than in most neighboring countries.

The trend in imports of cattle for fattening and slaughter has been upward since the end of the war. And imports of purebred cattle have increased sharply, from 800 in the entire 10-year period 1944-53 to 1,022 in 1956 alone. The favorite breeds are Holstein, Cebu-Brahman, and Brown Swiss.

TABLE 11.--Livestock numbers, Guatemala, selected years

Kind	Nov. 1947	Apr. 1950	Apr. 1955[1]	Apr. 1956[1]
All cattle	900,327	919,110	992,690	1,033,062
Dairy cows, 3 yrs. and over	189,007	184,837	([2])	([2])
Horses	155,423	185,974	170,776	169,774
Mules and donkeys	60,797	68,573	64,684	67,231
Hogs	374,367	424,170	390,370	361,802
Sheep	617,611	715,576	739,307	756,186
Goats	63,545	78,856	86,456	77,708

[1] Estimated.
[2] Not available.

Official records of Director General of Statistics.

The development and expansion of modern dairy herds is being given increased attention by SCIDA, the Interamerican Cooperative Service for Agriculture. An association for dairy herd improvement was set up in 1955 to study feeding practices, methods of improving quality of milk, and increasing yield per cow. Since dairy herds are kept at higher elevations and are under closer supervision than beef herds, milk production is more efficient than beef production. Despite the wet and dry seasons milk production remains fairly constant throughout the year. Dairy farmers are increasing the amount of pasture under irrigation and building more silos for storing forage to be used in the dry season. Milling byproducts, cottonseed meal, and hull as well as blackstrap are used in Guatemala for supplemental feeding. Many of the herds in the dairy association now average over 7,000 pounds of fluid milk per cow annually.

Hog production is centered in Jutiapa Department but a few hogs are kept on small farms throughout the country. Farmers sell their surplus stock to buyers who drive them to nearby towns, where they are sold to butchers or resold to hog feeders. Commercial slaughter is also centered in Jutiapa Department.

Little attention is given to proper feeding or to diseases; hog cholera epidemics occasionally cause heavy losses.

Sheep raising is carried on at higher elevations in the Central Highlands. Flocks are small and of low quality, producing only 1 or 2 pounds of low-grade carpet wool per sheep. Some improvement occurred through use of imported breeding stock but imports have been too small to effect general improvement. Death losses are high from disease, and botflies also cause serious losses.

Goats are kept in about the same areas as sheep and are raised chiefly for hides and milk. A few milk goats are grazed near the cities, driven through the streets where milk is delivered directly to consumers.

Both horses and mules are widely distributed throughout the country. Horses are used to a limited extent for transportation but are kept mostly for riding or racing. Much of the heavy draft work and hauling of produce is done by mules or oxen.

Poultry are to be found on practically every farm, most on small individual farms. In recent years some commercial poultry farms were established around Guatemala City. These farms raise purebred flocks and use balanced feed rations; their egg production is well above that of common farm flocks.

Eggs, baby chicks, and poultry feeds are rather important imports into Guatemala and quantities are increasing. The United States supplies the greater portion of these imports.

Meat, dairy products, and hides and skins are Guatemala's principal livestock products. The city trade takes small but increasing amounts of imported prepared meats and dairy products. Small quantities of cattle hides are exported. Lard, tallow, and butter are important as sources of fat.

Few Guatemalans can afford to consume as much meat as they would like. They prefer pork although beef makes up the greater part of total supply. Beef is consumed largely in urban centers while pork, lamb, goat meat, and poultry are more common in rural areas.

Most cattle are slaughtered for sale through public meat markets and slaughter is recorded, but on farms and in villages many small animals are slaughtered and no record kept of meat produced.

Reported meat production in 1950 amounted to around 40,000 short tons, and estimated total meat production to 49,000 tons. Two-thirds of total production was of beef. Reported slaughter of cattle and sheep has increased somewhat; the increased cattle slaughter reflects larger imports of live cattle.

Despite increased slaughter there has been little change in per capita meat consumption, which was estimated at about 34 pounds in 1955. Guatemala City, with less than one-eighth of total population, consumes about one-fourth of the country's meat supply.

The pork supply appears low in relation to the number of hogs slaughtered because all fat is trimmed from the meat and many fat cuts are rendered for lard. As a cooking fat, lard is first choice among consumers. Estimates on 1955 slaughter showed that about 4,400 short tons of lard were produced compared with 6,400 tons of pork.

