

ERS For 268

ECONOMIC RESEARCH
SERVICE REFERENCE
CENTER

FILE COPY ONLY
Do Not Remove
FD CD - - ERS

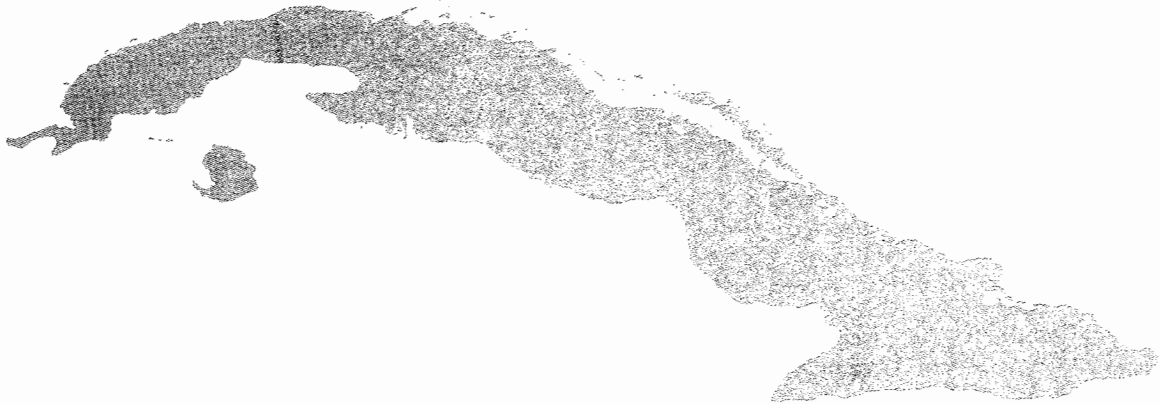
JAN 20 1969

RECEIVED

A SURVEY OF

AGRICULTURE

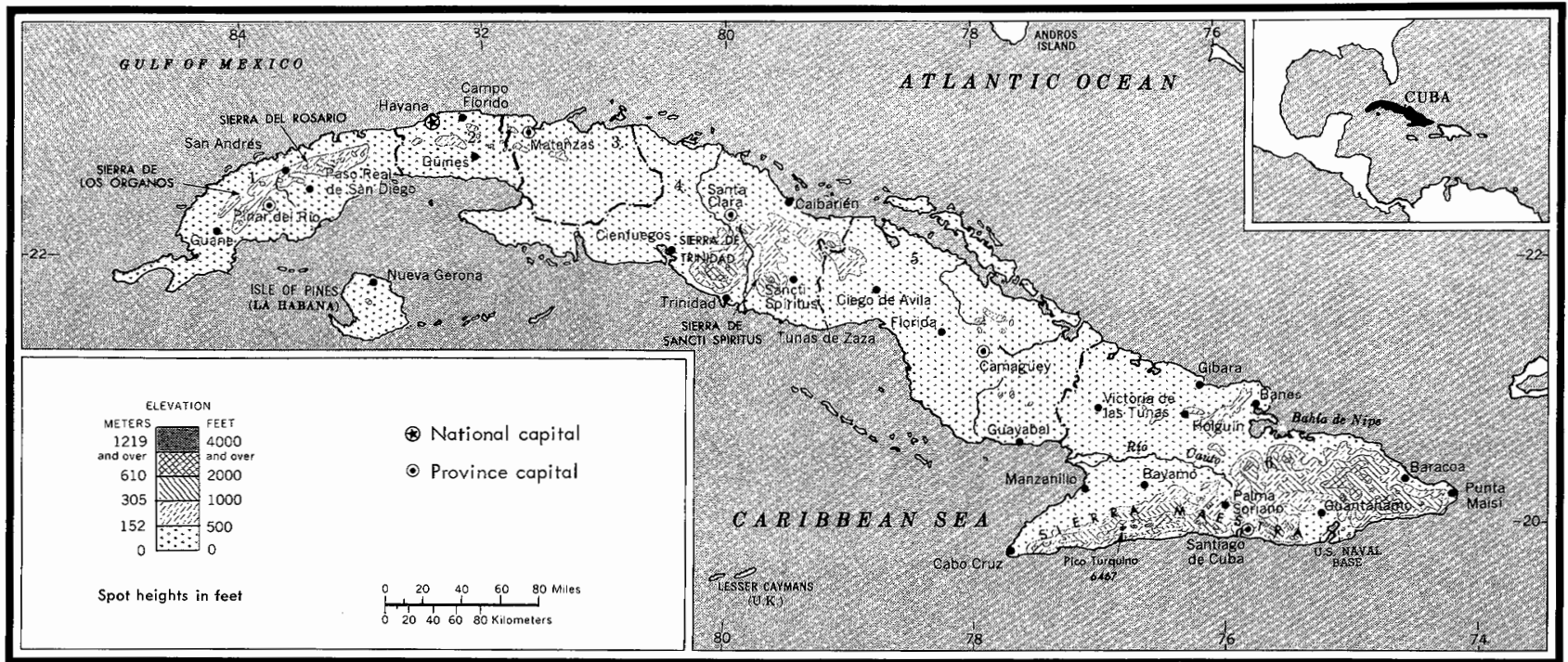
IN



CUBA



**U.S. DEPARTMENT OF AGRICULTURE
ECONOMIC RESEARCH SERVICE
FOREIGN REGIONAL ANALYSIS DIVISION**



PREFACE

Developments in Cuban agriculture are of continuing interest to the United States, although there has been an embargo on U.S. trade with Cuba since 1962.

Good descriptive and historical material is available on Cuba, but statistical data were spotty even before 1959. Although data on production of commercial crops (particularly sugar and tobacco) and on trade were adequate, data on subsistence crops were much less satisfactory. Statistical and other information available on Cuban agriculture and trade since the Revolution is fragmentary, but gives some indication of trends. Much of the descriptive and analytical material reflects the point of view of the observer, and is not likely to be entirely objective. The principal sources used for this study are listed in the Selected References.

Area units used in this report are expressed in hectares (2.471 acres) and square kilometers (0.386 square mile); length is in meters (39.37 inches) and kilometers (0.6214 mile). Tons are metric tons (2,204.6 pounds). Values are in U.S. dollars unless otherwise indicated.

CONTENTS

	<u>Page</u>
Summary	v
Background factors.	1
Physical environment	2
Historical relationships.	4
Nature of the Cuban economy	5
People and labor supply.	6
Organization of agriculture	7
Land use and types of farms.	7
Size and tenure of holdings.	8
Land reform	9
Farm practices	10
Mechanization	10
Irrigation	11
Fertilizers and pesticides	11
Agricultural policies and institutions	12
Internal policies.	12
Foreign policies.	14
Agricultural production and trade	15
Crops.	15
Livestock and livestock products.	22
Foreign trade	24
Agricultural prospects	28
Selected references	29

SUMMARY

Problems in the overall economy, together with inefficient and scarce farm labor, pushed Cuba's 1968 per capita farm output about 35 percent under the 1959 mark. Meat and dairy supplies fell short of pre-Revolutionary levels, and food imports continued to be required to sustain an acceptable caloric diet for the island's 7.6 million people.

Cuba has the potential for a greatly expanded agricultural output, however, and the long-run prospects for increased production are good, given time and outside financial and technical assistance. In terms of natural resources, Cuba is well suited to the development of a wide variety of crop and livestock products. Sugarcane, the most important crop, occupies by far the largest part of the cultivated land, furnishes the major share of the farm income, and supplies the principal export. Corn, rice, beans, and tubers are the major crops produced for domestic consumption. Tobacco is the second agricultural export in terms of value. Fruits and vegetables (both canned and fresh), exported in considerable quantities before the Revolution, again entered the export market in 1966 and 1967. Coffee was formerly the third agricultural export, but has not been important recently. Cuba imports all of its wheat and flour requirements, as well as a significant part of the rice, fats and oils, and dairy products consumed in the country.

The Revolutionary Government that assumed power in January 1959 has completely changed the institutional structure of the Cuban economy. All components of the economy--agriculture, industry, services, commerce--are controlled by the state, and they are mostly state owned and operated as well. Confiscation, expropriation, and purchase have converted from 65 percent to 85 percent of the agricultural land into state farms; the remaining land is in private holdings of 67 hectares or less, operated under direction of state-controlled agencies.

Sugarcane grows throughout the island, but the plains of the eastern provinces furnish the bulk of the crop; they also supply the pasture for most of the cattle. Tobacco, on the other hand, is concentrated in the central and western parts of the island. The older coffee-

and cocoa-growing regions have been in the foothills of the mountains of eastern Cuba. Traditionally, sugarcane was grown on both large and small holdings under an extensive system of cultivation, with relatively little application of fertilizer or use of irrigation facilities. Since the Revolution, the state has maintained the sugar estates and cattle ranches in large blocks and has operated them as state farms. Production of tobacco, coffee, and cocoa are, for the most part, small farm enterprises, whereas food crops are grown on both the state farms and small private holdings.

Government policy goals are for increased output of both crops and livestock, and a production goal of 10 million tons of raw sugar has been set for 1970, compared with slightly over 5 million tons produced from the 1968 harvest. The planned expansion in production is being hampered by a variety of problems, one of which is the inefficiency and scarcity of farm labor, especially for the sugar harvest. "Volunteers" from the city, the military, and the schools are being sent to the fields; and efforts are being made to develop machinery that can be used in planting and harvesting cane, tasks traditionally performed by hand labor. Expansion of irrigation and drainage facilities, construction of fertilizer plants, training of technicians and agricultural specialists, expansion of research and extension services, and provision of farm credit are all included in the far-reaching plans. Government planning extends not only to overall goals and programs but to all details of agricultural operation. This makes for delay and confusion.

Not only has Cuba's internal economy changed radically during the past 9 years, but its foreign markets and suppliers have shifted also. Formerly, the United States was the principal market for Cuban exports and the major source of its imports; and Cuba was a good market for U.S. agricultural exports, as well as an important supplier of sugar and tobacco to the U.S. market. All this has changed. The USSR and other Communist countries now take the major part of Cuba's sugar and supply a large share of the needed imports. Non-Communist countries, however, are increasing their trade with Cuba.

A SURVEY OF AGRICULTURE IN CUBA

By Kathryn H. Wylie
Foreign Regional Analysis Division
Economic Research Service

BACKGROUND FACTORS

The island of Cuba lies just 90 miles (145 kilometers) south of Key West, Fla., and is the closest noncontiguous Latin American neighbor of the United States. From the time of Cuba's independence in 1898 through the decade of the 1950's, Cuba and the United States had close economic and social ties. In agricultural trade particularly, the two countries were mutually benefited by the flow of goods in both

directions. U.S. agricultural imports from Cuba in 1955-59 averaged \$405 million, making Cuba second only to Brazil as a Latin American supplier of farm products (fig. 1). During the same period, U.S. exports of agricultural products to Cuba averaged \$131 million, placing Cuba first as a Latin American market (and second only to Canada as a Western Hemisphere market) for U.S. farm products.

