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# Foreign AGRICULTURE

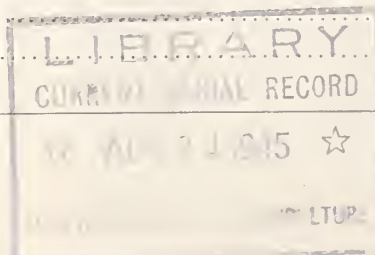
A REVIEW OF FOREIGN FARM POLICY, PRODUCTION, AND TRADE

VOLUME 9, NO. 8

AUGUST 1945

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# The Agriculture of Costa Rica

by Kathryn H. Wylie\*

Costa Rica is an agricultural country, depending on the soil not only for its domestic food supply but for most of its exports as well. The war has intensified some of its prewar problems; has induced an increased emphasis on food production; has shifted, at least temporarily, the market for its principal export crop—coffee; has reduced the shipments of bananas; and has stimulated the output of strategic crops. For many years the country has supplemented its own food production by imports. Shipping and allocation difficulties during the war have hampered this import movement and resulted in short supplies. These short supplies, together with expanded purchasing power and other factors, have brought high prices and a steady rise in the cost of living. The Government has resorted to price control and rationing to stem the tide of inflation and has encouraged increased food production to relieve the domestic shortages. Legislation enacted in 1943 and 1944, directed toward an expanded production of food, is designed to outlast the war and provide for improved production methods and greater diversification.

## Physical and Economic Background

The Republic of Costa Rica lies between Nicaragua on the north and Panama on the south, or southeast. Its eastern coast line on the Caribbean Sea is regular and almost straight, whereas the long coast bordering the Pacific is deeply cut by large gulfs and inlets to form three peninsulas, the Nicoya, the Osa, and the Burica. (See fig. 1.) With an area of more than 19,000 square miles,<sup>1</sup> the country is about the size of Vermont and New Hampshire combined. Costa Rica's most outstanding physical characteristic is the high Continental Divide that influences its climate, distribution of population, and agriculture. Two mountain ranges of the American Cordillera extend from southeast to northwest across the country and enclose a central plateau (Meseta Central) ranging between 3,000 and 6,000 feet in height. A narrow coastal plain separates the mountains from the Pacific Ocean, and a broad lowland separates the eastern Cordillera from the Caribbean.

Because of its location in the Tropics, Costa Rica's climate is determined largely by altitude. The coastal and interior lowlands are hot, temperatures ranging between 77° and 95° F.; between these ex-

tremes lies the temperate belt where temperatures rarely register below 59° or more than 77° F. Here is the home not only of most of the people but of Costa Rica's famous coffee. Humidity is high on the Caribbean coastal plains, and the rainfall is heavy. Rainfall averages from 117 to 255 inches annually and is continuous throughout most of the year. The Pacific coast receives from 43 to 126 inches of rain, and the central plateau receives an average of 79 inches. In these latter areas the rainy season—from May to November—is well defined.

The soils of Costa Rica vary from one region to another as well as within regions. Generally, however, those of the highlands are productive, fine-textured, and friable, possessing physical characteristics favorable for absorption and retention of moisture. They sometimes show potash and lime deficiencies. They are highly resistant to erosion, some areas having been cropped for hundreds of years without any signs of washing. The deep volcanic ash found in many parts of these highlands is ideal for growing fine-quality coffee.

The deep alluvial soils on the eastern coastal plain are enriched by the deposits of the mountain streams. They range in texture from loamy fine sand to silt loam, with a narrow strip of sandy soil along the coast. To the west and south of the Continental



FIGURE 1.—Map of Costa Rica showing principal areas of agricultural production.

\*Office of Foreign Agricultural Relations.

<sup>1</sup> Before the settlement of the Panama boundary on September 18, 1914.



Divide the mountain slopes, valleys, and coastal plains generally have a fairly thick layer of sandy loam. Between the coast range and the ocean and around the Gulf of Dulce are deep, fertile alluvial soils, which are being planted to bananas. Farther north on the Nicoya Peninsula and in Guanacaste Province are deep, fertile limestone soils, although large areas in northern Guanacaste are reported to have thin, sterile soils.

### THE PEOPLE AND THE LABOR SUPPLY

The total population of Costa Rica was estimated on December 31, 1944, at 725,000, or 38 persons per square mile. The people are concentrated in a narrow finger along the highland plateau, however, with moderate settlements spilling out into the surrounding areas and reaching up into the lands on either side of the Gulf of Nicoya. At the time of the last enumerated census in 1927, the racial distribution was as follows: White 80.2 percent, mestizo 14.1, Negro and mulatto 4.5, Indian 0.9, and others 0.3 percent. Negroes, largely immigrants from the West Indies, are found on the Atlantic coast, 95 percent of the total being in the Province of Limón.

For several years working conditions, hours of work, and rates of pay in certain occupations have been regulated by law. A decree of August 1935, for example, fixed minimum wages for agricultural workers on coffee, sugar, tobacco, banana, and cacao farms. This decree was amended in November 1942 to increase the wage on coffee, sugar, and tobacco plantations by about 20 percent.

A new labor code (*Código del Trabajo*), enacted in August of 1943 (effective September 15), supersedes all previous labor legislation and contains certain provisions regarding cooperatives. It sets up procedures for fixing minimum rates of pay for all types of agricultural, industrial, and commercial laborers, stipulates an 8-hour day, and provides other benefits to workers.

In peacetime high wages in the banana industry drew labor from other agricultural pursuits and from the West Indies. During the war years construction of the Inter-American Highway and military activities have attracted labor from the farms. A shortage of agricultural workers has resulted, particularly during the coffee-harvesting season. Toward the end of 1943, however, work on the military-highway project was suspended, thus freeing labor for other uses.

### TRANSPORTATION

Short railway lines, extending from the highlands to the Pacific and Caribbean coasts and into the banana areas of the east coast, serve the regions grow-

ing coffee, cacao, and bananas and transport these products to the seaports. A few all-weather roads connect the principal towns of the Meseta Central, but no highways as yet reach from the mountains to the sea. Feeder roads consist of pack trails and narrow wagon lanes. Transportation facilities into the interior and along the coastal plains are largely nonexistent. Although there are numerous rivers within the country, few are navigable. When the Inter-American Highway is completed, it will open up for development the Province of Guanacaste in the north and Puntarenas in the south.

The Atlantic port of Limón and the Pacific port of Puntarenas are equipped to handle such shipping as the country's commerce demands. In peacetimes regular steamship service is provided to both ports. Air transportation is developing rapidly and already connects the country with both North and South America.

## Development and Present Status of Agriculture

About 20 percent of the total area of the country is estimated to be agricultural, but less than 10 percent is actually cultivated. Much of the land now in forest no doubt is potential cropland of good quality. (See table 6, p. 127.)

The agriculture of the central plateau is characterized by many small individually owned farms interspersed with large estates. On the coasts, on the other hand, the large-scale operations of a United States fruit company predominate, although there are numerous small planters who sell their products to the company. In addition to land privately owned, there are large areas of public lands that may be used by private individuals under specified conditions. Except for the coffee and banana industries, few statistics are available on the size of farms or extent of individual ownership.

### METHODS OF CULTIVATION

Throughout most of the country, methods of cultivation are simple, the farmers employing largely hand tools, such as the hoe, the shovel, and the ever-present machete, a long-bladed knife about 23 inches in length. The machete is used in clearing the land for planting, in weeding, and in harvesting the crops. Many small farms producing food crops or coffee are not adapted to the use of machinery, and the income of the farm is usually not sufficient to bear the heavy initial cost of mechanization. The large-size farms and plantations, however, are becoming

more and more modern in their operations. The fruit company producing bananas uses mechanized equipment for cultivating, spraying, and irrigating its lands.

A little commercial fertilizer is used on coffee farms, and some in the cultivation of sugarcane, tobacco, and rice. Pulp from coffee berries and other local materials are also utilized. Supplies of commercial fertilizers, all of which must be imported, have been reduced since the war began because of shipping shortages and priority difficulties.