Nearly all tallow produced is used in soap and candle making, with small amounts being used on farms. In 1955, production of tallow amounted to around 3,200 tons.

Poultry meat is produced and consumed on small farms or traded in the local markets. Trade in chickens and eggs provides an important source of cash for many farm families. Poultry meat and eggs supply a sizable amount of total animal protein available to rural inhabitants. Estimates of egg production, based on number of laying hens, place the total at around 17 million dozen annually. Commercial broiler production is still on a small scale but is increasing and probably adds about 5,500 tons of meat per year - or almost 4.5 pounds per capita.

Dairy products are not important foods in Guatemala, but production of fluid milk is increasing. In 1956 it appeared that milk production, officially estimated at 235 million pounds, was providing all normal requirements.

Most of the milk produced comes from range-fed cows and is processed into butter or cheese and consumed on the farms or in nearby villages. Fluid milk is consumed mostly by the urban population. The government is encouraging fluid milk consumption, but lack of refrigeration in rural areas, transportation difficulties, and the high price of milk in relation to other foods all serve to keep consumption down.

The Government of Guatemala and the United Nations International Children's Emergency Fund are trying to promote the consumption of dry milk products among school children. The government has installed a milk drying plant at Asuncion Mita. Opposition by dairy producers has kept recombining plants out of the country.

Pasteurization of milk has made progress in recent years; there are now four modern pasteurizing plants in the country. There is also one sterilization plant in Guatemala City.

Butter is eaten mostly by the upper class in the cities and by the foreign population. Unofficial estimates place butter production at 650 short tons in 1957 compared with 750 short tons in 1956. Most cheese is produced and consumed in rural areas, and most of it is a dry unseasoned type.

TRADE IN AGRICULTURAL PRODUCTS

Agricultural products made up 84 percent of Guatemala's total export value in the prewar period, rose to over 96 percent in 1954, and then declined slightly. Coffee is by far the principal export. The rising value and quantity of coffee exports and the entry of new products into the export market account for the increase in total value.

The United States is the leading market for Guatemalan agricultural exports. In 1956 the United States took 77 percent of the coffee, 63 percent of the bananas exported, and 72 percent of all agricultural exports by value. Most of the cotton went to Western Germany, the second largest buyer of Guatemalan farm products. Other important markets are the Netherlands, Belgium, Sweden, and Canada.

Of imports, agricultural products represent only a small share of the total value. Wheat and flour are the principal items, followed by lard and processed milk.

The United States is the chief source of Guatemala's agricultural imports, although Canada, the Netherlands, and El Salvador are also important suppliers. Eighty percent of the wheat flour imported in 1956 came from the United States as did the greater part of the lard, tobacco, industrial tallow, fresh grapes, dried fruit, and all of the rice and fresh meat. For all imports of agricultural origin the United States share in Quatemalan trade was 75 percent.

DOMESTIC CONSUMPTION OF FOOD PRODUCTS

Average daily per capita food consumption in Guatemala is about the same as in other Central American countries. Normally, food supplies are sufficient to meet consumption needs but sometimes near the close of the season local deficits and higher prices may curtail food consumption.

Because of inadequate storage on farms, there is extensive local trade in foodstuffs. Farmers sell the greater part of their crop immediately after harvest, and they buy back supplies until the next harvest. Because harvesting seasons vary at different elevations, there is considerable interchange of food crops between the highlands and lowlands.

Corn and beans are the staples of the Guatemalan diet, particularly of the rural population. Rural people also consume sugar (usually in the form of panela), fats, fruits--mostly bananas and plantains, and many vegetables. The urban population consumes most of the wheat, fruits other than bananas, refined sugar, and imported canned goods; they consume much more meat and milk than rural dwellers.

Poor distribution, rather than scarcity, is the cause of dietary deficiencies, especially with regard to fruits and vegetables. Generally speaking, the consumption of cereals is much above recommended levels, while that of fruits, vegetables, fats, and livestock products is low. Both tropical and temperate zone fruits are produced in quantities sufficient for consumer needs and are available throughout the country. Both white and sweet potatoes are available in season.