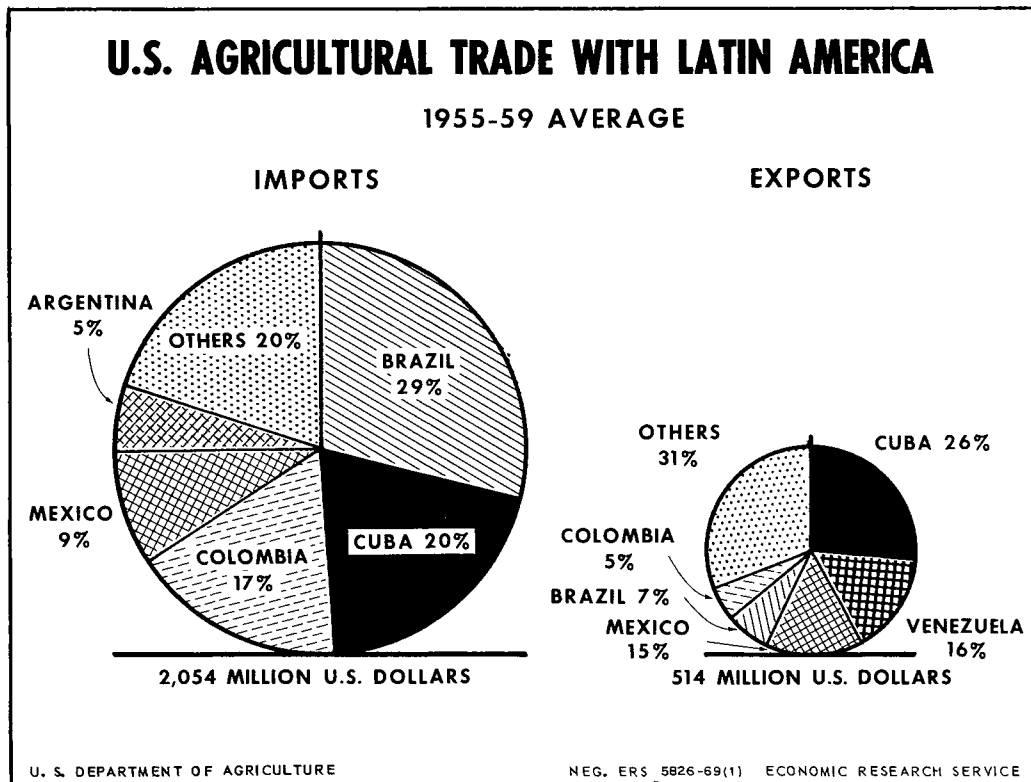


Figure 1

In 1958, the United States supplied about 70 percent of Cuba's total imports in terms of value (86 percent of its agricultural imports), and took 67 percent of Cuba's total exports (88 percent of its agricultural exports) (fig. 2). Revolutionary activity in Cuba brought about political changes in January 1959, and a Revolutionary Government, led by Fidel Castro, came into power. Immediate steps were taken to transform Cuba into a state-controlled economy. Trade relationships changed drastically in the 1960's, as trade between Cuba and the United States fell to zero and Cuba's principal trading partners became the USSR and other Communist countries. In 1966, the latter provided 76 percent of Cuba's total imports in terms of value and took 77 percent of the total exports.

Agriculture remains the principal source of Cuba's income, and farm products continue to account for about nine-tenths of total export value; more than half the people depend on agriculture for their living. The country's equable climate and the fertile soil in its numerous wide valleys and plains provide excellent conditions for agricultural development. Sugar is by far the most important product, accounting for the major part of export value.

Physical Environment

Cuba is the largest island in the West Indies. Including the Isle of Pines and adjacent keys, it has a land area of 114,524 square kilometers, with about 3,200 kilometers of coastline. It is roughly the size of Louisiana, but its population of 7.6 million is about twice as large.¹ The island is long and narrow, varying in width from about 32 to 200 kilometers, and is divided into six provinces. Oriente, the most easterly province, is the largest.

¹ Population figure from Foreign Demographic Analysis Division, U.S. Bureau of the Census. Cuban and United Nations sources estimate the population at 8 million.

	<u>Sq. km.</u>
Oriente.....	36,602
Camagüey.....	26,345
Las Villas.....	21,412
Mantanzas.....	8,443
La Habana (including Isle of Pines) ..	8,220
Pinar del Río.....	<u>13,502</u>
Total.....	114,524

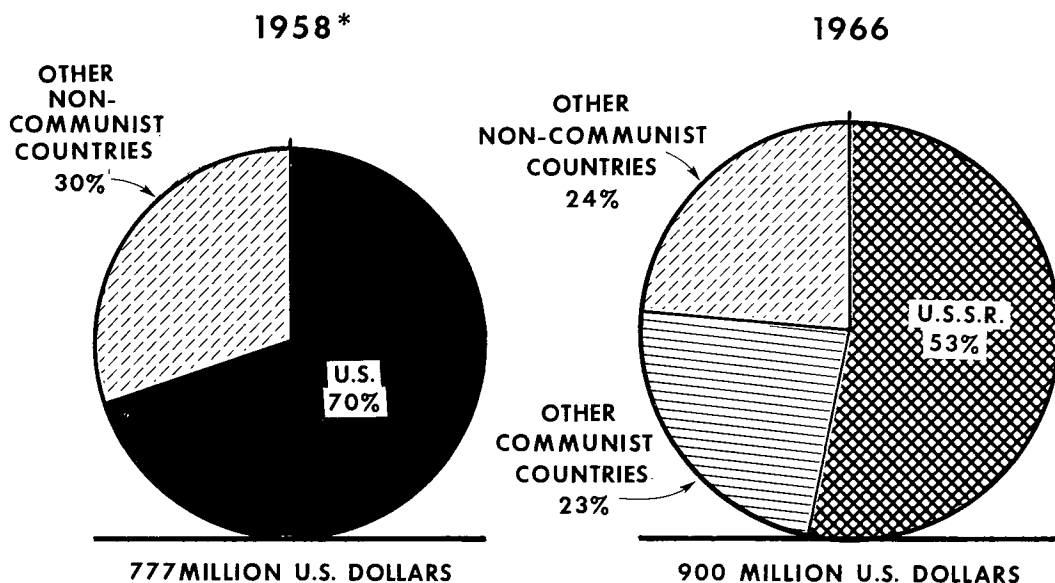
Topography--The topography of Cuba varies from the extensive swamps of the Ciénaga de Zapata in southwestern Las Villas to the rugged mountain mass of the Sierra Maestra in southern Oriente. The Sierra Maestra range is the highest in the island; in places the mountains appear to rise sharply from the shore. This range contains Cuba's highest peak, Pico Turquino, which is 1,994 meters above sea level. Mountains extend into eastern Oriente, but are generally of lower elevation than the Sierra Maestra. There are two other mountainous regions: one is in Las Villas in central Cuba; the other parallels the northern coast of Pinar del Río in western Cuba.

Mangrove swamps and marshes cover some of Cuba's north coast and extensive sections of the south coast. The greater part of the island's land area lies between the swamps and the rugged hills, and consists of gently rolling plains and low hills bisected by rivers and streams. The rivers are generally short; the longest, the Río Cauto in eastern Cuba, flows west for 320 kilometers to the Caribbean Sea. Rivers flowing south to the Caribbean are somewhat longer than those flowing north to the Gulf of Mexico or the Atlantic Ocean. Water volumes of the rivers and streams fluctuate widely, following the rainfall pattern.

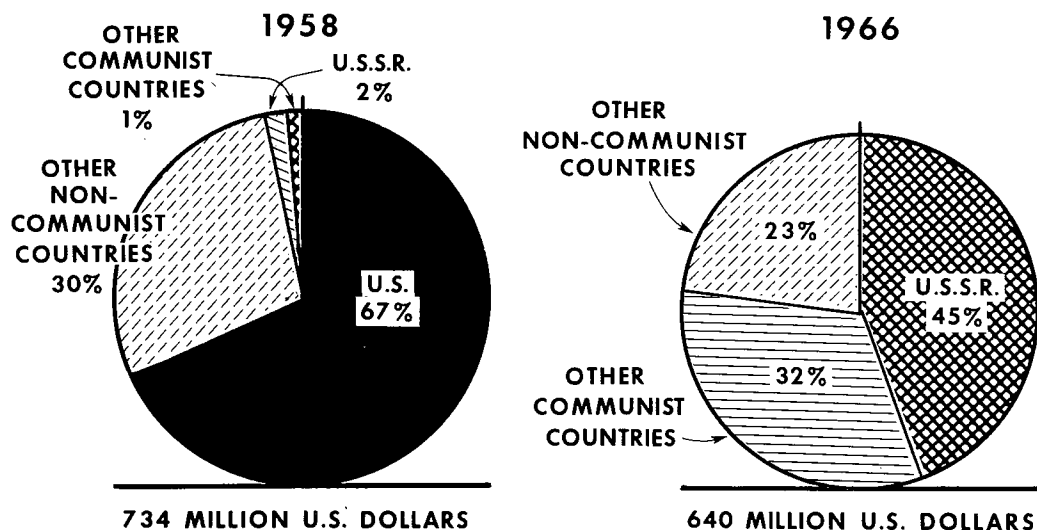
The Isle of Pines (or the Isle of Youth, as it is now being called by Cuban Government officials) is, for the most part, a flat to rolling plain, with a few scattered hills in the north and west-central part of the island. Marshes and swamps characterize the coastlines of this and other offshore islands.

TOTAL CUBAN TRADE

SOURCES OF IMPORTS



DESTINATION OF EXPORTS



* U.S.S.R. AND OTHER COMMUNIST COUNTRIES INSIGNIFICANT

Figure 2

Climate--Although Cuba is entirely within the Tropics, lying just south of the Tropic of Cancer, its temperatures are moderated by the prevailing trade winds that flow in an easterly direction across the island. Other cooling influences are the cold air masses from the nearby North American Continent. Annual average temperature is 75° F., varying little between the 70° average of winter and the 81° average of summer. The persistent trade winds also narrow the temperature spread between day and night.

Average annual rainfall for all of Cuba is 54 inches. Oriente Province has the least--about 40 inches a year. Rainfall increases toward the west. The western part of the Isle of Pines receives an average of about 70 inches. Most of the rain falls in the summer season from May through October, with peak periods in May and June and again in September and October. The rainfall pattern is erratic, however, and monthly precipitation may vary greatly from year to year and from place to place. Extreme drought is not uncommon, and torrential rains occur frequently.

Cuba is in the hurricane belt and severe disturbances, especially during August-October, sometimes inflict extensive damage to crops. Hurricane Flora in the fall of 1963 and Hurricane Inez in the fall of 1966, for example, ruined much sugarcane and coffee in Oriente and Camagüey Provinces, although the western provinces usually suffer more from hurricanes than do those on the eastern end of the island. Earthquakes, too, hit Cuba from time to time; few of them have been severe, but Santiago de Cuba has been seriously damaged five times.

Soils--The soils of Cuba are varied and sustain many types of vegetation. Of the eight soil groups, only three are not presently cultivable--the peat soils of the Isle of Pines and other offshore islands, the small areas of rockland, and the thin soils of the steep hills and mountains. The arable soils range from fertile, friable clays and sandy clays with excellent drainage to heavy, nonfriable clays that are difficult to cultivate. Color varies too--from red to brown, yellow, gray, and black. The deep red and brown clays are found primarily in central and western Cuba but there

are patches of the brown soils on the plains of Oriente. The tropical Brown Forest and Rendzina soils are the most fertile, in addition to being easy to work and well supplied with plant nutrients. The deep Red Latosols, although not as fertile, have a favorable structure and good drainage, and they respond well to application of fertilizers.

The Latosolic soils, which are similar to Red Latosols but lack their desirable friability, vary in color from brown to red to yellow. The brown and red soils occur chiefly in central and eastern Cuba and in low-lying areas along the north coast. Red and yellow soils are found together in western Cuba, where they are characterized by sandy or clayey surfaces.

The ground-water Laterites and Planosols are found on the coastal plain in the west and in savanna areas in central Cuba. In western Cuba, where surface drainage is poor, these soils are in palm groves or pasture; in central Cuba, they produce fair yields of sugarcane if fertilized. The Grumusols in the low coastal plains and interior valleys of middle and eastern Cuba are clay soils, high in plant nutrients but difficult to work in either wet or dry weather. On drying, these soils bake and crack deeply. The better drained areas produce high yields of sugarcane; the poorly drained ones could be improved by ditching.

Historical Relationships

As a result of the Spanish-American War, Cuba obtained its independence from Spain in 1898 and completed arrangements for an autonomous government in 1902. In the latter year, Cuba and the United States negotiated a Treaty of Commercial Reciprocity that fostered strong economic and trade ties between the two countries and attracted large U.S. investments in Cuba. In 1903, Cuba ceded to the United States small territories at Guantánamo Bay, where a naval base is still maintained. Despite a growing spirit of nationalism in Cuba and several points of friction between the two countries over the years, the United States and Cuba maintained close political and economic relations through the 1950's. This situation was strengthened by a new reciprocity treaty in 1934 that provided for tariff reductions. Many

Americans also sold their land to Cubans during the depression, thereby reducing the claim of some Cubans that U.S. citizens were removing profits that had been made within the country.

Political, economic, and social problems continued to plague the country through the late 1930's, although sugar production was regulated and some diversification was encouraged. World War II brought emergency legislation and economic and political controls, but the economy benefited from wartime expansion in the sugar industry. The 1950's were relatively prosperous, but living conditions were poor for the low-income classes. The first revolt against the Government, led by Fidel Castro, came in 1952. Although this rebellion and another in 1956 were quelled, the Government was overthrown by the Revolutionary forces, also led by Fidel Castro, in January 1959 (10).²

During the 2 years following the advent of the Castro regime, relations between Cuba and the United States underwent a marked deterioration as Cuba oriented its political philosophy of government, as well as its economy, more and more toward the Communist world. During 1960, Cuba cut its imports from the United States and sought supply sources from Communist countries. In October of that year, the United States began to require export licenses for many commodities shipped to Cuba, and in 1961, restrictions on exports to Cuba were increased. The United States cut Cuba's sugar quota for 1960 and set it at zero for 1961 and following years. A majority of the Western Hemisphere Republics voted in January 1962 to exclude Cuba from the inter-American system. In accord with this decision, the United States imposed an embargo on U.S.-Cuban trade, effective February 7, 1962. Cuba thus entered into an era of strained political relationships with the remaining members of the Organization of American States. Many non-Communist countries, in both the Western Hemisphere and other parts of the world, however, have continued to trade with Cuba and to assist the economy by means of loans and technical assistance.