### AGRICULTURAL CREDIT

Almost the only effective credit available to farmers before 1933 was private financing, usually at high interest rates. In 1933, however, a livestock-credit law authorized the International Bank of Costa Rica (*Banco Internacional*) to lend from 300 to 20,000 colones (\$53.00 to \$3,558.00) to individuals on livestock collateral. The Bank, as reorganized in 1936, became the National Bank and is at present one of the most important sources of agricultural credit. It is the national bank of issue but has also a mortgage branch and a commercial branch. The main office is in San José, and branch offices are located in Alajuela, Limón, and Puntarenas. In addition to the agricultural loans made directly by the Bank, three of the principal rural-credit activities are carried on by agencies financed through and controlled by the Bank—Agricultural Credit Boards or Councils (*Juntas Rurales de Crédito*), the warehouses (*Almacenes de Depósito*), and the coffee-processing plants or *beneficios*.

The Agricultural Credit Councils were authorized by law in 1936 to make loans at low interest rates (6 percent a year) and help the farmers with their problems. The first of these was organized in 1937. In the spring of 1942 there were 19 councils organized and operating in 35 cantons. The councils serve as local agricultural-credit banks, handling short-term and intermediate, as well as long-term, credit.<sup>2</sup> Activities under this system have increased steadily since 1937. In 1941, 5,809 loans were made for amounts totaling \$355,340.<sup>3</sup>

The Warehousing Act of 1934 authorized the National Bank to establish a system of warehouses (*Almacenes Generales de Depósito, S. A.*) that could serve as credit institutions as well as storage centers. The warehouses are privately owned but controlled and financed through the Bank. They may make

loans on goods stored with them up to 60 percent of the landed value of the merchandise at an interest rate of 6 percent. During 1941, the four warehouses then operating negotiated 1,478 credit operations with a total value of \$894,319.

### CROP PATTERN

Costa Rican economy depends heavily on the three crops—coffee, bananas, and cacao—which have accounted for from 80 to 97 percent of all exports (in terms of value) since the 1880's. Coffee usually holds first place, with bananas second, although in a few years bananas were first. In 1883, for example, coffee accounted for 82 percent of all exports, whereas in 1913 bananas stepped into first place, representing 50 percent of the total value. By 1943, cacao had increased to about 9 percent of the total. (See fig. 2.) In addition, vegetables and fruits, including oranges, are exported, largely to the Canal Zone. Abacá, rubber, and balsa exports have been of increasing value during the war.

Corn, beans, rice, and potatoes are the principal staples and form the bulk of the food consumption of the country. Domestic production of these items usually furnishes most of the requirements, but from time to time varying quantities are imported from neighboring countries. Sugar, tropical fruits and vegetables, lentils, coconuts, and yuca are also grown for home use. Although imports supply a considerable quantity and variety of food products, normally the most serious food shortages occur in wheat flour and fats and oils. Other important food imports are hominy grits, processed milk, confections, and meat. Most of the food imports are from the United States, although live cattle for slaughter come across the border from Nicaragua.

## Export Crops

### COFFEE

Coffee was introduced into the country in the late eighteenth or early nineteenth century. By 1841 production was estimated at 9 million pounds, and export markets were already established. The highlands of San José, Alajuela, Cartago, and Heredia were then as now the principal producing areas. Until the railroad to the east was completed, all coffee was moved over pack roads to the export port of Puntarenas on the Pacific. Early markets in Chile became a little later the exchange points for shipments around Cape Horn to Europe, particularly to the United Kingdom. With the opening up of the railway from San José to Limón on the Atlantic

<sup>2</sup> HERNANDEZ, ALFREDO E. EL CRÉDITO RURAL EN COSTA RICA. *La Vida Rural* 20: 817-832. Lima (Perú), 1943.

<sup>3</sup> BANCO NACIONAL DE COSTA RICA. VIGESIMOSEPTIMA MEMORIA ANUAL, 1941. 489 pp., illus., 1943.



coast, however, most exports were made from that port direct to London and the Continent. With the increased coffee movement to the United States, the two ports shared about equally in the trade during 1940-41. Since then first one and then the other has dominated. Production has increased slowly but steadily to an estimated 55 million pounds in 1944-45.

Besides producing the most valuable export product, the coffee industry provides a living for a substantial part of the population. At the time of the coffee census in 1935, one-quarter of all the people in Costa Rica lived on the 25,477 coffee farms (144,026 out of a total population of 577,833); in 16 cantons, more than 50 percent of the people were on coffee farms. These farms were owned by 21,731 proprietors, 98.6 percent of whom were Costa Ricans. Of the 118,620 acres planted to coffee, however, foreigners owned almost 15 percent so that their farms averaged about 54.5 acres in size compared with an average of 4.7 acres for the native farmer. Most of the coffee farms are small; almost 56 percent of the proprietors had less than 1,000 trees in 1935, and 75 percent had less than 2,000 trees.

The four principal producing Provinces accounted for 97 percent of the area cultivated and of the total crop in 1935 (fig. 3). Of the 222 processing plants (or beneficios) 59 were in San José, 54 in Cartago, and 48 each in Alejuela and Heredia.



FIGURE 3.—Distribution of coffee production in Costa Rica, by Provinces, 1935.

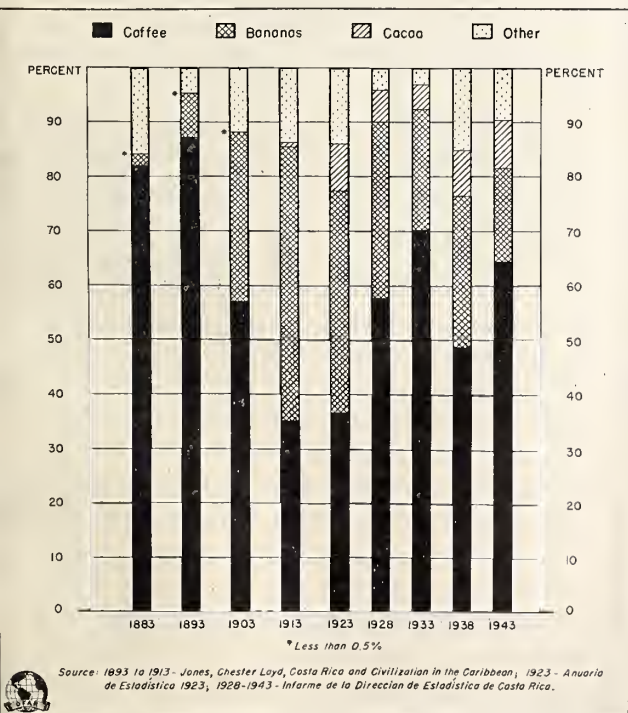


FIGURE 2.—Principal exports from Costa Rica as percentages of total value of all exports, specified years.

The small coffee farmers use simple tools—a flat shovel for hilling and weeding and a machete for pruning the trees. The larger operators employ more modern methods of cultivation, although coffee culture does not lend itself to extreme mechanization. Almost all Costan Rican coffee is of the species *Coffea arabica*. It is grown under shade, and the trees are kept pruned down so that the berries can be picked by a man standing on the ground. Bananas or plantains are used as shade for young coffee trees, but leguminous trees, such as *Glicicidia sepium*, are commonly used for the older trees.<sup>4</sup>

Costa Rican plantations are relatively free of diseases and pests. The most common diseases are a leaf-blight fungus, a leaf and fruit spot, and a root rot. All are under control at the present time.

Coffee ripens during the latter part of the rainy season; harvesting begins in October on the lower elevations and ends in March on the upper slopes. The berries are picked by hand to ensure that only ripe fruit is gathered. Ripening is continuous over a period of several weeks so that the same trees are gone over as many as three times during the harvesting season. The average annual yield per tree (according to the 1935 Census) is about 0.8 pound of beans; the highest, 1.27 pounds, was reported in the canton of Turrialba.

The large farms have their own processing plants or beneficios, where the berries are prepared for mar-

<sup>4</sup> POWELL, JANE SWIFT. AGRICULTURE IN COSTA RICA. Pan Amer-Union, Amer. Agri. Ser. 41 pp. illus., Washington, 1943.

ket. Small farmers take their products to plants on the larger farms or in the cities and small towns. The most modern methods are employed in processing, and the coffee is strictly graded. Costa Rican coffee is a well-prepared, high-grade product, which is superior for blending purposes.

Only about one-sixth of the crop is consumed within the country. During the present century exports have increased from 35 to 53 million pounds. (See fig. 4.) From 1900 to 1915 more than 75 percent of the total exported went to the United Kingdom, and about 60 percent went there during the 1920's and early 1930's. Part of this coffee was then sold to the Continent. In the early 1930's Germany began to buy coffee direct from Costa Rica under the compensation system, thus ensuring a market in the latter country for German goods. During 1936-40 Germany took about a quarter of the coffee exported and was the second market; in 1938-39 it jumped into first place, taking 37 percent of the total shipped.

