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# LAND TENURE IN THE LEADING TYPES OF FARMING OF PUERTO RICO

*Rafael Picó*

FARM organization and tenure are of vital importance to the Island of Puerto Rico, a basically agricultural community with a land shortage problem where 506 inhabitants depend directly or indirectly on every square mile of land, and 1,365 on each cultivated square mile of cropland, an efficient type of land tenure is at a premium. Together with efficient management, an equitable distribution of the farm income among all factors of production, such as farmer, laborer, and government (chiefly in the form of taxes), is also imperative in a progressive community with such a dense agricultural population.

During the present century of American domination, efficiency in production has been achieved to a great extent in the leading export commodities of the Island (with the notable exception of coffee which has actually retrogressed) through specialization in a few crops, intensiveness of methods, use of machinery, introduction of higher yielding varieties, and use of thousands of laborers. Puerto Rico's export trade has been increased to several times its 19th Century level, and the Island now enjoys a balance of trade, although not a balance of payments. (Clark, V.S. and Associates: "Puerto Rico and its Problems," The Brookings Institution, Washington,

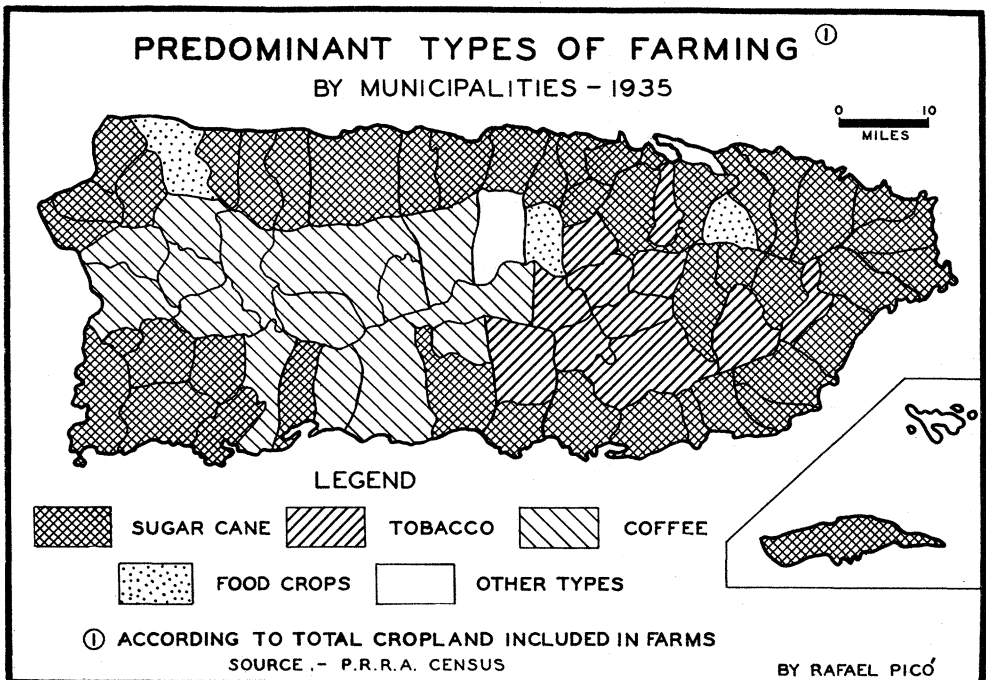


FIGURE 1.—Sugar cane dominates in the level coastal and interior plains of Puerto Rico, coffee in the rugged and rainy west central mountains, and tobacco in the humid east central mountains.