TABLE 12.--Principal agricultural exports, Guatemala, 1937-39 average and 1953-57

Product	Average 1937-39		1953		1954		1955		1956		1957	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 pounds	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*
Coffee:												
Dry clean beans....	102,329	10,014	124,648	68,134	114,029	73,482	128,819	75,483	137,717	91,883	136,325	82,271
In parchment.....	571	42	205	96	939	685	3	(1)	(2)	(2)	(2)	(2)
Total.....	--	10,056	--	68,230	--	74,167	--	75,483	--	91,883	--	82,271
Bananas.....	479,569	4,844	382,990	12,580	(3)	11,203	(3)	9,418	(3)	9,285	(3)	9,480
Cotton.....	0	0	0	0	11,541	3,656	14,266	4,486	17,211	4,917	14,724	4,145
Abaca.....	(4)	(4)	8,829	1,402	6,742	1,158	4,901	941	1,717	524	1,874	506
Essential oils.....	212	61	(5)	(5)	754	730	1,052	1,177	1,903	2,311	2,882	2,747
Honey.....	2,414	125	4,222	379	4,277	406	3,984	430	4,211	445	6,051	709
Cottonseed.....	0	0	0	0	11,488	250	18,133	483	10,302	205	5,125	116
Cacao.....	121	8	747	204	622	239	562	184	1,036	233	514	166
Fruits, fresh or preserved.....	--	1	--	145	--	201	--	175	--	165	--	217
Fresh vegetables, incl. onions and potatoes.....	--	(5)	--	111	--	172	--	229	--	192	--	297
Sesameseed.....	(4)	(4)	1,947	154	1,237	138	855	105	500	40	835	94
Zacatan root.....	474	47	306	58	333	67	395	139	454	124	345	97
Legumes.....	33	1	231	15	873	52	190	17	62	5	56	5
Cattle hides.....	(6)	91	(6)	84	(6)	47	(6)	17	(6)	(6)	(6)	(1)
Total value, listed products.....		15,234		83,362		92,486		93,284		110,329		100,850
Share (%) in total value of exports...		84.2		93.8		96.4		94.5		94.9		92.7

[1] Less than $500.
[2] Not separately shown.
[3] 6,335,141 stems of about 50 pounds each in 1954; 5,298,398 in 1955; 5,237,136 in 1956; 5,720,900 in 1957.
[4] Not commercially produced.
[5] Insignificant.
[6] Not available.

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TABLE 13.--Principal agricultural imports, Guatemala, 1937-39 average and 1953-57

Product	Average 1937-39		1953		1954		1955		1956		1957	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars
Wheat	7	(1)	8,194	336	11,365	402	17,584	551	37,529	1,109	55,813	1,788
Wheat flour	21,023	463	48,204	2,559	61,837	3,252	67,273	3,357	41,442	2,075	39,376	1,909
Lard	655	55	7,714	914	10,829	1,897	13,089	1,703	12,873	1,524	11,157	1,541
Processed milk	--	42	--	1,258	--	1,286	--	1,595	--	1,314	--	1,447
Leaf tobacco	75	31	712	559	708	593	586	436	761	604	701	589
Industrial tallow	1,021	39	7,630	434	7,143	501	5,690	412	8,364	622	8,451	662
Live cattle	[2] 6,857	43	[1] 40,253	419	[2] 32,214	453	[1] 34,187	486	[2] 52,210	656	[2] 36,130	721
Vegetable oils	--	108	--	169	--	335	--	110	--	84	--	238
Fresh eggs	(1)	(1)	988	186	981	258	1,598	357	1,598	322	3,642	725
Malt & germinated grains unspec	1,071	38	3,593	244	3,113	194	3,377	202	4,202	226	4,149	237
Condiments		22		129		164		151		173	--	205
Rice, rough or polished	93	2	13	7	1,642	134	3,258	221	3,578	192	8,269	535
Margarine	2	(1)	540	120	474	104	452	99	668	152	841	185
Bacon and ham	57	14	123	77	141	93	168	94	212	118	259	141
Grapes, fresh	203	11	877	101	622	78	772	82	1,144	123	1,071	153
Fruit, dried	165	12	355	67	344	66	364	70	390	77	405	77
Cheese	77	16	150	67	123	53	260	161	284	103	310	115
Butter	88	9	7	4	7	4	27	14	40	19	41	17
Fresh meat, chilled or processed	18	2	7	1	9	2	7	2	18	7	30	22
Grain residues, etc., for feed	765	10	95	3	22	1	33	2	564	16	121	4
Corn	4,855	68	4	1	4	(1)	[3] 59,108	[3] 1,805	41,288	1,427	56	6
Cotton fibers	1,378	139	0	0	0	0	(1)	(1)	(1)	(1)	(1)	(1)
Total value of products listed		1,124		7,635		9,870		11,910		10,953		11,317
Share (%) in total value of imports		5.5		9.6		11.4		11.4		8.0		7.7

[1] Insignificant.
[2] Number.
[3] Does not include 72,264,583 pounds valued at $2,331,980 from U. S. under P.L. 480.