Conditions in the world coffee market and the partial break-down of London as the marketing center for Costa Rican coffee, among other things, brought lower prices to Costa Rica. These prices, however, were in line with those for coffee from other areas. In fact, the high quality still favored a price differential over the Brazilian, and at times the Colombian, coffees, even in the New York market (table 1).

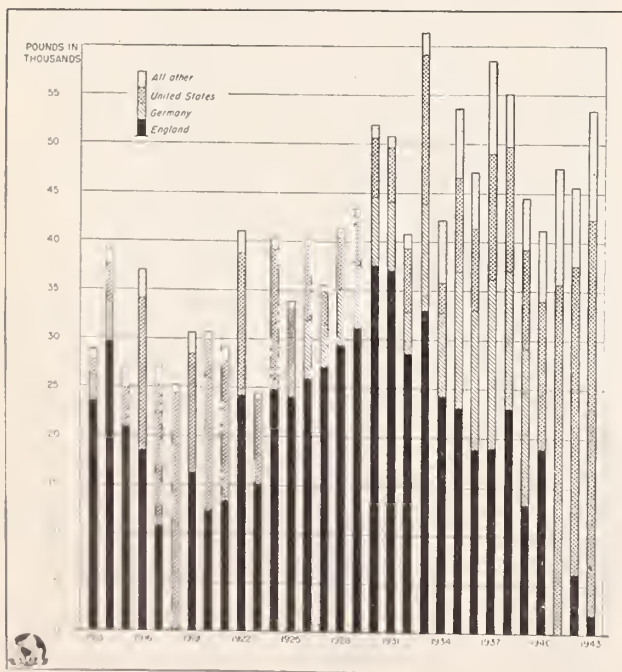


FIGURE 4.—Exports of coffee from Costa Rica, by country of destination, 1913-43.

When the European war began, the large German market, as well as certain other continental markets, was lost. Under the terms of the Inter-American Coffee Agreement, signed in late 1940, Costa Rica, however, was allotted a share in the United States market, which now takes up to three-quarters of the total exported. (See table 2.)

TABLE 1.—New York spot price of selected types of coffee, annual average, 1913-43

| Year | Santos 4 (Brazil) | Medellins (Colombia) | Prime Washed (Costa Rica) | Year | Santos 4 (Brazil) | Medellins (Colombia) | Prime Washed (Costa Rica) |
|------|-------------------|----------------------|---------------------------|------|-------------------|----------------------|---------------------------|
|      | Cents per lb.     | Cents per lb.        | Cents per lb.             |      | Cents per lb.     | Cents per lb.        | Cents per lb.             |
| 1913 | 13.17             | 16.21                | 16.45                     | 1929 | 21.84             | 23.63                | 24.06                     |
| 1914 | 11.46             | 15.98                | 15.72                     | 1930 | 12.88             | 18.44                | 17.96                     |
| 1915 | 9.57              | 14.91                | 13.98                     | 1931 | 8.75              | 16.85                | 16.85                     |
| 1916 | 10.55             | 14.97                | 13.70                     | 1932 | 10.59             | 12.25                | 13.11                     |
| 1917 | 10.16             | 14.44                | 12.25                     | 1933 | 9.12              | 11.05                | 10.72                     |
| 1918 | 12.71             | 17.67                | 14.28                     | 1934 | 11.11             | 14.41                | 13.99                     |
| 1919 | 24.78             | 28.22                | 26.26                     | 1935 | 8.88              | 10.85                | 10.01                     |
| 1920 | 18.72             | 22.66                | 21.44                     | 1936 | 9.45              | 11.99                | 10.81                     |
| 1921 | 10.05             | 16.33                | 15.96                     | 1937 | 11.04             | 12.19                | 12.72                     |
| 1922 | 14.13             | 17.98                | 18.13                     | 1938 | 7.66              | 11.51                | 11.00                     |
| 1923 | 14.50             | 19.62                | 19.66                     | 1939 | 7.41              | 12.30                | 10.13                     |
| 1924 | 20.92             | 26.46                | 26.42                     | 1940 | 7.05              | 9.21                 | 9.06                      |
| 1925 | 24.26             | 28.98                | 29.69                     | 1941 | 10.84             | 15.11                | 14.99                     |
| 1926 | 22.13             | 29.56                | 28.57                     | 1942 | 13.37             | 16.25                | 16.00                     |
| 1927 | 18.47             | 26.46                | 27.05                     | 1943 | 13.37             | 16.25                | 16.00                     |
| 1928 | 22.94             | 28.13                | 28.06                     |      |                   |                      |                           |

<sup>1</sup> U. S. ceiling prices.

As a result of the Agreement, the disaster threatening the industry because of the war was averted. Prices increased, and coffee moved into export, with little surplus stock held over from one crop year to the next. In spite of higher production costs, the industry appears to be in sound condition and is closely regulated under a series of Government decrees.

That governmental attention was early directed to coffee is indicated both by regulations placed on importation of plants, to prevent lowering the high quality of the product, and by export taxes to raise revenue for the treasury. The first export tax was levied in a decree of December 6, 1841. Changes in the tax were made several times during the next 50 years, and on October 23, 1914, it was set at \$1.50 (U. S. currency) per quintal (101 pounds). That general rate obtained until 1937, when it was changed to 8 percent ad valorem.

For the relief of the coffee industry during the depression years of the 1930's, Law No. 121 of July 24, 1933, created the Coffee Defense Institute (*Instituto de Defensa del Café de Costa Rica*). The Institute is authorized to interest itself in all phases of the industry. It is directed by a board (the *Junta Directiva*) composed of 5 members. Funds for its operation are obtained from tariffs and special appropriations.



TABLE 2.—Coffee production, export quotas, and actual exports for quota years, 1940-45

[Base quota=200,000 bags for the U. S. and 242,000 for other countries]

| Year beginning October 1 | Production                | Quotas                    |                           |                           | Exports                   |  |
|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--|
|                          |                           | United States             | Other countries           | To United States          | To other countries        |  |
|                          | <i>Bags of 132 pounds</i> | <i>Bags of 132 pounds</i> | <i>Bags of 132 pounds</i> | <i>Bags of 132 pounds</i> | <i>Bags of 132 pounds</i> |  |
| 1940-41                  | 358,400                   | 208,932                   | 242,000                   | 269,824                   | 88,576                    |  |
| 1941-42                  | 410,315                   | 296,242                   | 242,000                   | 237,771                   | 106,770                   |  |
| 1942-43                  | 435,872                   | 353,186                   | 242,000                   | 305,920                   | 97,655                    |  |
| 1943-44                  | 372,314                   | 263,644                   | 242,000                   | 232,397                   | 72,050                    |  |
| 1944-45                  | <sup>1</sup> 415,800      | 281,946                   | 242,000                   | ( <sup>2</sup> )          | ( <sup>2</sup> )          |  |

<sup>1</sup> Estimated.<sup>2</sup> Not available.

REVISTA DEL INSTITUTO DE DEFENSA DEL CAFÉ DE COSTA RICA; consular reports.

On August 17, 1933, Law No. 171 was signed, setting up regulations governing the relations between producers and processors concerning the price of coffee and the conditions of sale. This law created a Committee on Liquidations (*Junta de Liquidaciones*) within the framework of the Institute, which is responsible for fixing the prices to be paid to the producer and for carrying out the provisions of this law and the amendments thereto.

To protect the industry against the disastrous effects of war, legislation was enacted in 1940 to remain in force until one year after hostilities cease. Minimum prices were established, export duties and the municipal tax on production and cleaning (with one exception) were canceled, and a propaganda tax of 10 cents per bag of 46 kilos (101 pounds) was placed on exports, funds from which are to be used to expand foreign markets for the Costa Rican product.

In order to conform with the provisions of the Inter-American Coffee Agreement, signed in late 1940, new legislation provided for governmental control of all coffee cleaned in the country and established a coffee-quota office to authorize sales, purchases, and exportations of coffee.<sup>5</sup> The executive was authorized to issue regulations on the distribution of quotas in accordance with international agreements. Decrees are issued periodically establishing these quotas and setting the price for purchase of coffee for domestic consumption. The latest decree<sup>6</sup> establishes regulations for the sale and exportation of the 1944-45 crop.