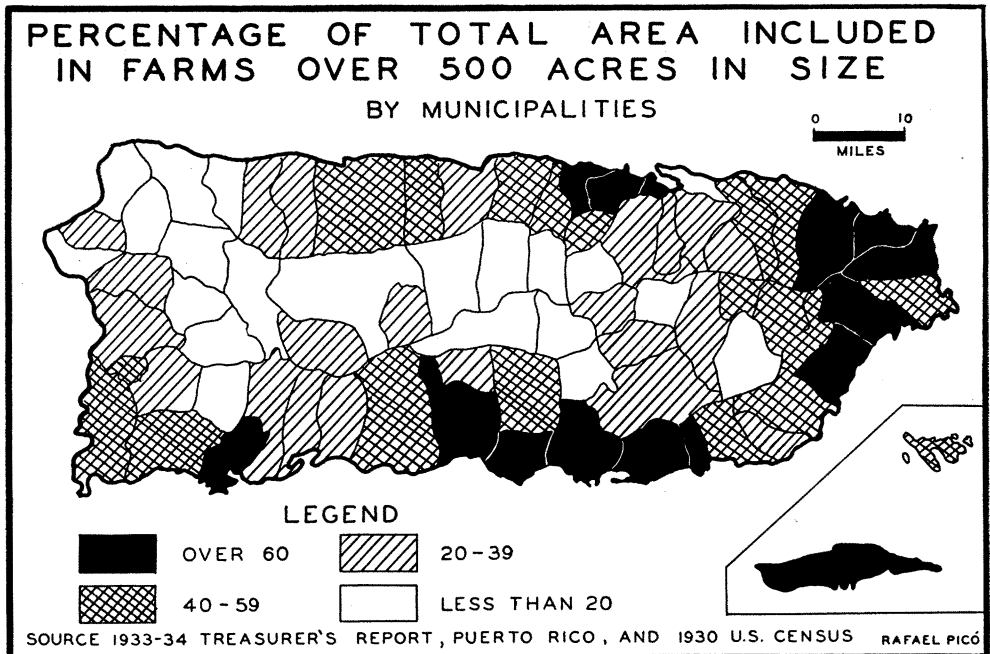


FIGURE 2.—Most of the large farms of Puerto Rico are in the sugar cane regions of the coastal lowlands.

D. C., 1930, Chapter XV.) However, efficiency of production has not raised standards of living of the Puerto Rican masses to a desirable level. Their standards of existence, rather than of living, are still so depressingly low that the appalling housing, health, educational, and food problems of the Island have attracted national attention. As Erich Zimmerman said:

“This overpopulated island is inhabited by what is probably the largest single group of destitute people under the American flag.” (Zimmerman, E. W.: “World Resources and Industries,” Harper & Brothers Publishers, New York, 1933, pp. 215-216.)

In view of the dependence of the Island on its agricultural industries one of the most important and perplexing problems of present-day Puerto Rico is determination of the best types of farming and land tenure which would modify existing contrasts in distribution of the

farm income, without decreasing efficiency of production.

#### GENERAL LAND TENURE SITUATION

Large farms dominate most of Puerto Rico. Those over 500 acres in size, although only 335 out of a total 52,790 Puerto Rican farms, include 34 per cent of the total area in farms, 30 per cent of the total cropland, and represent 46.6 per cent of the value of lands and farm buildings in Puerto Rico. (Unless otherwise expressed, statistics are taken from “Census of Puerto Rico: 1935,” Puerto Rico Reconstruction Administration. U. S. Government Printing Office, Washington, D. C., 1937.) On the other hand, small farms are very numerous, but comprise small acreage and smaller share of farm capital and probably of income. Over 50 per cent of the total number of farms in Puerto Rico are less than 10 acres in size.

However, they include only 7 per cent of total acreage, 10 per cent of cropland, and a meager 6 per cent of value of lands and farm buildings on the Island.

In order to get a truer picture of its importance than the above generalization the land tenure problem of Puerto Rico has to be studied from the point of view of the different regions and crop areas. For example there are striking contrasts between conditions in the southern coastal lowlands and in the east central mountains, as well as between those prevailing in the sugar cane and in the coffee or tobacco industry.