² Underscored numbers in parentheses refer to items in the Selected References, p. 29.

Nature of the Cuban Economy

Cuba is predominantly an agricultural country. Agriculture, including sugar milling, accounts for from 30 to 50 percent of the gross domestic product and furnishes about 90 percent of the value of exports. Although less than half the population lives in rural areas, more than half depends on agriculture for a livelihood, if processing of agricultural products is taken into account. Since the beginning of World War I, sugar has been the mainstay of Cuba's economy; it is still the principal product and the most important export.

The sugar economy has had its effect on all other phases of Cuban life. By 1958, the transportation system provided rail and highway access into almost every part of the country. The central highway extended from Pinar del Río in the west to Santiago de Cuba in the east; secondary as well as farm-to-market roads penetrated into the interior, and the railway network, two-thirds of which was owned by the sugar mills, covered a good part of the island. These facilities were provided largely for the movement of the sugar crop--from field to mill and from mill to domestic markets and export ports.

The drastic and sudden shift in patterns of ownership, management, and operation of the economy since 1959 has created many problems, as well as opportunities for long-term improvement. Rail and truck transportation has deteriorated since 1962. Disruption of the former trade patterns and development of new trading partners have cut off supplies of repair parts for U.S.-manufactured machinery, as well as for planting materials. By mid-1964, an estimated 350,000 Cubans, partly from the high-income, well-educated class, had emigrated, taking with them much of the nation's industrial and agricultural know-how, and emigration is continuing. Centralized planning of all economic activities resulted in confusion, as numerous changes were made in overall goals as well as in the direction of detailed operation.

On the other hand, educational opportunities offered to the low-income groups may eventually produce a more literate, better trained working force capable of expanding

agricultural and industrial output. New machinery is being developed to benefit agriculture; the Government is constructing new roads and repairing existing transportation facilities; and irrigation and drainage works are under construction that will permit better seasonal distribution of the water supply.

People and Labor Supply

More than one-fourth of Cuba's 7.6 million people are concentrated in and around the capital city; in the entire province of La Habana only 11 percent of the population is classed as rural. Although the percentage of rural population dropped from 48.6 to 42.3 percent from the 1953 census until 1965, reports by the United Nations indicate a reversal of this trend as a result of Government pressure to increase agricultural production.

Number of workers--Before 1959, the supply of agricultural labor was adequate for the level of output and, in fact, workers were underemployed during the so-called "dead" season between sugar harvests. There were 818,700 workers employed in agriculture in 1953, according to the census; in 1957, there were an estimated 855,000 workers; and the number of agricultural workers used by the Central Planning Board (Junta Central de Planificación, or JUCEPLAN), as a basis for its 1962-65 plan, was 915,000. The current number of agricultural workers is not known, but a survey conducted in 1968 by the Cuban Government should supply information not only on number of workers but on their distribution throughout the country.

Farm labor shortages have developed, however, and the Government has encouraged "voluntary" workers to go to the fields for specified periods, especially at harvesttime. Compulsory military service and an increasing number of farm boys entering technical schools have taken workers from the fields. Since 1961, field labor and canecutters have been in short supply. City people are being recruited to work in the canefields at night and on weekends on a voluntary, unpaid basis, after working their full week at regular jobs. "Voluntary" labor is being organized into battalions and brigades to be sent to the fields in groups, not only from among the city workers but from the secondary schools

and universities, from the militia, and lately even from the fifth and sixth grades of elementary school. Prisoners jailed for political offenses are also being trained in agriculture. The leaders of these battalions and brigades include a member of the party organization and a political commissar, and the Union of Young Communists is incorporating many youths into agricultural work brigades. An estimated 150,000 women have been added to the labor force since the Revolution, many of them in agriculture. Women make up an estimated 70 percent of the poultry industry's work force; they are also employed in a variety of other occupations, including cane cutting, coffee picking, and other harvesting chores, and as tractor and irrigation pump operators (1).

The use of "voluntary" labor points up the disruption in agricultural operations that has followed the abrupt change in the institutional structure of Cuba. Even though the absolute number of people working at agricultural tasks may well be above the pre-Revolutionary totals, there is obviously a sharp decline in overall efficiency of labor from the 1958 level.

Working and living conditions--Although labor in Cuba achieved numerous rights and privileges before 1959, working and living conditions in the rural areas were primitive for many farmworkers. A sharp stratification of society existed, characteristic of a system of one-crop plantation agriculture. The ruling class in the cities enjoyed a high standard of living; most of the laborers and peasants in the rural areas lived at near-subsistence levels, with little hope of improvement, and a slowly growing middle class struggled for economic and social progress. Leaders of the Revolution promised and still promise to give benefits to those in the lowest economic class, at the expense of those in the upper economic and social stratum.

The Government has exercised increasing control over the labor force since 1959, and certain rights of labor, guaranteed by the 1940 Constitution and various laws and agreements, have been abrogated or undermined. These include: freedom of contract, a maximum workday, nonpaid leisure time during lunch breaks and night rest, paid leisure time on a

weekly basis and for holidays, summer days off, and annual vacations. The state, for all practical purposes, now controls all sources of work; the laborer cannot freely choose the kind of work he will do--he cannot abandon one job to seek a better one because he would forfeit his position within the group in which he is registered. Wages, promotions, and transfers between jobs are controlled by the state. The worker must have an identity card as a requisite for any type of work and must carry it with him at all times. Indirect control is also employed through the use of residency and food cards, which are valid only in an assigned locality (24).

Levels of living for those who actually work the land may show some improvement over previous years. Wages, although low, are paid regularly throughout the year. Observers report that in the rural zones thatched mud huts are slowly giving way to small concrete houses. Health clinics, child care centers, laundry facilities, and improved roads are being provided on some state farms. Schools on these farms are helping to reduce the hard core of illiteracy among farmworkers, and

traveling musical and theatrical groups occasionally perform there. Government studies show that there are five times as many students in agriculture at the university and university-preparatory level as there were a decade ago. During the past 3 years agricultural technical schools have graduated 500 specialists (17).

Food shortages began to appear in Cuba shortly after the Revolution, as production declined and supplies from the United States were cut off. Imports of commodities from other suppliers apparently are now sufficient to provide a reasonably adequate diet in terms of energy value. Cereals, sugar, and fats, however, provide two-thirds of the total calories. The decrease in meat and milk supplies is reflected in a decline in the consumption of animal protein. Food rationing began in July 1961 for fats, followed soon after by rationing of red meat and other products. Items on the list shift from time to time and the quantities change as supplies vary; in early January 1969, sugar was added to the ration list, leaving salt as the only unrationed food item at that time.

ORGANIZATION OF AGRICULTURE

Traditionally, Cuban agriculture has been organized on an extensive rather than an intensive basis. An ample supply of good soil, a long growing season, and a sufficient labor supply have made it more profitable to expand onto new land than to incur the expense of using commercial fertilizer and mechanized equipment to increase returns from older land. From the end of World War II until the Revolution, however, some progress was made in irrigation, farm mechanization, fertilization, seed improvement, and disease control. Progress varied from one crop to another, from one operation to another for the same crop, and between small-size holdings and large, estate-type operations. In the sugarcane industry, for example, preparation of the soil was fully mechanized, whereas weeding and harvesting were performed by hand at the insistence of the labor unions. Airplanes were used for crop

dusting, but primitive procedures were still used by many producers of coffee and cocoa beans.

The Government has taken over control of practically all farming activities since 1959. It has introduced new types of machinery in the canefields, and has undertaken to develop irrigation facilities, increase the use of fertilizer, and seek new strains of planting materials. These efforts have not yet resulted in greatly improved yields or more efficient practices, and extensive farming is still the rule in most of Cuba's agriculture.

Land Use and Types of Farms

Approximately two-thirds of Cuban land is arable, and adequate area is available to increase the output of agricultural products.

Although quantitative measurement of land use in Cuba is difficult, particularly since 1959, available information indicates that there has been an increase in cropland at the expense of pasture over the past 20 to 25 years (table 1). The 1958/59 harvested area (before the Revolutionary Government policies affected the pattern of agriculture) was estimated at about 20 percent above the 1945 area. As a result of new policies of agrarian reform, a shifting of

sugarcane area to food crops, an exodus from Cuba of trained technical workers, and a general disruption in the continuity of agricultural operations, there was a reduction in total cultivated area during the first years of the Castro regime and a sharp decline in farm output. Reassessment of production plans and correction of previous errors have reversed the downward trend, and the cultivated area in 1965 showed a substantial increase.

Table 1.--Cuba: Land use, 1945, 1955, and 1965

Type of use	1945		1955		1965	
	Area	Percentage of total	Area	Percentage of total	Area	Percentage of total
	1,000 ha.	Pct.	1,000 ha.	Pct.	1,000 ha.	Pct.
Cropland.	1,970	17.2	2,315	20.2	2,819	24.6
Pasture	3,897	34.0	3,557	31.1	2,854	24.9
Forests	1,266	11.1	1,145	10.0	1,129	9.9
Other ¹	4,319	37.7	4,435	38.7	4,650	40.6
Total land area .	11,452	100.0	11,452	100.0	11,452	100.0

¹Includes 268,000 hectares of marabú in 1945 and 328,000 hectares in 1955; includes 300,000 hectares of marabú and scrub forest in 1965.

Sources: Data for 1945, (12); data for 1955 from a survey by the Agricultural and Industrial Development Bank; data for 1965, from unpublished estimates.

Size and Tenure of Holdings

Before January 1959, there was a marked concentration of landownership in Cuba. Although some effort had been made to break up large estates and provide benefits for the small renter and sharecropper, the results were minimal. Today, despite the Revolution's avowed aim of breaking up large holdings, landownership is still concentrated--but in the hands of the state. Current estimates of state ownership are not exact and vary from source to source, ranging from 65 to 85 percent of total farmland. An official report to the Food and Agriculture Organization of the United Nations showed that 65 percent of farmland in January 1966 was owned by the state (1):

	1,000 hectares	Percent
State-owned farms.....	4,816.5	65
Privately owned farms	2,600.0	35
Total farm area	7,416.5	100

The 1945 census figure for "land in farms" was 9.1 million hectares; it is not known whether the 7.4 million hectares called "total farm area" in the 1966 report is comparable. The state farms are said to range in size from 4,000 to 40,000 hectares each.

In 1965, it was reported that there were 200,000 privately owned units of production, ranging downward in size from 67 hectares

each. Since that time, the state has purchased or confiscated additional farms. Some authors believe that the number of private farmers does not exceed 150,000 to 160,000 and that these farmers cultivate only 15 percent of the tilled area (18). An estimated 40,000 farms are so small that they produce only for the farm family with no surplus for sale.

The private sector provided 36 percent of the total value of products purchased by the state from the procurement centers in 1965. The percentage varied, by commodity, from 20 percent of total meat production to 95 percent of the cocoa beans (1). Since 1965, these percentages have been diminishing because of increasing crop and livestock production by the state.

Land Reform

During the decade of the 1940's, there was some Government effort to break up the large estates, and a Presidential decree of April 1947 appropriated five estates and divided the land among the farmers living on them. A land-lease and sharecropping law, passed in the following year, aimed at protecting the rights of renters and sharecroppers by requiring written agreements between the renters and the owners (26). Fundamentally, however, little change in ownership patterns had occurred from the time of the 1945 census through 1958. The Government that took office in January 1959 changed this situation radically. Landholdings of persons directly associated with the former Government were confiscated almost immediately. The first Agrarian Reform Law (published in the Cuban Official Gazette of June 3, 1959) provided for expropriation and socialization of large estates, prohibited ownership of land by foreign nationals, and established a National Agrarian Reform Institute (Instituto Nacional de Reforma Agraria, or INRA) to handle all matters pertaining to land reform and agricultural production, credit, and trade.