## BANANAS

The Costa Rican banana industry was started about 1875. The early commercial production was

<sup>5</sup> Legislative Decree No. 18, and Executive Decree No. 9, October 25, 1940.

<sup>6</sup> Decree No. 1, September 30, 1944.

closely associated with the construction of the railway from the highlands to the Caribbean coast. A United States citizen, who was instrumental in this construction, is credited with the establishment of banana plantations along the lower route of the railway in the Province of Limón. That area until recently was the center of production. The United States fruit company, organized in 1899 to consolidate the banana interests of the Caribbean countries, continues to dominate the banana trade of Costa Rica.

Export shipments, the first made from a Central American country, began in the late 1870's. They increased steadily to a peak of 11 million stems in 1913 but have since declined. The port of Limón shipped most of the fruit, but small quantities moved also from Puntarenas on the Pacific.

Panama disease or banana wilt, which attacked Costa Rican bananas as early as 1904, was until 1937 the biggest factor in decreased yields of export fruit. As the disease spread, large tracts of banana land on the east coast were abandoned. In 1937 another disease, sigatoka, appeared and further devastated the fields. Plantations on the east coast were taken out of banana production, and cultivation was shifted in 1938 to the Pacific coast, which today is the important banana zone of the Republic.

Shipping difficulties sharply reduced exports from both coasts in 1942. Since domestic consumption is negligible, the industry depends largely on the export market. United States expenditures in Costa Rica during 1942 and 1943, however, gave employment to many of the displaced banana workers.

Before 1900 all banana exports went to the United States, but after that time the United Kingdom entered the market, taking about one-quarter of the total shipments. The United States, however, was

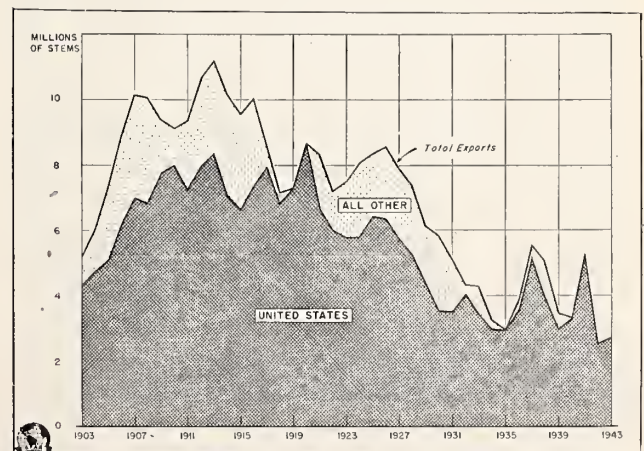


FIGURE 5.—Exports of bananas from Costa Rica, to the United States and other countries, 1903-43.

the sole market in 1919 and 1920 and again from 1941 through 1943. (See fig. 5.)

The cultivation of bananas in Costa Rica is similar to that in other Central American countries. When a new plantation is to be started, the land is cleared, drainage and irrigation systems are installed, and roads are built. Rootstocks are planted in the cleared ground. Every 3 or 4 months the weeds and tropical growth must be cleared away and some of the young plants cut out to make room for those already growing.

At harvesttime (the fruit is cut green, the stage of maturity depending on the time required to reach the market), the stems are cut from the top of the plant with a sharp knife attached to a long pole. They are then carried to the road and from there taken by animal back or cart to the railway. Each stem must be dipped into an acid solution to remove the bordeaux mixture, which was applied to control the sigatoka disease, and then into a water bath to remove the acid. They are next loaded on the railway cars and carried to the port of shipment.

The machete is the important tool used by the private banana planters both for cultivating and harvesting. Cultivation on the company lands, however, is mechanized as much as is practicable. Bulldozers clear the land, tractor-drawn plows and harrows prepare the soil for planting, and machines maintain the irrigation and drainage ditches in working order. The trees are sprayed periodically by means of an overhead system to help check the spread of sigatoka disease.

The scarcity of copper-sulfate and formaldehyde solutions for spraying the plants is a wartime hazard of the industry. This, together with lack of shipping space for the fruit, has prevented expansion of the industry. Few new plantings are made, but the company is trying to keep the plantations as free from disease as possible so that expansion can take place after the war.

The Government gave little attention to the industry during its early development. In 1909 it negotiated a contract with the United States fruit company, which provided for an export tax not to exceed 1 cent (U. S. currency) per bunch until 1930. By 1930, production had fallen far below that of 1909, and the Government's interest shifted somewhat toward encouragement of new plantings.

A new law was passed, extending to 1950. This stipulated that the fruit company (1) extend its own plantings on 3,000 hectares (7,413 acres) of new land during the following 5 years, half to be on the east coast; (2) facilitate the private planting of an additional 3,000 hectares (7,413 acres), and (3) se-

cure the grant by the railways it controls of rate concessions on fruit rejected for export. Furthermore, the Government was to permit the opening of any new ports necessary for export of the new banana yield. During the agreement no tax shall be levied against the company, except (1) an export tax not to exceed 2 cents (U. S. currency) per stem of any class or size and (2) a territorial contribution.<sup>7</sup>

When the company shifted its operations to the west coast in 1938, new contracts were made with the Government, one signed on April 2 and one on May 3, 1938. The company agreed to plant 4,000 hectares (9,884 acres) to bananas on the Pacific coast during the following 5 years, to construct railway lines and port facilities on the west coast, to build a hospital for employees, and to advance to the Government \$1,000,000 against future export taxes. In return the company is guaranteed the free use of water rights and exemption from import duties on machinery and materials. The contract is for a 50-year period.

## CACAO

The third commercial crop is cacao. It was cultivated by the Indians before the Spanish conquest and used by them as money to pay for other products. The important producing regions were near the present site of Cartago and in the Matina Valley that drains into the Caribbean.

Cacao was also one of the first items of commerce. Its production declined throughout the nineteenth century, however, and exports did not again become significant until 1910.

TABLE 3.—Exports of cacao from Costa Rica, 1901-43

| Period      | Exports         |                  | Period              | Exports         |                  |
|-------------|-----------------|------------------|---------------------|-----------------|------------------|
|             | Volume          | Value            |                     | Volume          | Value            |
|             | 1,000<br>pounds | 1,000<br>dollars |                     | 1,000<br>pounds | 1,000<br>dollars |
| Average:    |                 |                  | Average<br>(Con'd.) |                 |                  |
| 1901-05.... | 190             | 35               | 1931-35....         | 13,699          | 477              |
| 1906-10.... | 536             | 64               | 1936-40....         | 14,284          | 969              |
| 1911-15.... | 858             | 107              | Annual:             |                 |                  |
| 1916-20.... | 2,895           | 350              | 1941.....           | 12,430          | 696              |
| 1921-25.... | 8,003           | 776              | 1942.....           | 12,396          | 1,104            |
| 1926-30.... | 12,231          | 874              | 1943.....           | 12,225          | 1,107            |

The present centers of cultivation are in the Province of Limón along the route followed by the railroad from the city of Limón west to the Reventazón River, as well as in areas southeast of Limón to the Panama boundary. Most of the crop, about 80 percent of the total, is produced on land owned by the fruit company and formerly in bananas. Many small

<sup>7</sup> JONES, CHESTER LLOYD. COSTA RICA AND CIVILIZATION IN THE CARIBBEAN. Ed. 2, 155 pp., illus. Madison, Wis. 1941.



farmers also sell their product to the company for export. The fruit company owns and operates almost 26,000 acres of cacao, about 10,000 in the Almirante Division (served by the port of Almirante in Panama), and 16,000 in the Limón Division.

Two crops of cacao are obtained; the principal harvest is from October to January and the secondary, earlier in the year, from May to July. Growing conditions are good, and the plants are relatively free of disease. One of the worst dangers to the crop is the "temporal" or heavy rain, which sometimes "burns" the cacao on the plants. Heavy rains of this type occurred late in 1943 and in 1944 and materially reduced the surplus for export in 1944. No machinery is used in cultivation, but the plantations are weeded occasionally with a machete. Harvesting is done by hand, and the pods are opened with a knife.

Most of the laborers on the plantations are West Indian Negroes who were formerly employed in the east-coast banana fields. During most of 1943 and 1944 there was a shortage of labor, brought about by competition, first, from the highway and other emergency demands and, later, by the fruit company itself for work in the abacá fields.