Three leading types of farming dominate the Island's agricultural economy: sugar cane, coffee, and tobacco (Figure 1). In 1935, 58 per cent of the total number of farms in Puerto Rico had one of these three crops as the main source of income. These farms included 77 per cent of the total area in farms, over 83 per cent of the cultivated acreage, and represented a land and building investment equivalent to 82 per cent of the total for the Island. Furthermore, they gave employment to over

175,000 agricultural workers—72 per cent of the total employed in agriculture in Puerto Rico. The products of these farms constitute the bulk of the Island's exports; thus, the economic structure of specialized, commercial Puerto Rico is dependent on conditions in sugar, coffee, and tobacco farms. Practically all geographic regions of Puerto Rico, whether rainy or humid mountains, humid or semi-arid hills, wet valleys, or arid plains include one of these three leading types of farming. (Picó, Rafael: "Studies in the Economic Geography of Puerto Rico," *The University of Puerto Rico Bulletin*. Series VIII, No. 1, September, 1937.)

#### SUGAR CANE, A PLANTATION INDUSTRY

Sugar cane farms, most important of all, occupy most of the level coastal lowlands and interior valleys with fertile alluvial or limestone soils, and abundant moisture whether from precipitation or irrigation. Normally from 60 to 85 inches of rainfall are received annually by these lands, with the exception of the



FIGURE 3.—View, facing the Caribbean Sea, of some of the sugar cane lands belonging to Lafayette Central. The sugar mill in the left background. (Courtesy of Puerto Rico Reconstruction Administration.)

northwestern and southern coastal lowlands where about 80,000 acres are irrigated by the insular irrigation service, practically all planted to sugar cane. The sugar cane farms number only 12.5 per cent of the total Puerto Rican farms, but they include about two-fifths of total farm and cropland area, represent an investment of 56 per cent of the total agricultural wealth, give employment to almost one-half the agricultural laborers, and produce in a normal year 60 per cent of the total exports of Puerto Rico.

The typical sugar cane plantation covers a large acreage. According to figures taken from the Agricultural Adjustment Administration, in 1934-35, farms 500 acres or over in size, although less than one per cent of the total, covered 65 per cent of the area included in

all sugar cane farms, and probably a similar percentage of all cane lands of Puerto Rico (Figure 2). The large farms belong to about 100 landlords operating as independent farmers (*colonos*) and to 41 sugar cane mills of the Island, which in turn represent only 30 corporate or individual owners. Proportional control of the sugar industry exercised by these two types of large farms is decidedly in favor of the sugar mills. The 30 sugar mill owners, besides possessing all facilities for grinding cane in Puerto Rico, directly manage about half the lands devoted to sugar cane production in Puerto Rico, and produce 60 per cent of the total cane grown in the Island. To continue, the land is centralized in still fewer hands. Of these 30 producers, four absentee-owned sugar corporations are as important as