This first law placed a limit of 30 caballerías (1 caballería = 13.4 hectares or 33.2 acres) on the land that any person or body corporate could own unless certain production norms were met, in which case the limit was

100 caballerías. Government-owned land, obtained through expropriation or otherwise, was subject to distribution to landless farmers and farmworkers. The law also provided that INRA should organize so-called cooperatives on the expropriated estates to insure optimum development. Although land was apparently distributed to more than 100,000 former sharecroppers, squatters, and tenant farmers, INRA followed a policy of keeping most of the large estates intact as operating units (25).

Cooperatives were the first type of state-managed organization set up on expropriated estates. Most of them were sugarcane cooperatives, although some specialized in the production of henequen, rice, potatoes, tomatoes, and tobacco. The second type of organization was the "peoples' farm" (granja del pueblo). The first of these farms were, for the most part, former large cattle ranches and rice plantations. The sugar cooperatives and others were reportedly transformed into peoples' farms in 1962; these in turn are now known as state farms (granjas estatales). As late as 1966, however, 215 joint or cooperative cattle-raising and farming cooperatives were reported, totaling 30,000 hectares and employing 2,600 farmworkers (2).

The law provided that compensation for expropriated lands was to be made by means of state bonds earning 4½ percent interest annually, redeemable in 20 years in annual lots. The Government reports it had paid 5,550,000 pesos in bonds and 1,250,000 pesos in cash, up to April 1962.³ No payment has been made, however, to foreign nationals or to Cubans who fled the country, and it is not known how much is still owed to the Cuban nationals who remained.

A second basic reform law (Act No. 588 of October 3, 1963) further limited the size of private holdings, providing for the expropriation of holdings in excess of 5 caballerías (67 hectares) with the exception of a few "well farmed lands." These lands were promptly transformed into state farms. Cash compensation is apparently being paid for these lands,

³ The peso, traditionally worth US\$1.00, is still quoted at that rate by the Cuban Government, although its internal value has been eroded by inflation, and it is externally nonconvertible.

if they were actually being cultivated at the time of expropriation, at the rate of 10 pesos per month for each caballería up to a maximum of 250 pesos, such payment to be made over a 10-year period. Table 2 shows expropriations during October 1963 as reported by INRA (23).

Table 2.--Cuba: Farms expropriated during October 1963

Size of farm	Number of farms	Land area
<u>Caballerías</u>		<u>1,000 hectares</u>
5-10	6,062	608
10-20	3,105	610
20-30	1,456	508
Over 30	592	377
Total	11,215	2,103

A third major "land reform" is the development of a new type of collective farming unit. The San Andres Pilot Project in Pinar del Río was started in early 1967. More than 900 families have pooled their holdings to work them as a unit. They receive financial and technical assistance from the Government, and are promised roads, hospital facilities and medical care, new homes, laundry service, and child care centers. The children are home with their families only on weekends. In return for these services, the farmers must plant and cultivate the land as directed.

In addition to direct Government control and supervision over state farms and pilot projects, the Government also indirectly controls the production and policies of the private farm sector through price and marketing regulations, provision of credit and farm requisites, and nationalized processing of agricultural commodities (2 and 23).

FARM PRACTICES

Although large estate cultivation of sugarcane dominated the agriculture of Cuba from 1902 until the Revolution, many small farms were also devoted to raising sugar. On both large and small holdings, subsistence crop and livestock production were important segments of the farm operation. The large rice farms and livestock ranches devoted primarily to these specialized activities had their plots of subsistence crops, and truck farmers and those specializing in commercial fruit production also raised corn, beans, yucca, and other foods for the workers, tenants, and squatters living on the land. There was some rotation of crops, particularly on the sugar farms where pasture gave way to sugarcane, and subsistence crops were rotated from one year to another.

In the early years of the Revolutionary Government, emphasis was placed on crop diversification, and some sugarcane land was diverted to rice and other crops. The general confusion occasioned by abrupt shifts in policy brought about a chaotic agricultural situation and an overall reduction in farm output. The

Government has again changed its policy and is encouraging greatly expanded output of sugar, as well as an increase in output of other crops and of livestock products. Centralized state planning is the rule for all farm operations, including the designation of crops to be planted, new areas to be cleared, and farm practices to be employed.

Mechanization

Following World War II, farm machinery came into increasing use. Tractors, together with tractor-drawn plows and harrows, were widely used to clear and prepare the land for planting cane and to cultivate the larger canefields. More than half of the rice production was fully mechanized, and the rest was partly mechanized. Equipment on other than sugar and rice farms, however, usually consisted of an oxcart, a plow, a harrow, and hand tools.

Prior to 1959, Cuba produced little farm machinery but did assemble a few tractors imported from Europe. Most of the farm machinery was imported from the United States,

as were the trucks and other automotive equipment. Since 1959 it has been difficult, if not impossible, to obtain spare parts to maintain this equipment.

In the early 1960's, practically all farm machinery was imported from East European Communist countries, principally the USSR and Czechoslovakia. By 1963, there were an estimated 18,000 tractors in Cuba, compared with 14,200 in operation in 1956. Tractor imports reached nearly 5,700 units in 1967. During the past 2 or 3 years, imports have come not only from Eastern Europe but from Western Europe as well.

A combine to cut and load sugarcane has been introduced from the USSR; another model has been developed in Cuba. Difficulties have been experienced in using these machines, however, and only 2 percent of the sugarcane was harvested with combines in 1967. Improvements are being made in the machines, and experimental harvesting stations are being set up. Centers also are being established for hundreds of tractors, bulldozers, and other equipment to be operated by mechanized agricultural brigades. Extensive campaigns to get workers into the canefields for manual cane cutting during the 1968 sugar harvest, however, belie any large-scale use of combines or mechanical cutters for that harvest. Cane-loading machines, on the other hand, are proving themselves; an estimated 26 percent of the cane milled in 1965, and 44 percent of that milled in 1966, was loaded by machines.

Servicing of agricultural machinery in Cuba has been a problem, partly because of a lack of skilled workers, mechanics, and maintenance shops. Special courses have been organized to train operators for the tractors, lifts, combines, and other machinery. A network of farm workshops for maintenance of equipment is being organized throughout the island.

Irrigation

The area under irrigation in Cuba was relatively small before the Revolution, although about 60 percent of the rice was irrigated and part of the sugarcane, tobacco, potatoes, and truck crops received supple-

mental water. The National Institute of Hydraulic Resources (Instituto Nacional de Recursos Hidrológicos, or INRH) was founded in 1962 to conduct research and experimentation, supervise construction, and assist in training technicians for irrigation work. In July 1965, the Government reported a total irrigated area of over 493,000 hectares, with plans for a total of 2.7 million hectares (31). Facilities were not being utilized on an estimated 147,000 hectares. Irrigation was being supplied to 147,000 hectares of sugarcane, 70,000 hectares of pasture, and 60,000 hectares of vegetables. Other crops being irrigated included rice, fruit, and tobacco.

Construction has been completed or is nearing completion on more than 600 irrigation projects; more than 500 projects, covering approximately 296,000 hectares, are directly connected with agriculture (1). Work is going forward in southern Pinar del Río to halt periodic flooding of some 26,840 hectares of land to be used for raising livestock and for the production of starchy vegetables and rice.

Fertilizers and Pesticides

Cuba used 220,000 tons of chemical fertilizers in 1958, of which about 80 percent were imported. About 46 percent of the total supply was used for sugarcane and the remainder for seedbeds, fruits, and miscellaneous crops. Fertilizer applications per hectare of area planted, however, were far smaller for sugarcane than for other crops.

Reports indicate that availability of fertilizers increased during the 1960's. Imports, mostly from East European Communist countries, continue to supply the major part of these fertilizers. The plant nutrient content of fertilizers used in 1967 totaled 270,000 tons, of which about 90 percent were imported. Of the total consumed, nitrogen accounted for 105,000 tons, phosphate 90,000 tons, and potash 75,000 tons (3). In addition, 20,000 tons of ground rock phosphate were used for direct application.

Both the USSR and the United Kingdom are assisting Cuba in building fertilizer plants. The United Kingdom extended credit equivalent

to US\$45 million to help finance construction of a large plant in Cienfuegos, and in early 1968 sent engineers to assist in the construction. When completed in 1971, the plant will more than double Cuba's output of nitrogen.

The use of pesticides and fungicides to combat insects and plant diseases had become progressively more widespread prior to 1959. In 1958, imports of pesticides totaled 3,616 tons. Aerial application had also made notable advances. After 1959, there was a sharp decline in pest control, but recently the use of pesticides has increased; the Cuban Government reports that 1,200 tons of herbicides and 7,152 tons of pesticides were used in 1967 (1). The

Alexander Humboldt Institute of Tropical Research, established with the aid of East Germany, has been experimenting with pesticides to determine the most adequate formulas to be applied under Cuban conditions.

A serious agricultural pest is marabú, an extremely thorny, hardwood, leguminous perennial shrub that grows into almost impenetrable thickets about 12 feet high. This shrub covers thousands of hectares of potentially productive land. Marabú can be controlled by spraying with 2,4-D or 2,4,5-T, but this is an expensive and little used operation. Generally bulldozers are used to uproot it.

AGRICULTURAL POLICIES AND INSTITUTIONS

Cuban agricultural and commercial policy goals have been fairly consistent for several decades, but methods for achieving them have changed sharply and emphasis on one goal or another has shifted from time to time. These goals include the expansion of export markets, diversification of production, increase of food output to reduce the necessity to import, stabilization of prices of the principal export commodities, increased employment and higher wages, and improvement in the standard of living of the farm population.

Before 1959, the chief instruments used to achieve these objectives were production and export controls, particularly for sugar; participation in international organizations and adherence to international commodity agreements; tariffs; minimum prices to producers and price support or stabilization operations; and, during the 1950's, provision of farm credit. The Revolutionary Government has effected a complete change in the agrarian structure and has instituted state management and control of all agricultural production and trade in its effort to attain these goals.

Internal Policies

Planning and overall control of the Cuban economy under the present Government is ex-

ercised by the Central Planning Board (Junta Central de Planificación, or JUCEPLAN), established in 1960 and reorganized in 1965. This agency is in charge of long-range plans for future economic development, as well as those of medium and short duration. The Central Bank handles the financing and is responsible for the financial leadership of the economy. All other agencies that are concerned with agriculture, industry, and commerce must fit their plans and operations into the general plans of the JUCEPLAN and the Central Bank. Two general plans have been developed by JUCEPLAN for the economy: The first spanned the years 1962-65 and was revised drastically in 1963; the second covers the years 1966-70. The goals of the earlier plan were much too optimistic to be realized. The current goals also appear high; they include not only continued increases in sugar output, but also gains in output of food crops, fibers, tobacco, and livestock products. In addition, they call for a rural housing program to construct concrete houses for workers, particularly on the state farms.

The principal agency for developing the detailed plans for agriculture and for implementing these plans is INRA (see p. 9). In the early days of the Castro regime, INRA absorbed the Ministry of Agriculture as well as the commodity stabilization institutes and the

agricultural section of the Agricultural and Industrial Development Bank (Banco de Fomento Agrícola e Industrial, or BANFAIC). INRA has broad powers, and has been the most influential agency in directing agricultural development and change. It has been reorganized and the responsibility for different segments of agriculture has been shifted from time to time. Since 1965, the Government has experimented with different types of organizations. It has set up several enterprises (empresas) to integrate various economic activities within a given industry, such as that for tobacco, described on page 20.

There have been several shifts in emphasis and production goals over the past 9 years. During 1961, almost all the available cane was harvested, with no new planting, in preparation for putting not only new land but portions of the cane area into food crops, tobacco, cotton, coffee, and cacao trees. By 1963, however, the Government recognized the primary importance of sugar to the economy as a whole, and a reversal of emphasis sought to put land back into cane. During this phase, Communist China was relied on to supply rice, and production of this crop as well as other food crops suffered. During 1967 and 1968, efforts were made to increase the output of rice and other food crops.

Although information is scarce on price policies with respect to agriculture, the Government states that prices for crops are set prior to the preparation of the land for planting. Reports indicate, however, that in practice, prices are rarely published, and farmers complain that prices are low. A network of procurement centers and storage facilities has been set up throughout the country, and since 1963, specified percentages of agricultural output have been required to be sold to the procurement centers at prices established by INRA. This system gives INRA a virtual monopoly over marketing and distribution of agricultural commodities. The required percentages, or acopios, established in 1963 were: rice, 78 percent; corn, 64; millet, 85; beans, 76; citrus, 87; pineapple, 90; pork, 28; poultry, 82; milk, 22; and eggs, 40 (23).