No statistics are available on production, but estimates indicate an annual average crop of about 15,000,000 pounds. About 80 percent of the production is exported. (See table 3.)

The best market is usually found in the United States, but since the beginning of the war Latin American countries have been taking the greater part of the product. Colombia, Chile, Peru, and Mexico have been the principal importers recently. Ceiling prices in the United States have been lower than those obtaining in Latin America. During the third quarter of 1943 the price offered by Chile was \$10.25 per 100 pounds; by Colombia, \$9.50; by Peru, \$9.15; and by the United States, \$8.06. All prices are net, f. o. b. Limón. During the third quarter of 1942, the first exports were made from Puntarenas, whereas previously Limón, on the Atlantic, was the only port of shipment.

During 1943 and 1944 Mexico took the largest share of the exports, largely because of good shipping facilities between the two countries. Prices in Colombia, however, continued to be more favorable than those offered in Mexico or the United States.

## Food Crops

Food crops are produced largely for local use, with only small quantities moving to outside markets. Few official statistics are available on production and acreage of these crops, and all quantitative

data used are merely rough estimates. With the exception of corn and potatoes, the staple foods were all introduced into Costa Rica after the conquest. In fact, imports of most of these products are still necessary in varying amounts. Supplies of the basic foods—corn, rice, and beans—were particularly short during 1943 and 1944, and increased imports were necessary. (See table 4.)

In order to stimulate the production of basic foods, Law No. 26 of November 6, 1943, was enacted, setting up a fund for the purchase of rice, beans, corn, and potatoes. The fund is managed by a new section of the National Bank of Costa Rica. The Bank issues contracts to national producers for these products, guaranteeing to purchase their crops at a fixed minimum price for resale to consumers. By the end of 1943 the Bank had already purchased 783,000 pounds of corn and 243,000 pounds of rice.

TABLE 4.—Net imports of selected staple foods into Costa Rica, average 1930-39, annual 1940-43

[Minus sign = net exports]

| Period       | Rice         | Sugar        | Beans        | Corn         | Wheat flour  |
|--------------|--------------|--------------|--------------|--------------|--------------|
|              | 1,000 pounds | 1,000 pounds | 1,000 pounds | 1,000 pounds | 1,000 pounds |
| 1930-34..... | 5,355        | 633          | 472          | 425          | 22,214       |
| 1935-39..... | 1,592        | 238          | 463          | 82           | 19,191       |
| 1940.....    | 2,590        | 11,321       | 88           | 2            | 22,145       |
| 1941.....    | 2,317        | 1,056        | -42          | 0            | 23,814       |
| 1942.....    | 53           | -4,198       | -337         | 267          | 17,862       |
| 1943.....    | 5,218        | -1,109       | 3,027        | 2,328        | 25,057       |

Official statistics.

## GRAIN

Corn and rice are the principal grains produced, although small amounts of barley, oats, and wheat are grown. Corn is the most important food crop and is grown on small plots throughout the country. Most of it is cultivated by hand labor with small tools. Even on the large farms, everything, with the exception of plowing, is done by hand. The region around Cartago grows the greater part of the crop, but the Atlantic lowlands are becoming increasingly important. The smaller crop of the Atlantic coast is harvested in June, and the larger crop of the plateau and Pacific zones in September. The corn is a high-yielding, short, white strain with a small cob.

Rough estimates place the average crop of 1938 and 1939 at 33,841,000 pounds and the area anywhere from 25,000 to 55,000 acres. A corn-drying plant has been erected in Guacimo by the Institute of Inter-American Affairs, which is expected to stimulate corn planting in the humid Atlantic-coast region.

Rice is produced in the Province of Guanacaste and along the *Ferrocarril del Pacífico* from Puntarenas to Ciruelas, from Ciruelas to Alajuela, in

the Santa Ana district of San José, and in the San Carlos district. Harvesting begins in August but does not reach large proportions until December. The area under cultivation before the war was estimated at 22,000 acres, and production averaged 24,000,000 pounds. Production in 1943 increased to an estimated 27,000,000 pounds. Although estimates indicate a further increase in 1944, supplies were inadequate for domestic needs.

Because of a threatened food crisis in 1944, the Government authorized the importation of rice, free of duty, from El Salvador, Nicaragua, and Ecuador to tide the country over until the new-crop harvest. Recently imports have increased from an average of 1,600,000 pounds during the 5 years 1935-39 to 5,200,000 pounds in 1943. These imports were made over a tariff imposed to encourage rice production. In 1932 (Law No. 53 of January 23, 1932) the Government levied a tariff of 0.28 colón per kilo on rice imports, to be increased by 0.02 colón each year until 1942. Loans from the National Bank are made to small rice farmers, and the Government program announced in late 1943 (referred to above) is aimed at expanding the production of rice.

Production of grains other than corn and rice is small. Almost all the wheat is used for poultry feeding, the oats for forage, and the barley for the local manufacturer of beer. Imports of wheat have been largely in the form of flour, although a flour mill was opened at San José in September 1943. The mill has agreed to conclude contracts with farmers for the purchase of their grain at a fixed price and for granting production credit at a maximum interest of 6 percent.

Imports of flour averaged about 20,000,000 pounds a year before the war; they declined in 1942, because of shipping difficulties, to 18,000,000 pounds but increased again in 1943 to 25,000,000 pounds. When shipping was particularly unsatisfactory in 1942, flour supplies dwindled, and rationing was started. The situation was further complicated by the fact that flour does not keep well in the Costa Rican climate, and regular shipments must be made to ensure adequate supplies. During 1943 supplies were irregular, and rationing was suspended and reimposed several times as conditions changed. The price of wheat flour is controlled by the Government to protect consumers. Consumption of flour in Costa Rica is estimated at 144,000 barrels a year.

#### BEANS AND POTATOES

Several varieties of beans are grown throughout the country, but black beans are most important in the local diet. Potatoes are produced in the high-

lands and are reported to be of good quality. Production of these crops before the war was estimated at about 97,000,000 pounds each.

The small dry-season bean crop is harvested in August and the large rainy-season crop in late December and January. Because of reduced harvests and increased demands, beans have been in short supply during the war.

#### VEGETABLE OILS

Costa Rica grows sesame seed and peanuts and has coconut palms, as well as other oil-bearing palms, to draw upon for vegetable-oil supplies, but it has long been a heavy importer of such products. Before the war, about 2,600,000 pounds of cooking oils and 335,000 pounds of vegetable-lard compounds were imported. Copra and coconut oil were also imported from the Far East, largely for making soap. In 1943, a vegetable-oil mill at Alajuela, which began operations in 1940 with a productive capacity of 200,000 pounds of oil a month, was able to process enough cooking oil to meet the country's needs and permit small exports to the Canal Zone. More than half the raw-material supply, mostly sesame seed from Nicaragua, was imported, however, despite increased domestic production. (The 1942-43 crop of Costa Rica was estimated at 1,000,000 pounds, or more than double the 1941-42 crop of 375,000 pounds.) To stimulate further increases in the production of sesame seed and of peanuts, the 1941-42 crop of which was placed at 234,000 pounds, the mill made contracts with farmers guaranteeing them a certain price for deliveries to the mill, the capacity of which is now placed at 3,500,000 pounds a year.

#### SUGAR

The cultivation of sugarcane was introduced early into Costa Rica, and it spread rapidly throughout the middle zone. In 1763, the Province of Heredia alone had more than 100 small sugar mills or *trapiches*. Production of white sugar, however, is a comparatively recent development and fluctuates slightly above and below domestic requirements. During the year of peak production (the crop year November 1, 1941, through October 31, 1942) there were 21 mills in operation, 8 of which were in the district of Grecia. Other important producing centers were Poás, Turrialba, and Jiménez. "Plantation white" sugar is the highest grade produced. Production statistics apply only to this type. In addition, panela (unrefined brown sugar) is produced for use by a large majority of the Costa Ricans and also for use in the production of alcohol.



Before the war, the estimated annual production of white sugar averaged 20,000,000 pounds, increasing in 1940-41 to 28,000,000 and to a peak of 45,000,000 in 1941-42; then it declined again in 1942-43 to 32,000,000 pounds. According to the Sugarcane Board, 24,300 acres were devoted to cane in 1941.