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TABLE 14.--Food balance, Guatemala, consumption year 1954-55

Product	Supply			Utilization			
	Production[1]	Net trade[2]	Total	Nonfood	Total	Per capita	
	1,000 short tons	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*1,000 short tons*	*Lb. per year*	*Calories per day*
Cereals:							
Corn	476.9	+29.8	506.7	72.1	434.6	271.6	1,215
Wheat	20.3	+55.1	75.4	12.1	63.3	40.0	181
Rice (milled)	7.1	+1.7	8.8	0.9	7.9	4.9	22
Total cereals							1,418
Pulses	[3] 55.1	([4])	55.1	5.5	49.6	31.0	133
Vegetables:							
Root crops	[5] 19.8	([4])	19.8	4.0	15.8	9.9	12
Other vegetables	77.2	([4])	77.2	11.0	66.2	41.4	31
Total							43
Fruit:							
Bananas	275.6	-132.3	143.3	16.5	126.8	79.3	66
Plantains	70.5	([4])	70.5	4.4	66.1	41.3	39
Other fruit	45.0	([4])	45.0	4.4	40.6	25.4	13
Total							118
Sugar:							
Refined	52.8	([4])	52.8		52.8	33.0	159
Panela	55.0	([4])	55.0	5.5	49.5	30.9	135
Total							294
Cacao	.3	-.2	.1		.1	.063	1
Vegetable oils:							
Corozo (palm)	.6	([4])	.6		.6)		
Sesame	1.0	-.3	.7		.7)		
Cottonseed	3.2	-1.0	2.2	.2	2.0)	2.3	24
Other vegetable oils	.2	+.2	.4		.4)		
Animal fats:							
Butter	.8	([4])	.8		.8	.5)	
Lard	8.8	+6.5	15.3		15.3	9.6)	109
Tallow	3.5	+2.9	6.4	5.7	.7	.4)	
Meat and fish:							
Beef	38.8	0	38.8		38.8	24.3	75
Pork	11.9	+0.1	12.0		12.0	7.5	39
Mutton and goat	5.0	+0.1	5.1		5.1	3.2	9
Poultry	5.5	0	5.5		5.5	3.4	5
Fish	.8	+1.4	2.2		2.2	1.4	([4])
Total meat and fish							128
Milk	[6] 165.3	+24.3	189.6	11.0	178.6	111.6	83
Eggs	5.5	([4])	5.5		5.5	3.4	20
Total Consumption.							2,371

Note - Based on population of 3,200,000, January 1955. [1] Crop year 1954-55. [2] + imports; - exports. Calendar year 1955. [3] Adjusted for incompleteness. [4] Insignificant. [5] Estimated; includes potatoes, sweetpotatoes, and yuca. [6] Raised 55,000 tons above officially reported estimate, for incompleteness.

OUTLOOK

There are indications that the several steps being taken will eventually bring about considerable expansion in agriculture. The new highway program will help open up and bring into production additional lands. It has been slow to develop partly because the mountainous terrain makes transportation difficult and expensive. The people cling to the Central Highlands because of the equable climate and are reluctant to settle in the more potentially productive areas. Also, the prevalence of tropical diseases in the more accessible productive regions has retarted agricultural expansion.

Production might well increase when national farms are returned to private ownership. In addition, the idle-lands tax may encourage plantation owners to put large holdings into production or sell to those who will do so. The Rural Development Program is also placing some of the landless on farms large enough to provide a living for the family, and it makes supervised loans to farmers. If the national farms and other idle lands are to be distributed to the landless and brought into production, more long-term credit will be needed.

Integrating Indians into the general economy should increase farm production too, especially since they make up about half of the population. Some progress is being made by SFEI (Service for Promoting the Indian Economy. At present, they maintain their own cultural patterns and mix little with the rest of the population. Also, many of them work only parttime.