Farm credit--BANFAIC, whose agricultural operations were absorbed by INRA shortly

after the Revolution, was set up in December 1950 to advance long-term credit to producers as well as production credit. By 1958, it accounted for about 29 percent of total credit supplied for crop and livestock operations. INRA now advances short- and medium-term credit both for the state farm operations and for privately owned farming from funds provided by the Central Bank.

Credit to small farmers may amount to as much as 80 percent of the estimated value of the crop. The annual rate of interest has not surpassed 4 percent, and mid-1967 interest was abolished on these loans. Seasonal credit far exceeded investment credit in 1965 and 1966 (table 3).

Table 3.--Cuba: Credit to small farmers, 1965 and 1966

Credit	1965	1966
Seasonal credit:	----- Million pesos -----	
Sugarcane...	21.5	21.8
Tobacco....	24.7	24.8
Coffee.....	17.2	22.2
Other.....	20.5	13.1
Total....	83.9	81.9
Investment credit:		
Sugarcane...	5.3	4.2
Other.....	9.0	10.9
Total....	14.3	15.1
Total credits...	98.2	97.0

Source: (1).

The distribution of supplies to the small farmers is carried out through a network of supply centers and stores. Supplies granted in 1965 to the private sector amounted to 35.3 million pesos, of which 53 percent were for seeds, livestock feed, and fertilizer.

Farm organizations--Aside from some commodity associations and farmworkers

unions, Cuba had few private farm organizations before 1959 and the cooperative movement was limited. Among the most successful governmental or semigovernmental organizations operating in the field of agriculture were the stabilization organizations for sugar, tobacco, rice, and coffee.

The Cuban Government announced in August 1959 that all autonomous organizations dedicated to agricultural production and marketing were to be transferred to INRA. A new organization was established in 1961 to absorb a number of local associations of small producers of such crops as tobacco and rice; this organization is also under the control and direction of INRA. It is presently known as the National Association of Private Farmers (Asociación Nacional de Agricultores Privados, or ANAP), but was formerly called the National Association of Small Farmers (Asociación Nacional de Agricultores Pequeños). ANAP has encouraged the formation of service and credit "cooperatives" among the small farmers, and controls the policies of the member groups. It plays an important role in setting individual production goals, granting credit, supplying fertilizers and seeds, and giving technical assistance to the small farmers.

Foreign Policies

Trade--Prior to 1959, the framework for Cuba's commercial policy was the General Agreement on Tariffs and Trade, known as GATT, through which the contracting parties to the agreement assured each other of most-favored-nation treatment and agreed to mutual lowering of duties and lessening of trade restrictions (26). Negotiated preferences under this agreement gave to the United States and Cuba lower tariff rates on most products imported from each other than were obtained on imports from other countries. In addition, Cuba had a substantial sugar quota in the U.S. market and was assured of the U.S. price for this quota sugar, which was usually above the world price. Cuba is still a member of GATT, but did not participate in the negotiations of the Kennedy Round concluded in 1967. Although the GATT agreement and others are still

legally in force, they have lost their effectiveness as they apply to relations between Cuba and the United States. A majority of the Western Hemisphere Republics voted in January 1962 to exclude Cuba from the inter-American system and Cuba is no longer a member of the Organization of American States. In accord with this decision, the United States imposed an embargo on U.S.-Cuban trade effective February 7, 1962.

Cuban trade is now under strict Government control and most of it moves under bilateral agreement. Cuba has such agreements with most of the Communist countries and with many non-Communist countries, including France, Spain, Switzerland, Morocco, Syria, Sweden, West Germany, and the United Arab Republic (Egypt, or UAR). Control is exercised by a series of enterprises (empresas), most of which are branches or divisions of the trade ministry or chamber of commerce. An exception is the Cuban Tobacco Enterprise (Empresa Cubana de Tabaco, or CUBATABACO), a separate entity that handles the export of tobacco and products as well as all other phases of the industry (see Crops, p. 15). In addition, there are agencies for expediting the movement of goods and for controlling quality of the products.

Cuba is a member of the International Sugar Agreement and the International Grain Arrangement and, until September 1968, was a member of the International Coffee Agreement (see Crops, p. 15).

Aid--Cuban agriculture has received substantial aid from foreign sources, particularly since World War II. Through 1960, much of the financial and technical assistance came from the United States. From 1934 through June 1960, the U.S. Export-Import Bank loaned Cuba \$68 million directly, and accepted risks on an additional \$26 million loaned by commercial banks. Much of this benefited Cuban agricultural development either directly or indirectly. The U.S. technical assistance program, started in 1943 and terminated in May 1960 in Cuba, was for direct assistance to agriculture. The Organization of American States maintained a regional technical cooperation office in Havana from 1952 until early 1961.

Much of the foreign financing, as well as technical assistance, now comes from the USSR and other Communist countries, although non-Communist countries are increasingly making substantial loans and providing technical assistance that aid agriculture. Estimates indicate that Cuba owes the USSR the equivalent of \$1.5 billion, excluding military aid. The USSR subsidy of the Cuban economy is estimated to be about \$400 million a year, and aid from other Communist countries is estimated to be about \$75 million to \$100

million a year (17). One observer estimates that loans and commodity imports from non-Communist countries are equivalent to about \$1 million a day (19).

The United Nations has given assistance to the present Cuban Government through its specialized agencies and from the Special Fund, all of the assistance benefiting agriculture either directly or indirectly. Estimated total assistance through U.N. agencies from 1959 through 1967 amounted to \$5.7 million.

AGRICULTURAL PRODUCTION AND TRADE

Crops

Sugar dominates agricultural production in Cuba, and the cane area harvested probably represents two-thirds of the area harvested for all crops. Grains, primarily corn and rice, are second in area, but far down the scale from sugar. The second export crop, tobacco, occupies only a small area compared with that in food crops. Other crops important in Cuban agriculture include tubers, legumes, coffee, and fruits.

Sugar--Although Cuba is outranked by the USSR as the world's principal producer of centrifugal sugar (both cane and beet), it remains the most important world exporter of sugar. Since 1914, Cuba has been the principal producer of cane sugar in all but one year, 1966, when it was second to Brazil. However, Cuba provided almost one-fourth of world sugar exports in that year and, if U.S. imports from its offshore areas are excluded, Cuba provided 27 percent of world sugar exports.

Cuban sugar output reached a record of 7.2 million tons in 1952. Production in the following years declined sharply as a result of quota controls and did not again reach a total of 6 million tons until 1961, when production restrictions were removed and 6.8 million tons were produced (table 4). Two years later only 3.8 million tons were produced, due, in large measure, to Government policies. Those policies are now changed,

and the 1966-70 plans call for an increasing output each year to a total of 10 million tons by 1970. The 1968 production of just over 5 million tons, however, fell short of the goal for that year by almost 3 million tons.

Soon after the present Government took office in 1959, it abolished the Cuban Stabilization Institute (Instituto Cubano de Estabilización del Azúcar) set up in 1931 to regulate the sugar industry, and turned this authority over to INRA. Also dissolved at that time were other organizations concerned with the sugar industry, including the National Association of Cuban Sugarcane Farmers (Asociación Nacional de Colonos de Cuba). INRA has implemented its control through branches or organizations with varying names, and in 1965 a Sugar Industry Ministry (Ministerio de la Industria Azucarero, or MINAZ) was set up. In cooperation with INRA, the Ministry establishes production goals and standards of output from the farm level through the milling of the cane. Sugar prices at all stages from the farm through the retail level are established by Government decree. Sugar exports are made by the Cuban Enterprise for Exporting Sugar and its Derivatives (Empresa Cubana Exportadora de Azúcar y sus Derivados).

Sugar grows in all six provinces, but the three eastern ones are by far the principal producers (fig. 3). Some shifting of the cane area during the past 8 years has served to

Table 4.--Cuba: Sugar production, exports, and stocks, averages 1950-54, 1955-59, 1960-64, annual 1960-68

Period	Production	Exports	End of year stocks ¹	Available for domestic consumption
Average:	----- 1,000 tons ² -----			
1950-54	5,717	5,091	1,225	275
1955-59	5,338	5,186	941	296
1960-64	5,171	4,975	570	401
1960	5,862	5,635	1,097	352
1961	6,767	6,414	1,030	420
1962	4,815	5,131	341	373
1963	3,821	3,520	186	456
1964	4,589	4,176	197	402
1965	6,082	5,316	472	491
1966	4,867	4,435	362	542
1967	6,236	5,683	286	629
1968 ³	5,170	n.a.	n.a.	n.a.

n.a. = not available.

¹ No adjustment made for changes in unreported stocks. Data beginning in 1962 are of doubtful reliability.

² Raw sugar value.

³ Preliminary, from Foreign Agricultural Service.

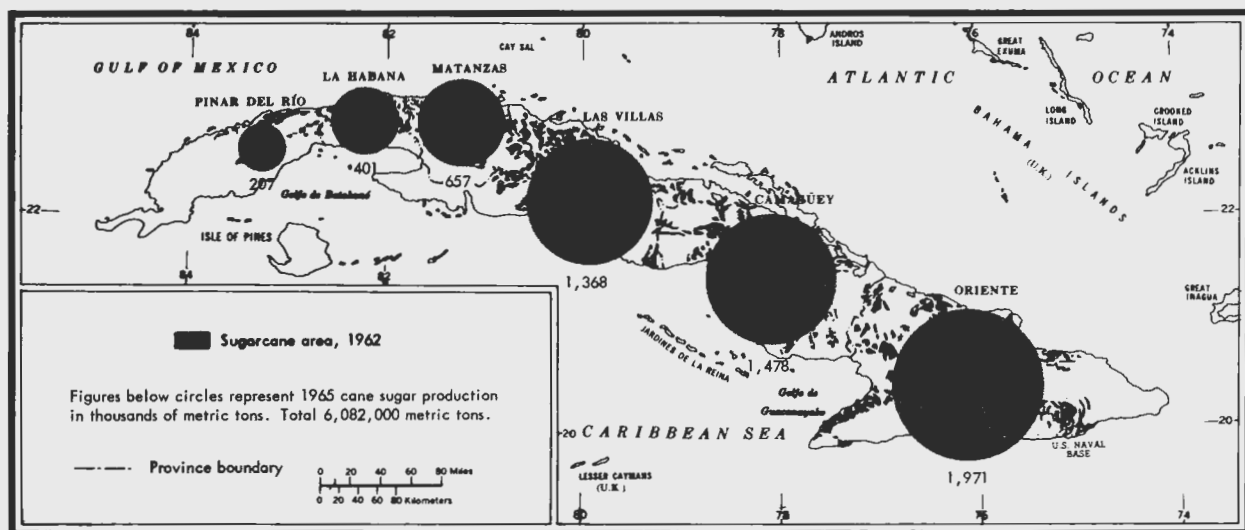
Sources: (7) and (8).

increase the importance of Oriente Province; almost one-third of the total sugar crop of 1965 was produced in Oriente, and almost 80 percent of the sugar ground in that year came from Oriente, Camagüey, and Las Villas Provinces.

Planting of cane is still done largely by hand, although the Government has introduced a few machines for this purpose. The plowing, disking, harrowing, and fertilization of the canefields were practically all mechanized before the Castro regime came to power, and these operations continue to be mechanized. Most of the cane is still cut by hand with machetes, although loading machines and combines have been introduced recently. The loading machines have performed satisfactorily, but the combines have not as yet proved themselves in the field. Only an estimated 2 percent of the 1965 crop was harvested

by combine, and this percentage reportedly did not increase during the next three harvests. Prior to 1959, most of the cane was hauled to the mill by truck, but observers report an increased use of ox-drawn carts in the hauling of cane in recent years, possibly due to lack of gasoline and repair parts for the trucks. Experimentation continues in an attempt to perfect machinery to handle all phases of sugar growing from the planting of the cane through the milling operation.

Cuban soil, climate, and moisture conditions are excellent for sugarcane, but yields are low compared with those obtained where cultivation is more intensive as in Hawaii, Peru, and Indonesia. Application of fertilizer on Cuban canefields has increased from just over 100,000 tons in 1958 to an estimated 521,000 tons in 1967, almost four-fifths of it applied in the three eastern provinces.



U.S. DEPARTMENT OF AGRICULTURE

NEG. ERS 5803-68(11) ECONOMIC RESEARCH SERVICE

Figure 3.--Cuba: Sugarcane area and production of sugar by provinces.