The short cane crop of 1939-40, which necessitated imports of more than 11,000,000 pounds of sugar, added impetus to proposals for Government regulation of the industry. On August 29, 1940, the President signed Legislative Decree No. 359, which is now the basic law governing this industry. It created a Board of Protection of Sugarcane Cultivation, usually referred to as the Sugar Board, regulated the fixing of internal and export quotas and the relations between cane growers and mill owners, fixed maximum prices for sugar, and levied an import duty and a manufacturing tax on processed sugar. The Board is charged with the duty of taking an annual census of the cane cultivated, estimating national production, importing sugar when needed to supplement domestic production, and determining the export surplus, if any. In case a surplus exists, the Board can set up a reserve fund to cover any loss resulting from export or to pay bounties to the industry. The law is to remain in force for 10 years, during which period no export tax may be levied on white or brown sugar.

The shortage of sugar during 1944 became acute toward the end of the year, and sugar rationing was inaugurated. In addition to the short cane crop, several mills were unable to maintain their output because of lack of repair parts and new machinery.

## VEGETABLES AND FRUITS

Many tropical fruits grow in Costa Rica, and vegetables produce abundantly. In peacetimes all these, with the exception of bananas and a few oranges, were grown largely for domestic use. Before the war exports of truck crops averaged less than 440,000 pounds; oranges slightly higher, and other fruits only about 55,000 pounds. In fact, fresh-fruit imports, usually averaging 695,000 pounds, were as large as total fruit exports, with the exception of bananas. Varying quantities of dried and canned fruits are also imported, largely for use by the urban people. Increases have occurred in the production of truck crops and in the harvesting of tree fruits as a result of the cooperative program of the Institute of Inter-American Affairs, which was designed to encourage food production for the armed forces and civilian population of the Canal Zone and for the crews working on the Inter-American Highway.

## Raw-Material Crops

### ABACÁ

Abacá or Manila hemp is a strong fiber much desired for rope making and particularly useful for the manufacture of marine cordage. The Philippine Islands were the principal source of supply before the war. Abacá cultivation in Costa Rica is a relatively recent development. The Government has been interested in stimulating cultivation for several years and sought to encourage production through Decree 85 of August 28, 1937. Not until 1942, however, was much progress made.

The project is now largely under the supervision of the fruit company on lands formerly planted to bananas. Plantations are in full operation at Monte Verde and Good Hope, both inland a short distance from Limón. They employ about 2,000 workers and appear to have absorbed many of the men displaced by the shift of the banana industry to the west coast. Early in 1944 a total of 11,500 acres were under cultivation. A processing plant has been completed at Monte Verde. The first shipments of fiber from these plantations were made in June 1944, and they increased steadily in volume each month thereafter. If these plantations can compete with other sources of supply after the war, abacá could become an important export of the east coast. Average yields in some fields are estimated at 1,500 pounds an acre, with prospects of an even higher output. This compares with an average yield of less than 1,000 pounds in the Philippine Islands.

### TOBACCO

The tobacco industry of Costa Rica is small, the area planted being about 1,300 acres. Production is concentrated in the two districts of Palmares and Puriscal in the central highlands, about 70 percent being in Palmares. The leaf is of the Virginia type, fresh seed being imported each year. The season begins in June or July, when the seeds are sown in beds. About the middle of September the plants are transplanted into the fields, and the tobacco ripens about 3 months later. It is cut and cured on racks in sheds, after which the leaves are stripped from the stalk and graded for shipment to market.

Production supplies about 95 percent of the tobacco used in the local manufacturing industry, imports of leaf tobacco from the United States usually averaging about 44,000 pounds a year. In 1943, however, imports increased to 280,000 pounds. In addition to leaf tobacco, cigarettes are also imported from the United States.

## Government Policy

Since 1932 the Government has followed a policy looking toward self-sufficiency in agriculture, as well as toward an improvement in the standard of living of the people. Before 1940, however, encouragement of increased production of deficit items took the form of high tariff rates designed to stimulate expanded production. Increases were effected in the duties on essential food items in 1932 and again in 1934. Since the war began, new and more rigid control measures have been adopted, and production of strategic war materials, as well as of foods, has been emphasized.

In addition to special Government attention given to specific crops, particularly coffee and sugar, a series of steps has been taken during the past 4 years to improve the structure of the Government agencies dealing with agriculture. In August 1940, a National Council was created to coordinate activities within the country. Two years later, in September 1942, agricultural work was separated from that of Public Works and consolidated under a Ministry of its own. The Coffee Defense Institute, the Sugar Board, and the National Agricultural School were put under the Ministry.

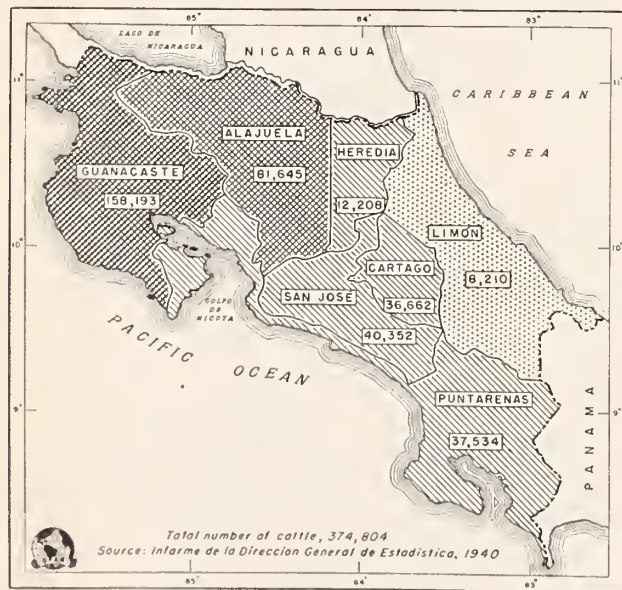


FIGURE 6.—Distribution of cattle in Costa Rica, by Provinces, 1939.

An early legislative step toward relieving the shortage of foodstuffs made more acute by the war, Law No. 149, of August 3, 1943, provided for the establishment of an organization known as the Na-

tional Agricultural Center (*Centro Nacional de Agricultura*) to work toward increased production. Under it the Ministry of Agriculture and Industries is authorized, among other things, to establish experiment stations throughout the country to give instruction in methods of cultivation, use of fertilizers, machinery, and selection of seeds; to organize associations for the purchase of machinery; to conduct a census of lands available for the cultivation of minor crops and further cultivation of major crops; and to draft measures of protection against pests and plant diseases.

Shortly thereafter Law No. 26, already mentioned, was passed, climaxing the discussions of plans to increase production of foods. To implement this further, Law No. 58, signed March 9, 1944, states that it will be considered contrary to the public interest to maintain uncultivated lands or to exact too high a rental for them. The law also is designed to enable the small farmer to rent lands on liberal terms and at a moderate rate.

The scarcity of foodstuffs, together with the steady increase in purchasing power, has resulted in rising prices. The index of living costs advanced (1936=100) from 108.4 for the year 1941 to 184.9 in November 1944. In an attempt to curb this upward trend, a Supply Commission (*Comisión de Abastos*) was set up,<sup>8</sup> authorized to enforce the provisions of an earlier law.<sup>9</sup> This early law was enacted to suppress monopolies and speculation in essential commodities. It provided for control of prices and stipulated penalties for acts tending to obstruct trade.

With the progress of the war, controls were tightened and ceiling prices established.<sup>10</sup> Early in 1943<sup>11</sup> the Supply Commission was superseded by the General Supply Board (*Junta General de Abastos*) and it, in turn, by the Office of Economic Defense (*Oficina de Defensa Económica*).<sup>12</sup> That Office had charge of import and export licenses, distribution of petroleum products, and control of other strategic materials, as well as of prices and rationing. A law of March 26, 1945, however, reorganized the system again and established a price administrator. He works with three committees—one on prices, one on quota allocations, and one on petroleum and tire rationing.

Costa Rica has entered into cooperative agreements with agencies of the United States Government

<sup>8</sup> Decree No. 2 of September 4, 1939.

<sup>9</sup> Decree No. 51 of July 16, 1932.

<sup>10</sup> No. 6 of September 14, 1939, as amended by Law No. 101 of July 15, 1942.

<sup>11</sup> Decree No. 3 of January 3, 1943.

<sup>12</sup> Decree No. 206 amended by No. 5, effective in September 1944.



in efforts to increase production of foods, rubber, abacá, and other strategic items needed for the war. It is also cooperating in the Inter-American Institute of Agricultural Sciences, located at Turrialba.