Although data for the 1960's are not available for accurate comparison, it would appear that yields have actually declined during the 1960's. Some students believe that fertilizer has been applied at the wrong time, tending to reduce rather than raise yields. Another factor contributing to the decline was the reduction in efficiency of the labor, especially the canecutters; many experienced cutters (*macheteros*) went into other activities and were replaced by "volunteer" labor, which was less efficient both in total output and in maintaining the ratoons for future harvests.

Prior to 1959, about 60 percent of the sugar produced in Cuba was of the P.O.J. 2878 variety, 13 percent was of the Cristalina variety, and the balance was other P.O.J. strains and varieties. The P.O.J. canes are resistant to mosaic, the principal disease affecting sugarcane in Cuba. The Government is sponsoring research to extend the growing season by developing canes that are early and late producers; observers believe, however, that the P.O.J. 2878 variety is still the dominant one grown. Since about 1963, harvesting of the cane has begun as early as November and has lasted through June, although the sugar content of the cane

varieties usually grown is less in the early and late months than during the traditional harvesting months from January through April.

All but 5 to 6 percent of Cuba's sugar crop is exported. Until 1960, the United States was the major outlet, accounting for 55 percent of total exports in 1955-59 (fig. 4). Beginning in 1934, Cuban shipments to the United States were subject to quantitative control under the U.S. quota system, except during the periods September 11 to December 26, 1939, and April 12, 1942 to December 31, 1947. Exports to the United States brought prices considerably higher than those obtainable in the world free market. During 1960 and 1961, the Cuban Government signed a series of agreements with East European and other Communist countries providing for sugar exports of 2.2 million tons in 1960 and up to 4 million tons in 1961. The United States reduced its Cuban sugar quota in July 1960, and set it at zero for 1961 and subsequent years.

Communist countries also agreed to take 4.9 million tons of Cuban sugar annually, including 3 million tons for the USSR, during

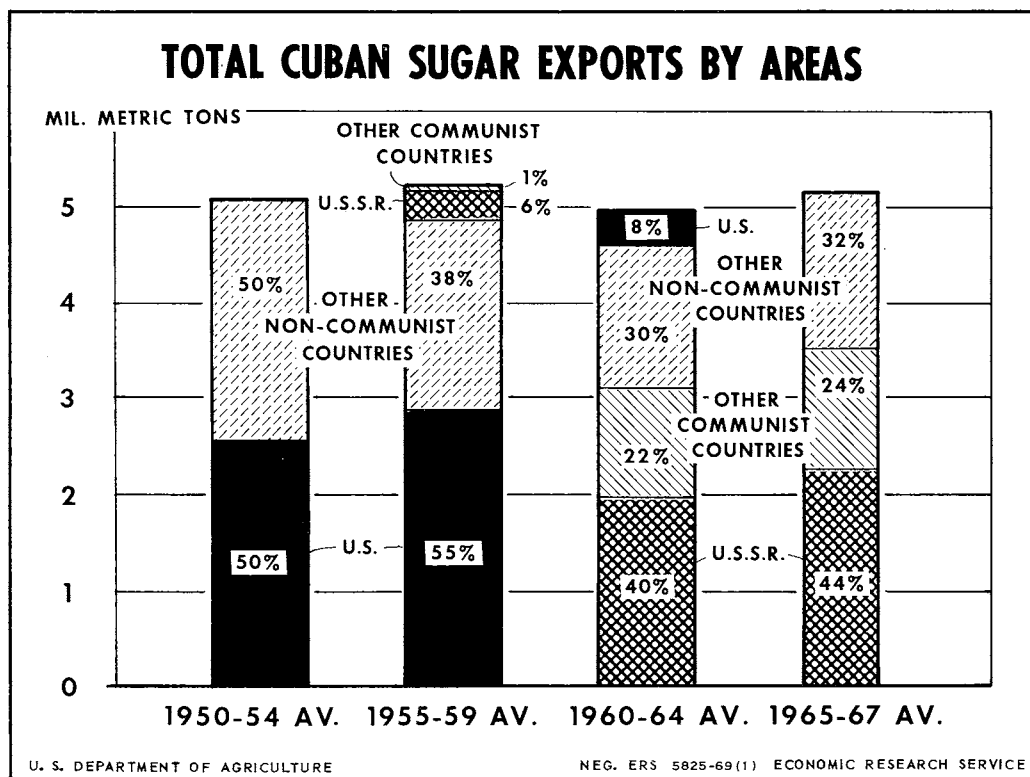


Figure 4

the 4-year period 1962-65. Because of the short crop in 1963, just over half of this amount was actually shipped to Communist countries that year. A new agreement with the USSR, signed January 23, 1964, called for Cuban raw sugar exports at 6 cents per pound through 1970, as follows:

	<u>Million tons</u>
1965.....	2.1
1966.....	3.0
1967.....	4.0
1968.....	5.0
1969.....	5.0
1970.....	5.0

As in the earlier agreement, Cuban sugar imported into the USSR is to be paid for largely in barter goods. Shipments to the USSR did not reach the agreed quantities in either 1966 or 1967. The USSR is also an exporter of sugar and in 1967 exported a total of 1.2 million tons, or just about half the quantity imported from Cuba (table 5).

Table 5.--USSR sugar trade, 1961-67

Year	Sugar imports		Sugar exports
	Total	From Cuba	
	<u>1,000 tons</u>	<u>1,000 tons</u>	<u>1,000 tons</u>
1961...	3,597	3,345	951
1962...	2,486	2,233	900
1963...	1,136	995	906
1964...	1,889	1,723	433
1965...	2,293	2,253	731
1966...	1,843	1,841	1,163
1967...	2,482	2,480	1,200

Sources: (7) and (8).

Before 1960, Cuban sugar exports were restricted by measures aimed at stabilizing prices on the world free market, which covered about 40 percent of international trade in sugar. An International Sugar Agreement

set quotas for this "free market" which were applicable through 1961; during 1962-68, no price or quota provisions were operative, although the protocols extending the framework of the agreement were still in effect. In October 1968, however, a new International Sugar Agreement was negotiated, setting minimum and maximum prices and establishing export quotas. Cuba's quota for the "free market" was set at 2,150,000 tons. Within certain limits, sugar exported to Communist countries is not to be charged against the quota. For the USSR and several other Communist countries, the quantity of sugar that could be re-exported without charge to Cuba's quota is limited to a total of 1,650,000 tons in 1969 and 1,800,000 tons in 1970 and 1971; for the rest of the Communist area, re-exports are not restricted by the agreement. In practice, however, Cuba would find it extremely difficult to locate final markets for large quantities of additional exports.

The sugar industry provides several byproducts in addition to raw sugar. These include blackstrap molasses, high-test molasses, invert sirups, bagasse, and a new product called Dextrana, used in making candy, detergent, and other products. Bagasse is used primarily for fuel in the sugar mills, although research is going forward to develop other uses. Annual production of molasses varies from 175 million gallons to more than 400 million gallons; from one-third to one-half of the annual output is exported.

Grains--The principal grains produced in Cuba are rice and corn, both used largely for food. Small quantities of grain sorghum are grown. Imports provide all of the wheat and wheat flour consumed in Cuba. Before 1950, imports of rice supplied the greater part of domestic needs, but production of rice increased rapidly during the early 1950's and furnished almost half of the 326,000 tons of milled rice available for domestic consumption in 1955-59. Since 1960, estimates of output from different sources vary widely, but all indications point to a sharp drop in production in the mid-1960's, with some improvement by 1967 and ambitious plans for 1970. Government purchases from the procurement centers are reported at 55,000 tons of rough

rice in 1965; purchases apparently increased to 96,000 tons in 1967. Plans call for a planted area of 200,000 hectares by 1970, compared with 121,000 hectares in 1960. The traditional rice areas in Oriente, Camagüey, and Pinar del Río are being rehabilitated, and new areas are being cleared. Rice planting, cultivation, and harvesting are mechanized. Much of the crop is irrigated, and fertilizers, pesticides, and herbicides are applied.

The principal varieties of rice grown before 1959 were a short-grain Honduras rice known as Zayas Bazan and the long-grain Blue Bonnet. No information is available on the varieties now being planted, but since Blue Bonnet seed was previously imported from the United States, it is assumed that Honduras rice is more widely grown than in 1959. A seed station is being organized for selection, acclimatization, and crossbreeding. Reports indicate that several varieties of rice have been obtained from Europe that are said to be ready for harvest in 80 days.

Before the Revolution, corn was grown as a subsistence crop on practically every farm, large and small, throughout Cuba. Production data have never been reliable because of the difficulty of estimation, but output apparently reached a peak of 212,000 tons in 1960, and declined steadily to a low of 117,000 tons in 1965. Small quantities of corn were exported prior to 1959, in which year imports were needed. Beginning in 1962, imports increased markedly and reached a high of 232,000 tons in 1964. More than half of the output is consumed as food; some is fed to poultry and a smaller quantity to hogs.

Other basic food crops--Dry legumes and roots and tubers have long been major items in the Cuban diet, although the relative importance of the various kinds has shifted over the years. Production estimates vary widely from year to year as well as for the same year from different sources. Black beans are the principal dry legume produced in Cuba. Production of beans was estimated at 35,000 tons in 1960, but has since declined; the principal growing area is in Oriente. Imports of white and red beans, dry peas, chickpeas, and lentils contribute well over half the

total consumption of legumes. Peanuts appear to be gaining in importance, but most of the crop is crushed for oil.

Sweetpotatoes, yams, malanga, and yucca are grown throughout the country, primarily for home consumption on the farm and by the low-income urban population. Sweet yucca production is estimated at about 200,000 tons. Output of white potatoes averaged 108,000 tons annually in 1955-59, rising in 1961 to 113,000 tons; since then, production has varied from 75,000 to 100,000 tons. Imports supplement domestic consumption, particularly for seed; since 1959, imports have apparently fluctuated from a low of 19,000 tons in 1963 to a high of 67,000 tons in 1964.

Fruits and vegetables--Cuba grows a wide variety of tropical and semitropical fruit. The principal fruits exported before 1961 were pineapples (both fresh and canned), bananas, and citrus, although avocados and mangoes also found markets in the United States. Cuba imported fresh apples, pears, and grapes, as well as some canned fruit and juices. Although complete trade data are not available for the past 5 years, there is evidence that both exports and imports of fruit declined following the cessation of trade with the United States. Cuba's bilateral trade agreements with East European countries, as well as with several Western countries, call for exchange of fruits. About 2,700 tons of apples and 650 tons of grapes were reportedly imported in 1965, and unofficial reports indicate that some fruit, especially citrus, was exported to Europe in 1965 and 1967 at the expense of domestic consumption to obtain foreign exchange.

Fresh and processed pineapples made up about two-thirds of all fruit exports by value in 1958. Even before the Revolution, Cuban exports of bananas and plantains had declined sharply, due largely to the widespread effects of the sigatoka and Panama diseases, and exports are now insignificant. Grapefruit from the Isle of Pines has long been an important export item, and plans include an expansion in output not only in the Isle of Pines but in other areas of Cuba as well. Government purchases from the pro-

urement centers show an increase for all citrus from 98,000 tons in 1962 to 160,000 tons in 1966. By the middle of 1966, there were 32,800 hectares of citrus trees in Cuba, of which 14,300 were in the private sector. Plans call for 34,840 hectares in citrus in the Isle of Pines by the end of 1968, 54,940 hectares in Pinar del Río, and small areas in other parts of Cuba (1).

Government vegetable purchases through the procurement centers in 1965 (not counting quantities consumed on the producing farms) totaled 220,000 tons. They included tomatoes, onions, garlic, green peppers, cucumbers, cabbage, eggplant, and carrots. Unconfirmed reports indicate that tomatoes and cucumbers were exported to Canada and East European Communist countries during 1967. Before the embargo on trade with the United States, these two products were produced not only for domestic use but for export to that market. With the loss of the U.S. market, exports were sharply curtailed. Before the Revolution, domestic production of onions and garlic supplied only 15 percent of total consumption, but output in 1965 reportedly supplied almost half of the total consumed, part of the imports coming from Spain.

The Government is sponsoring vegetable belt projects throughout the island near urban centers, with the aim of providing at least four or five different types of vegetables the year round. The Government reports that selection of suitable varieties and species, good cultivation practices, and rotation of crops have resulted in efficient, year-round production in the vegetable belts. Considerable investment has been made to modernize and enlarge vegetable-processing plants, and six new packing plants were built in 1955-56.