## The Livestock Industry

### CATTLE

Aside from dairying, which is an important industry in Costa Rica, livestock production is little developed. Guanacaste Province is the largest beef area, over a third of the country's 375,000 cattle being concentrated there. (See fig. 6.) The Spaniards brought slaughter cattle across the Nicaraguan border to this Province as early as 1561. Later on ranches were established in Nicoya, Bagaces, Cañas, Chomes, Aranjuez, and the Landeche Valley, all in Guanacaste. Most of the slaughter cattle still come from these lowland areas. Criollo and Brahma cattle predominate. A secondary beef area is being developed on the Atlantic coastal plains where, because of the continual rain, the pastures are green throughout the year. On the Pacific coast and on the central plateau pastures dry up, and feed supplies are short during the long season without rain. Grass feeding is normal both on the coasts and in the highlands, although some dairy farmers make hay for use in the dry season, and a few practice supplementary feeding.

Insect pests and diseases are prevalent on both coasts. The cattle fever tick is one of the most dangerous parasites, particularly in the lower elevations; the nuche fly thrives in the middle altitudes; and Brucellosis or Bang's disease is most prevalent on the central plateau as is bovine mastitis.

A few cattle and some tallow were exported to neighboring countries during colonial days, but later the Republic became a net importer of live cattle to supplement domestic production. These imports are largely feeders from neighboring Nicaragua. They are pastured on the ranches in Guanacaste until fat enough for market (usually from 9 to 12 months); then they are taken to the interior plateau for sale. A cattle-protective law was passed in 1932, however, and the proportion of imported cattle in the total slaughtered has declined (table 5).

A few live animals are still exported, but hides and skins constitute the most important export product of cattle. Shipments of those have even declined, however, from 645,000 pounds in 1930 to less than 5,000 in 1943.

The dairy industry is concentrated on the central plateau and the surrounding highlands. Here cli-

matic conditions are favorable for imported dairy breeds, diseases and pests are less prevalent, the market for milk products is larger, and the transportation facilities are more highly developed. Importations of purebred cattle to improve the dairy herds have been made in most years since 1900. An estimate of 1942 placed the number on farms at 1,150, of which 800 were Jerseys and Guernseys. Ayrshire, Brown Swiss, and Holstein are the other important types imported.<sup>13</sup>

No statistics are available on the quantitative production of fluid milk or dairy products. The estimated dairy-cow population is about 80,000. Production per cow varies, but the estimated average is 5 pounds of milk a day during a 7-month lactation period. Development of dairies to supply fluid milk is greatest around the capital city, San José, which contains more than 10 percent of the country's population. About 80 percent of the city's supply is handled by distributors, who buy the milk from the dairies and either bottle it for sale or sell it in bulk to restaurants or consumers bringing their own containers. Many of the dairies and distributing plants are run under good sanitary conditions, but the milk is not pasteurized, and enforcement of the sanitary code (*Reglamento sobre Alimentos y Bebidas*) is difficult. The other 20 percent of the San José milk supply is sold direct to consumers or retail stores by small producers.

TABLE 5.—Cattle slaughtered and imported for slaughter in Costa Rica, average 1901-40, annual 1941-43

| Period       | Total slaughtered | Imported for slaughter |                                    |
|--------------|-------------------|------------------------|------------------------------------|
|              |                   | Total                  | As percentage of total slaughtered |
| Average:     | <i>Number</i>     | <i>Number</i>          | <i>Percent</i>                     |
| 1901-05..... | 39,390            | 13,959                 | 35                                 |
| 1906-10..... | 42,505            | 15,289                 | 36                                 |
| 1911-15..... | 49,477            | 9,917                  | 20                                 |
| 1916-20..... | 42,719            | 7,728                  | 18                                 |
| 1921-25..... | 51,009            | 11,678                 | 23                                 |
| 1926-30..... | 53,808            | 15,208                 | 28                                 |
| 1931-35..... | 48,070            | 8,394                  | 17                                 |
| 1936-40..... | 46,460            | 9,262                  | 20                                 |
| Annual:      |                   |                        |                                    |
| 1941.....    | 47,673            | 3,486                  | 7                                  |
| 1942.....    | 51,706            | 8,652                  | 17                                 |
| 1943.....    | 52,210            | 9,795                  | 19                                 |

Official statistics.

Because of a scarcity of milk in early 1943, the General Supply Board announced that it would purchase the entire production of skimmed milk from the dairy farms for sale to the public. Such sale had previously been prohibited by law.

<sup>13</sup> HODGSON, R. E., and DAHLBERG, A. C. THE DAIRY INDUSTRY OF COSTA RICA. U. S. Bureau of Dairy Indus., 44 pp. Washington. 1943. [Mimeographed.]

As a result of poor pastures during the dry season, milk supplies become scarce, and distributing costs increase. At present no commercial organizations buy milk to be made into cheese, although many farms make cheese for sale. Most of the butter produced in Costa Rica is made on farms in quantities varying from a few pounds to a ton a week. Ice cream is manufactured in substantial quantities, but the quality could be improved if higher standards were enforced. At present no dried or condensed milk is produced. Imports are made, however, of both dried and condensed milk, largely for use in infant feeding.

Cattle for beef are produced largely in the Province of Guanacaste and, to a lesser extent, in San Carlos, but they are taken to the highlands before being slaughtered. In 1943, for example, of a total of 52,210 (including imported cattle) almost 60 percent were slaughtered in the two highland Provinces of San José and Alajuela. Every week cattlemen take their fattened steers from the lowlands to a cattle fair that is held every Monday at Alajuela. Middlemen buy and resell them to butchers from the cities of the central plateau. Animals for consumption in the cities must be slaughtered in the municipal slaughterhouses, and the meat may not be transported from one city to another.

In addition to imports of live cattle, small amounts of fresh and cured beef have been imported from time to time to supplement the domestic supply.

In September 1943 the price of meat began to rise, and the General Supply Board appointed a committee of middlemen to handle all cattle transactions at a fixed price. By December the number of cattle brought to the fairs declined to about half the normal number, causing a scarcity of meat. In order to stop black-market dealings, the Board then prohibited the cattlemen from selling at their farms instead of at the Alajuela fair. The National Bank announced a plan whereby it would finance the purchase of several thousand head of lean cattle from Nicaragua and Honduras for resale to breeders through a loan representing 75 percent of the purchase price.

#### OTHER LIVESTOCK

Although no data are available on the number of hogs in Costa Rica, slaughter figures show that they are important in the local diet. The cattle-protective law of 1932, which was effective in limiting cattle imports and total slaughter, seems to have stimulated substitution of pork for beef. Annual slaughter of hogs in the 10 years just prior to enactment of the law averaged 33,000, and in the 10 years thereafter, 46,000. In 1942 almost 60,000 hogs were

killed, but in 1943 the number was only 50,464. Small quantities of cured pork are imported, but the principal scarcity of hog products is in lard, most of that used being imported. During 1941-43, imports of lard averaged 3,230,000 pounds and domestic production only 15,000 pounds, to give an average total supply of about 3,245,000 pounds.

#### GOVERNMENT ENCOURAGEMENT

Since 1885 the Government has provided payment of freight costs for the importation of a number of purebred stock in order to encourage herd improvement. Not until the present century have many importations taken place, however, and these have been largely of dairy types.

Through laws passed on May 31, 1932 (Nos. 13 and 14), and amended October 15, 1934 (No. 8), the Government sought to encourage the beef-cattle industry of Guanacaste through the levying of progressive import duties on lean cattle. By Law No. 63, enacted July 30, 1943, the previous law was extended for another 10-year period.

To provide funds for the payment of freight charges on imported breeding stock, the law imposes a tax of 50 céntimos (about 9 cents) per head of cattle, horses, or mules, and 25 céntimos for hogs sold in the markets of Costa Rica. A slaughtering tax of \$5.00 per head is also levied on adult cattle, \$1.00 per head on calves weighing 200 kilos (441 pounds) or less, and \$1.25 on hogs. A protective tariff on lard is in effect. It amounts to 10 cents per kilo (2.2 pounds) on imports from countries with which Costa Rica has most-favored-nation agreements and 15 cents on those from other countries.