Tobacco--Cuban tobacco has been famous in foreign markets for many years for its quality and aroma. It is the country's second agricultural export, though unimportant compared with sugar (exports were less than 5 percent of the value of sugar exports in 1965). The United States was the principal market for both Cuban tobacco and tobacco products through 1960. The U.S. share (by value) was 70 percent of total exports of

these commodities in 1959, and 65 percent in 1960. When the U.S. market was lost, exports declined sharply. Tobacco is included in the bilateral agreements Cuba has negotiated with East European Communist countries and with several Western countries, but exports of unmanufactured tobacco are estimated at about 14,000 tons annually for the past 4 years, compared with 26,000 tons in 1960 and 24,000 tons annually in 1955-59. Estimates for tobacco production are highly unreliable for the years after 1960. The Cuban Government reports a sharp decline in output in 1963 and 1964, but an increase to the pre-Revolution average of 50,000 tons in 1966. Other estimates place output in 1966 at only 35,000 tons. Production losses from broomrape (orobanche), a tobacco parasite, were reported in the mid-1960's.

Cuban tobacco consists almost entirely of cigar types, although some dark air-cured tobacco is used in the domestic manufacture of strong, dark cigarettes. Burley and flue-cured tobacco account for only a small share of the total crop, although the Government is encouraging their cultivation.

Tobacco is still grown, for the most part, by an estimated 40,000 small farmers in the private sector. In 1966, only about 10 percent of the crop was grown on the state farms, which produce most of the shade-grown tobacco, mainly under irrigation.

The Government controls the entire tobacco industry. From 1959 to 1965, production was regulated by INRA; processing, internal marketing, and export were handled by other agencies of the Government. Considerable confusion resulted from changes in the traditional methods of tobacco production and marketing, and both quality and quantity of tobacco apparently dropped significantly in the early 1960's. In 1965, the Cuban Tobacco Enterprise (Empresa Cubana del Tabaco, or CUBATABACO) was reorganized and given full responsibility for all phases of the industry, from production through marketing at home and abroad.

Apparently, domestic consumption of both cigars and cigarettes has risen since

1962. Cuba imports cigarettes to supplement production--in pre-Revolutionary days from the United States, and now from other countries. Both cigarettes and cigars are rationed--two packages of cigarettes or two cigars per person weekly.

Other crops--Production of coffee approximates domestic requirements, even though output has declined sharply since 1961. Annual production averaged 43,000 tons during 1955-59, but estimates for 1967 placed the crop at only 27,000 tons. Before the Revolution, coffee output also provided small quantities for export, but by 1964 these had stopped entirely, although indications point to small exports recently. Apparently there were small imports in 1963 and 1964. Coffee-producing areas have been in the mountains of southern and eastern Oriente, to a lesser extent in the mountains between Cienfuegos and Trinidad, and in a small area of Pinar del Río. The Government has started an ambitious program during the past 2 years to plant coffee trees, not only in these traditional growing regions but also in the lowlands around Havana. It remains to be seen whether these lowland plants will produce good-quality coffee beans. There is some indication they may not have survived recent droughts.

Cuba was a member of the International Coffee Agreement until September 1968, when it withdrew because of the low quota offered. Because of reduced output of coffee, the 1968/69 export quota allotted to Cuba under this agreement was 50,000 bags of 60 kilograms each, or 3,000 tons, compared with a quota under the previous agreement of about four times this amount. If Cuba had shown evidence of export availabilities above this figure, its future quota could have been raised to a maximum of 200,000 bags.

Cocoa has never been a major crop in Cuba. Production averaged 2,400 tons annually in 1955-59 and probably has not exceeded 3,000 tons since then. Both coffee and cocoa beans have been produced by primitive methods, resulting in low yields and high production costs. More than 80 percent of the 1965 coffee crop and 95 percent of the cocoa

beans were produced on small, privately owned farms.

Henequen has been an important product in Cuban agriculture. Production and exports were at peak levels in 1952, when output reached 16,400 tons and exports were 10,200 tons of fiber equivalent. Production subsequently declined, and there is no record of exports since 1960. Commercial production of cotton began in 1958/59 and since then has fluctuated widely. Prior to 1961, imports from the United States provided the major part of consumption. Since that time, imports have come mainly from the USSR, with small amounts from Mexico and Syria. The Government plans to plant 56,900 hectares to cotton by 1970 in an effort to become self-sufficient in this fiber; it plans a rotation program, using kenaf and cotton on the same land. Kenaf has been grown experimentally since 1943, and the 1964 output was estimated at 4,000 tons.

Cuba depends on imports for most of its vegetable oil. Most of the oil produced domestically is crushed from imported soybeans, the rest from locally grown peanuts. Should cotton production expand as planned, some cottonseed will become available for crushing.

Livestock and Livestock Products

The livestock industry is second only to sugar as a source of farm income. Cattle are by far the principal kind of livestock, as shown in table 6. Cuba has both natural advantages and disadvantages for cattle raising. On the one hand, animals can be pastured throughout the year and protection against extreme weather is not needed. On the other hand, the subtropical climate requires selection of adaptable breeds; and pastures, unless well managed, deteriorate rapidly during the dry season.

Numbers, distribution, and management of livestock--Estimates of Cuban livestock numbers are neither consistent nor reliable. The census data for 1952 apparently failed to include many animals on small holdings. The

Table 6.--Cuba: Livestock numbers, selected years

Type	1952	1959	1961	1967
	-----1,000 head-----			
Cattle	4,042	5,840	5,772	7,000
Hogs	1,286	1,780	1,750	1,800
Sheep	194	210	225	235
Goats	162	190	170	190
Horses	412	465	480	500
Mules and donkeys .	35	35	35	26

Sources: 1952 data, (11); 1959 data, USDA estimates; 1961 data (4); 1967 data based on FAO estimates for 1964, except for cattle numbers, which are preliminary estimates from a Cuban Government cattle survey in August 1967.

cattle survey for 1961 appeared high in light of reported heavy slaughter in the early 1960's, and no appraisal of the 1967 survey is as yet available.

Both cattle and hogs were slaughtered in an indiscriminate fashion during the early 1960's. This resulted in temporarily large supplies of meat, but also in sharply reduced numbers on farms, including a loss of breeding stock. The 1961 cattle population, for example, was probably less than that indicated in table 6. The Government approved a law in March 1962 requiring prior authorization for anyone to slaughter cattle for either sale or personal consumption. In 1964 a Livestock Registry Office was established to implement livestock regulations. The Government is also carrying forward an ambitious program, not only to increase numbers but to upgrade the quality of the animals and improve feeding and management practices. Apparently, numbers are increasing; state farms account for a growing share of cattle.

The cattle population is heavily concentrated in the three eastern provinces. Crosses of the criollo, or so-called native breed, with the pest- and disease-resistant Brahman or

zebu type still predominate, although pre-Revolutionary efforts at upbreeding have been intensified. In addition to the Santa Gertrudis and Brown Swiss popular before the Revolution, other breeds being utilized include the Shorthorn, Holstein, Charolais, and Hereford. In 1967, Cuba reported the establishment of 11 artificial insemination centers which can be utilized free of charge by private cattle owners as well as by the state farms. Cattle graze on extensive pastures, most of which are just beginning to be improved. A program of annual planting of grasses has been started, and an estimated 270,000 hectares a year is put into cultivated pastures. The growing of legumes was initiated in 1966. Feeding of grain and other protein concentrates before 1959 was confined largely to dairy animals. Although several cattle feeding stations have been established since then, there is as yet little feeding of beef animals.

Cuban cattle suffer severe losses from a large number of animal diseases and parasitic infestations. Brucellosis, tuberculosis, cysticercosis, and anthrax are widespread. Aftosa (foot-and-mouth disease) was reported in late 1960. Despite official denial that the disease is present, Cuba is still not considered a disease-free country in this respect. Ectoparasites cause huge losses. A National Institute of Veterinary Medicine was created in 1967, the veterinary service was reorganized in 1959, diagnostic laboratories have been set up, and training of technicians is going forward--all aimed at safeguarding the health of domestic animals.

The climate of Cuba does not favor hog or sheep production. Most of the hogs are native types that gain weight slowly and produce little lard. Many of the animals have been left to forage for themselves, although there is some supplementary feeding of palmiche nuts (from the Royal palm) and to a lesser extent, corn. Hog cholera is prevalent, and internal parasites are a problem. Sheep are kept primarily for mutton, since the wool growth is usually not sufficient to warrant shearing. Goats kept by the poorer families on the outskirts of the cities and by small farmers furnish both meat and milk. Horses, mules, and donkeys are still important means of transport, especially in eastern Cuba.

Before the Revolution nearly every farm had a few chickens, most of them the native breed, Cubalaya. Following the Revolution, many farmers reduced their flocks sharply by consuming larger than usual quantities of poultry meat. Beginning in 1964, the Government adopted a policy of increasing egg production to the maximum and deferring to 1970 any extensive increase in distribution of poultry meat. Reports indicate the number of laying hens was 4.3 million in 1965, rising to 5.8 million in 1966 (1).

Livestock products--A clear picture of the output of livestock products is even more difficult to obtain than that for numbers of livestock. Before 1959, records of supplies were rudimentary. Since then information, even if recorded, has been sporadic and is subject to considerable question. Accordingly, data in table 7 should be considered approximations only.

Supplies of beef and veal increased sharply in 1959 to an estimated 200,000 tons, reflecting the abnormally heavy slaughter after the new Government came into power; indications are that output declined through 1963.

Table 7.--Cuba: Meat and milk production, average 1955-59, annual 1960-67

Period	Beef and veal	Pork	Poultry	Whole milk
	----- 1,000 tons -----			
Average: 1955-59	183	39	n.a.	775
1960	170	36	n.a.	730
1961	163	32	45	690
1962	147	27	47	690
1963	143	25	48	695
1964	170	27	48	690
1965	165	30	48	575
1966	160	30	n.a.	560
1967	160	30	n.a.	560

Sources: Beef and veal, pork, and whole milk data from Economic Research Service, USDA; poultry data (4).

Some growth in production has occurred, and in fact the Government reports a much greater increase in output than is shown in table 7. Pork and poultry are the only other meats produced in significant quantities. Although domestic production has supplied most of the fresh pork consumed, imports of cured pork from the United States were heavy for many years prior to 1961. Imports of cured pork in the period 1955-59 averaged 12,000 tons. Lard imports, which constituted almost the entire commercial supply, averaged 80,000 tons annually. Imports of cured pork have practically ceased, but canned meat imports have been recorded in some years. Lard is still imported, now from the USSR and the Netherlands, but the quantity varies from year to year. Domestic production furnishes practically all the poultry meat consumed.

Before 1959, about two-thirds of total milk production was used in fluid form; most of the remainder was devoted to the manufacture of cheese, butter, and condensed, evaporated, and dried milk. A small amount was used for feed. Production was supplemented by imports of cheese, butter, and processed milk, largely from the United States and the Netherlands. Milk production dropped in the early 1960's, and imports from the United States were shut off. Imports have continued, however, with Canada and the Netherlands the principal suppliers.

The Cuban Government has fostered the production of eggs and reports a dramatic increase in output in 1965-67. Eggs, however, have again been added to the ration list. Cuba is an exporter of honey, although exports have declined during the 1960's. Other livestock products include cattle hides, bones, tannage, inedible fats or tallows, and dried blood. Data are not available for the 1960's, but large quantities of cattle hides, rawhide trimmings, bones, and tannage were exported before the Revolution.

Foreign Trade

Cuban trade--Agricultural products continue to provide the major share of total exports. They constituted almost 90 percent of

the total value of exports in 1958. Comparable data are not available for later years, but exports of sugar and tobacco alone represented about 80 percent of total value in 1964 and 1965 (table 8).

Although farm products make up a much smaller share of total imports than of total exports, they were almost one-fourth of total imports in 1958, and probably accounted for more than one-fourth in 1964 and 1965 (table 9).

Sugar and its products accounted for more than 80 percent of total export value in 1958. Tobacco and its products ranked second, followed by a variety of other commodities, including coffee, fresh and processed fruits, and tomatoes and other vegetables. Agricultural exports in that year totaled \$647 million; the United States took two-thirds of the total.

By 1965 the USSR took 55 percent of total exports, mostly sugar, and other Communist countries took another 25 percent. Japan, Morocco, Spain, the United Kingdom, and UAR are the principal non-Communist markets for sugar. France and Spain are the major non-Communist markets for tobacco. Although there are some exports of fresh and processed fruits and vegetables moving under bilateral trade agreements to both Communist and non-Communist countries, the principal exports continue to be sugar and tobacco.

Cuba depended on foreign sources for about half of its food supplies (in terms of energy value) in 1965; calories supplied by imports represented almost 90 percent of total cereals consumed and 85 percent of the total fats and oils. The principal agricultural import in pre-Revolutionary days was rice, chiefly from the United States. Rice was still important in 1965, but the UAR and Communist areas were the suppliers; wheat and flour appear to be the principal agricultural imports in the middle 1960's. Following grains, fats and oils were the next most valuable agricultural imports, as they had been in earlier years.

Table 8.--Cuba: Value of total exports, 1958, and estimated exports, 1964-67, by principal markets¹

Item	1958		1964		1965		1966		1967	
	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.
Principal market:										
United States	490	67	0	0	0	0	0	0	0	0
Other non-Communist countries	225	30	293	41	140	20	148	23	145	20
USSR	14	2	275	39	375	55	285	45	375	53
Other Communist countries	5	1	141	20	171	25	207	32	195	27
Total exports ²	³ 734	100	709	100	686	100	640	100	715	100
Commodity:										
Sugar, raw and refined	557	76	554	78	546	80	n.a.	n.a.	n.a.	n.a.
Tobacco, unmanufactured. . .	37	5	23	3	26	4	n.a.	n.a.	n.a.	n.a.
Other agricultural products .	53	7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a. = not available.

¹In 1958, 1 peso = 1 U.S. dollar; 1964-67 data reported in U.S. dollars in source.

²Other sources give slightly different totals for 1964 and 1966.

³Total agricultural exports = \$647 million.

Sources: 1958 data, (13); 1964-67 totals and area breakdown, (30); 1964-65 commodity breakdown, (5). All data after 1960 are highly unreliable; they were estimated by using import data of reporting countries, and estimating sources were not always comparable.

Table 9.--Cuba: Value of total imports, 1958, and estimated imports, 1964-67, by principal suppliers¹

Item	1958		1964		1965		1966		1967	
	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.	Mil. dol.	Pct.
Principal supplier:										
United States	543	70	0	0	0	0	0	0	0	0
Other non-Communist countries	234	30	327	32	220	25	218	24	232	23
USSR	(²)	(²)	411	41	420	49	479	54	550	56
Other Communist countries	(²)	(²)	277	27	225	26	203	22	208	21
Total imports	777	100	1,015	100	865	100	900	100	990	100
Commodity:										
Principal agricultural products ³	111	14	165	16	167	19	n.a.	n.a.	n.a.	n.a.
Other agricultural products	67	9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

n.a. = not available.

¹ In 1958, 1 peso = 1 U.S. dollar; 1964-67 data reported in U.S. dollars in source.

² Insignificant, if any.

³ Includes rice, wheat and flour, corn, pulses, lard, vegetable oils, processed milk, and potatoes.

Sources: 1958 data, (13); 1964-67 totals and area breakdown, (30); 1964-65 commodity breakdown, (5). All data after 1960 are highly unreliable; they were estimated by using export data of reporting countries, and estimating sources were not always comparable.

Non-Communist trade with Cuba has varied widely in recent years; imports into Cuba were valued at about \$327 million in 1964, but fell to \$220 million in 1965. Spain was the principal non-Communist supplier in 1966, followed by Canada (the latter was probably the principal non-Communist supplier of agricultural imports). Other major non-Communist suppliers include the United Kingdom, Japan, the UAR, Morocco, France, the Netherlands, West Germany, and Italy. Some non-Communist countries send goods to Cuba via East European Communist countries.

U.S. trade with Cuba--The Cuban Government's decision in the early 1960's to reorient the economy toward the Communist

world disrupted trade patterns developed over several decades. Although the United States was much more important in Cuba's trade than Cuba was in the trade of the United States, nevertheless the broken relationship resulted in the loss of a good market for U.S. agricultural products, as well as the principal offshore supply of sugar to the U.S. market. Not only was Cuba the most important Latin American "buyer" of U.S. farm exports; it ranked seventh among world markets, importing more U.S. rice, lard, dry beans, and several other important farm commodities than any other country (15). Average annual U.S. exports of agricultural products to Cuba in 1955-59 were valued at \$131.1 million; this total dropped rapidly thereafter and by 1962 was only \$300,000 (table 10).

Table 10.--Value of U.S. agricultural trade with Cuba, averages 1950-54 and 1955-59, annual 1960-62

Principal commodities	Average 1950-54	Average 1955-59	1960	1961	1962
Exports:	-----Million dollars-----				
Rice	52.0	33.1	17.3	0.1	0
Fats and oils	28.7	27.3	23.8	5.1	0
Wheat and flour	11.1	14.1	12.9	.2	0
Vegetables and preparations . .	16.4	16.7	8.4	.1	0
Meat and products	9.2	11.2	6.5	(¹)	0
Fruit and preparations	9.2	7.5	1.3	.3	0
Dairy products	4.5	3.0	1.0	(¹)	0
Cotton, unmanufactured	3.7	3.1	3.7	0	0
Other	11.5	15.1	13.7	3.9	² 0.3
Total exports	146.3	131.1	88.6	9.7	0.3
Imports:					
Sugar	310.0	334.6	235.0	0	0
Tobacco, unmanufactured	26.1	26.0	26.6	24.2	³ 15.1
Other	40.1	44.0	37.0	4.9	0
Total imports	376.2	404.6	298.6	29.1	15.1

¹ Less than \$50,000.

² May include some commodities listed for other years.

³ Imports after February 1962 reflect tobacco released from bonded warehouses; these totaled \$6.6 million in 1963, \$4.6 million in 1964, \$2.6 million in 1965, \$1.6 million in 1966, and \$0.9 million in 1967.

Source: (15).

The total value of agricultural products imported from Cuba by the United States was impressive also; the average for 1955-59 reached \$404.6 million, more than three-fourths of it sugar. This represented 10 percent of total U.S. agricultural imports from all countries. During the 10-year period 1951-60, Cuba furnished slightly more than

one-third of the total sugar consumed in the United States and more than 70 percent of offshore supplies. By 1962, imports of agricultural commodities from Cuba had dropped to \$15.1 million, and most of this reflected tobacco released from bonded warehouses; sugar imports were zero. Trade between the two countries has now ceased altogether.

AGRICULTURAL PROSPECTS

A 10-million-ton sugar crop by 1970 is perhaps the most striking of the Cuban Government's announced goals. This objective hardly seems logical in light of Cuba's prospects for final markets for its sugar exports; nevertheless, Castro, in his 10th anniversary speech in 1969, re-emphasized the 10-million-ton goal. Additional goals are increased output of rice, coffee, cocoa, cotton, livestock, and other products. Promises of abundance probably will not be fulfilled in all these areas of production within the next 5 to 10 years. A concerted effort to grow more sugarcane, however, could cause the overall index of agricultural production to rise above its present low level (80 in 1968 compared with the 1957-59 base period of 100); rice and fruit are also expected to show some increase in output over the next 2 to 5 years.

Cuba is still plagued by the lack of sufficient agricultural know-how, even though foreign technicians and specialists have been imported to replace the Cuban agriculturists who emigrated following the Revolution. Skilled canecutters and other knowledgeable farmworkers are in short supply, and "volunteer" labor from the cities is inefficient. Mechanization of farm operations, especially for cutting sugarcane, is still years away from replacing a significant amount of hand labor. One of the principal deterrents to rapid increase in production is the cumbersome mechanism of state planning of detailed farm chores, with the accompanying frequent changes in instructions and administration. Added to these problems in the past 2 to 3 years have been droughts and hurricanes

that have hampered efforts to increase output.

Sufficient land is available for a great expansion in agricultural production, however; and for the more distant outlook, dramatic advances are possible with more widespread use of fertilizer, utilization of supplementary water to be provided by irrigation works now in process, and the further mechanization of agriculture that is now contemplated. With the exception of wheat and fats and oils, all basic foods could be provided for a growing population, and cotton and other fiber output could supply the domestic industry. Cattle numbers have risen during the past 3 years and are beginning to be reflected in greater meat supplies. Continued expansion in the livestock industry can be expected.

Cuba will undoubtedly continue as a major sugar producer and will probably remain the world's largest exporter, using sugar to pay for imports of industrial and manufactured goods, in addition to wheat and fats. New varieties and methods of production now contemplated will require considerable testing, however, to prove their adaptation to Cuban conditions.

Needless to say, Cuba will not be able to achieve its agricultural potential without continuing outside financial and technical assistance and continuing imports of food and other supplies, at least during the next 5 to 10 years. Another essential for success in expanding and diversifying production is a trained and willing force of agricultural labor and specialists.

SELECTED REFERENCES

- (1) Food and Agriculture Organization of the United Nations
1967. Agricultural and Livestock Production in Cuba: Report by Cuban Delegation to the 14th Session of the FAO Conference. Rome.
- (2) _____
1966. Country Report of the Cuban Delegation to the FAO on Land Reform. RU:WLR/C. Rome.
- (3) _____
1967. Fertilizers: Annual Review. Rome.
- (4) _____
1967. Production Yearbook. Rome.
- (5) _____
1966. Trade Yearbook. Rome.
- (6) International Bank for Reconstruction and Development
1951. Report on Cuba. Washington, D.C.
- (7) International Sugar Council
1968. Statistical Bulletin. Vol. 27, No. 4, London.
- (8) _____
1950-67. Sugar Yearbook. London.
- (9) Junta Central de Planificación (Cuba)
1963-64. Comercio Exterior de Cuba. Havana.
- (10) MacGaffey, Wyatt and Barnett, Clifford R.
1962. Cuba: Its People, Its Society, Its Culture. American University, by arrangement with HRAF Press, New Haven.
- (11) Ministerio de Agricultura (Cuba)
1952. Censo Ganadero. Havana.
- (12) Ministerio de Agricultura (Cuba)
1946. Memoria del Censo Agrícola Nacional. Havana.
- (13) Ministerio de Hacienda (Cuba)
1958-59. Comercio Exterior. Dirección General de Estadística. Havana.
- (14) Minneman, P.G.
1942. The Agriculture of Cuba. U.S. Dept. Agr., Foreign Agr. Bul. No. 2, Dec.
- (15) Naive, James and Bennett, Gae
1965. U.S. Agricultural Trade with the Western Hemisphere. U.S. Dept. Agr., ERS-Foreign 122, May.
- (16) Nelson, Lowry
1950. Rural Cuba. Univ. of Minn. Press, Minneapolis.
- (17) New York Times
1968. Rural Cuba Alive with Harvesttime Activity. Jan. 25: 2.
- (18) Norawski, Waclaw
1967. Agricultural Problems in Cuba. Weis Wspolczesna (The Modern Countryside). Poland, Dec. (Translation.)
- (19) Rowan, Carl
1968. How Our Friends Financed Castro's Communist Subversion. Readers Digest, May: 107-110.
- (20) Seers, Dudley and others
1964. Cuba: The Economic and Social Revolution. Univ. of North Carolina Press, Chapel Hill.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS



- (21) United Nations
1965. Progress in Land Reform:
Fourth Report of the Cuban
Delegation to the U.N. Eco-
nomic and Social Council.
E/4020.
- (22) _____
1963. The Cuban Economy in the
Period 1959-63: Economic
Survey of Latin America.
Economic Commission for
Latin America.
- (23) University of Miami
1965. Cuba: Agriculture and Plan-
ning, 1963-64. Cuba Eco-
nomic Research Project,
Miami.
- (24) _____
1963. Labor Conditions in Com-
munist Cuba. Miami.
- (25) U.S. Department of Agriculture
1962. Agriculture and Food Situation
in Cuba. Econ. Res. Serv.,
ERS-Foreign 28, May.
- (26) U.S. Department of Agriculture
1954. Cuba as a Market for U.S.
Agricultural Products.
Foreign Agr. Serv., FAR
No. 81, Sept.
- (27) _____
1962. Cuba Shifts Trade in Farm
Products to Soviet Bloc.
Econ. Res. Serv., ERS-For-
eign 23, Mar.
- (28) _____
Various years. Indices of Agricul-
tural Production for the 20
Latin American Countries.
Econ. Res. Serv.
- (29) U.S. Department of Commerce
1956. Investment in Cuba. Washing-
ton, D.C.
- (30) U.S. Department of State
1967. Battle Act Report: 20th Report
to Congress. Washington,
D.C.
- (31) Voluntad Hidraulica (Hydraulic Situation)
1965. No. 10, Aug., Havana. (Trans-
lation.)