## The Forest Industry

Although Costa Rica imports more forest products than it exports, forests constitute one of its most valuable natural resources. At least three-quarters of the country is wooded, much of it with virgin timber. Except for the tops of the mountains above the timber line, a number of natural savannas in parts of Guanacaste and in El General Valley, and a few swampy areas along the coasts, all of Costa Rica was probably forested before the conquest. More than a thousand species of trees have been identified, approximately equal to the number in all of continental United States.

#### RESOURCES AND TRADE

The three principal forest types in Costa Rica are evergreen rain, found predominantly on the Caribbean side of the Divide; deciduous, on the Pacific



side, on the Nicoya Peninsula, and in Guanacaste; and cloud forests in the uplands. In addition there are mangrove and palm swamps on the coasts. (See table 6.)

Imports of forest products into Costa Rica usually exceed exports in value. In 1939, for example, lumber imports alone, the most important of which are redwood and southern-pine boards and railroad ties, totaled \$287,000; whereas wood exports totaled only \$70,229. In addition, exports of chicle and rubber averaged about \$16,000. Imports have declined and exports have increased in value during the war, however, imports of wood being valued at only \$119,000 and exports at \$166,000 in 1943.

An increase in export value in 1943 is accounted for by sharply expanded movement of balsa wood to the United States. Balsa has been in demand during the war years particularly for use in airplanes.

Another forest product important in the war effort is rubber. Exports have expanded sharply from 146,000 pounds in 1941 to 853,000 pounds in 1943. Chicle shipments, on the other hand, declined in 1943 to 14,000 pounds from 25,000 in 1942. Exports of ipecac have been made recently, the product coming largely from the northern part of the country in the region of the San Juan River Valley.

## RUBBER

Wild rubber trees of the Castilla variety are found in small stands throughout Costa Rica. They are more plentiful, however, on the Caribbean side of the Divide, particularly in the San Carlos region near the Nicaraguan frontier. Exports from these wild trees were more important in the early 1900's than they were from 1920 through the mid-1930's. War-time demands have stimulated the gathering of the latex, especially during the past 2 years. The Rubber Development Company of the United States Government has contracted to purchase the entire output of these trees. Approximately 400 laborers are working in the San Juan River Valley and another 100 along the northwestern extension of the railroad.

Experiments are being conducted with plantation rubber (*Hevea brasiliensis*) at several places by different agencies. A United States rubber-manufacturing company, in December of 1935, purchased

about 1,000 acres of abandoned banana lands near Cairo in the Province of Limón and contracted with the Costa Rican Government for the cultivation of rubber. Since then an adjoining tract of 1,500 acres has been acquired and most of it planted to rubber. Work has been conducted continuously since 1936, and the company has been able to export small quantities of rubber from these plantings, as well as from trees planted back in 1914 by the fruit company. In April 1945, this company entered into a similar contract with the Costa Rican Government to cultivate rubber on about 1,000 acres near Parrita on the west coast. A few small farmers are also beginning to cultivate rubber. The Rubber Development Station at Turrialba (a joint project of the Costa Rican and United States Governments) is working to improve the rubber strains and develop a disease-resistant variety more suitable to conditions in the American tropics.

TABLE 6.—Estimated area of forests and agricultural land in Costa Rica

| Item                       | Area      | Percentage of total |
|----------------------------|-----------|---------------------|
|                            | Sq. miles | Percent             |
| Evergreen rain forest..... | 11,785    | 61.3                |
| Virgin.....                | 10,230    | 53.2                |
| Culled.....                | 905       | 4.7                 |
| Second growth.....         | 650       | 3.4                 |
| Deciduous forest.....      | 2,555     | 13.3                |
| Cloud forest.....          | 750       | 3.9                 |
| Palm swamp.....            | 155       | .8                  |
| Páramo.....                | 60        | .3                  |
| Savanna <sup>1</sup> ..... | 155       | .8                  |
| Agricultural land.....     | 3,770     | 19.6                |
| Total.....                 | 19,230    | 100.0               |

<sup>1</sup> Not including savannas in Guanacaste, which have been included in agricultural land.

Source: United States Forest Service. THE FORESTS OF COSTA RICA. (In cooperation with Office of the Coordinator of Inter-American Affairs.) 46 pp., illus. Washington, 1943. [Mimeographed.]

The area now under cultivation, including the plantings of the rubber company, totals about 2,500 acres. Estimates indicate that about 1,200,000 acres are suited by soil and climate conditions to produce plantation rubber. The new plantings are of high-yielding strains that are expected at maturity to return at least 1,000 pounds to the acre. This yield compares with about 400 pounds from the unselected-seedling areas of the Far East.

## FOREIGN AGRICULTURE

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A monthly publication of the Office of Foreign Agricultural Relations of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, with the approval of the Director of the Budget. Copies may also be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., 10 cents a copy, or by subscription at the rate of \$1.00 per year, domestic, \$1.60 per year, foreign.

## BALSA

Private individuals have been cutting small amounts of balsa for several years; large-scale operations, however, did not begin until late 1942. A United States company opened an office in Limón in November, and exports mounted rapidly. Sawmills were put into operation at Colorado Bar, Siquirres, and Guápiles, and one is being constructed at Limón, where a new finishing plant has been built, providing drying kilns, storage space, and offices. In mid-1943 the company contracted with the Costa Rican Government to cultivate and utilize balsa and similar products. It planned to conduct experiments designed to further the development of the industry and agreed to plant at least 500 hectares (1,235 acres) of balsa in the Caribbean area within 5 years and, possibly, additional trees in that or other areas of the Republic. The company is buying balsa from private sawmills in addition to that produced on its own holdings. Production and export continued heavy during the first two quarters of 1944, but toward the end of the third quarter they declined sharply.

## CINCHONA

On March 12, 1943, an understanding was reached between the Costa Rican and United States Governments to establish a cinchona-bark industry in Costa Rica. The industry was to be started from seeds brought over from the Philippines in the early days of the war.

A farm in the San Antonio district near Turrialba was chosen as a temporary bed for the cinchona seedlings until a permanent location could be selected. By the end of May 1943, 100,000 seedlings had been shipped by plane and were planted immediately. Early in 1944 a farm located on the slopes of the Volcano Poás was chosen as the permanent site. A contract was entered into in March 1944 between the Costa Rican Government and the Defense Supplies Corporation providing for the establishment of the American Cinchona Plantation on the site selected.

## Effect of the War

Postwar problems directly traceable to the war will center around the new industries developing on the east coast and the consequences of a high price level on the general economic structure. The old problems of inadequate transportation, lack of trained personnel in agriculture, unimproved cultivation techniques in many fields, and dependence on two or three export crops to provide exchange for

imports of needed goods existed before the war and will remain in more or less acute form at its close.

## STRATEGIC CROPS

The greatest wartime increases in production have come in strategic crops—rubber, abacá, and balsa. The development of all these products on the east coast in the vicinity of the disappearing banana industry has absorbed workers formerly in the banana fields and in general served to maintain the prosperity of this region. While the interest of the United States Government in encouraging production of these products in Latin America will extend beyond the war, wartime scarcity of these commodities has stimulated it sharply.

Continuation of the new industries will depend on the markets for these products and Costa Rica's ability to compete with other producing centers. Already the demand for balsa wood is declining, and prospects for cinchona are uncertain. The country is well suited to the production of abacá, however, and current yields compare favorably with those of the Philippines. Rubber yields from selected strains used in the new plantings are expected to exceed those from the unselected-seedling areas of the Far East and permit competition for postwar markets.

## PREWAR CROPS

At the end of the war, coffee and banana production probably will again dominate the Costa Rican economy. Exports of these two products again will pay for imported goods from other countries, particularly for wheat flour and lard in the agricultural field. Increased production of sugar and oilseeds no doubt will be sustained. The guaranteed minimum prices provided for in the law of November 1944 should ensure expanded production of the basic food crops—corn, rice, beans, and potatoes. All of this is only a continuation of the prewar agricultural pattern and trend of production.

The coffee industry is in a good position, largely because of sustained markets and prices resulting from the Inter-American Coffee Agreement. On the assumption that some such control will continue after the war, readjustment to peacetime conditions should not be difficult. Banana plantations on the Pacific coast are being kept in shape so that production can be expanded as soon as shipping facilities are available to carry the fruit to waiting markets.

If Costa Rica can control its rapidly rising price level and cope with current food shortages, the end of the war should find it no worse off, agriculturally, and in some respects better off than before.



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