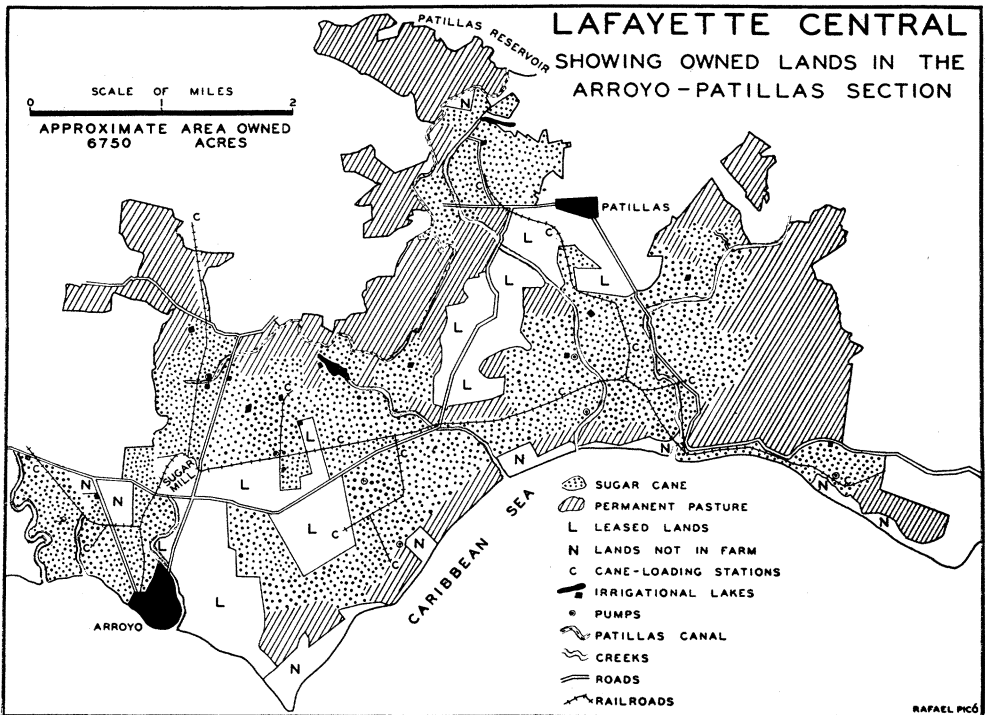


FIGURE 4.—The central is a complex farm unit including thousands of acres of sugar and pasture lands; irrigation lakes, canals, and pumps; miles of roads and railroads; modern mill for manufacturing sugar from the cane; and port facilities (in Arroyo) for exporting the finished product. (Adapted from a map by the Puerto Rico Reconstruction Administration.)



the other 26 units combined. From their own mills comes 45 per cent of the sugar produced in Puerto Rico, of which two-thirds are produced in their own lands, which represent one-fourth to one-fifth the total area devoted to the sugar cane industry on the whole Island. The average acreage directly controlled by each one of these four corporations is over 40,000, half of which is planted to sugar cane. Undoubtedly, the sugar cane mill belonging to an individual or a corporation, with thousands of acres adjacent to it, is the typical and predominant type of farming in the sugar cane industry of Puerto Rico.

Several factors facilitated land concentration in sugar cane farming rather than in other crops as coffee or tobacco: (1) a valuable crop with a protected market in mainland United States; (2) extensive level coastal plains or interior valleys where machinery could be used for large-scale farming (Figure 3); (3) abundance of cheap laborers, hundreds of whom could work in the plantations under a few supervisors; (4) many of the lands bought by the big landowners or corporations of the present were formerly in relatively large-sized farms devoted to cane and pasture and, they could be incorporated into a huge estate more easily than small farms.

As an attempt at correction of absentee ownership and land concentration in the sugar industry, in 1935 the Puerto Rico Reconstruction Administration, a federal agency, bought from their French owners the Lafayette sugar mill and lands (Figure 4). The *central* includes about 10,000 acres owned and 8,000 leased, most of it in the eastern corner of the southern coastal plain in the municipalities of Guayama, Arroyo, and Patillas. In all, about 1,200 families were living in the lands owned or leased by the *central*, while a recent survey reported that 860 families with an

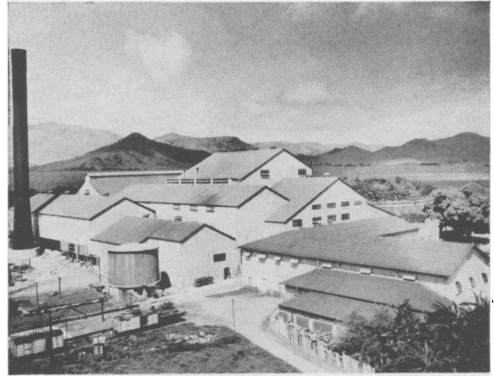


FIGURE 5.—The Lafayette sugar mill. In the background level cane fields, bordered by hills utilized only for pasture. (Courtesy of Puerto Rico Reconstruction Administration.)

aggregate population of 4,400 inhabitants had their homes in lands belonging to the mill. (Morales, Otero, P. and others: "Health and Socio-Economic Conditions in a Sugar Cane Plantation," *The Puerto Rico Journal of Public Health and Tropical Medicine*, Vol. XII, No. 4, June, 1937.) About 80 per cent of the 6,750 acres included in Figure 4 are rich alluvial soils irrigated from the Patillas Reservoir of the insular irrigation service, and by eight pumps belonging to Lafayette. The fertile lands are all planted to sugar cane; pasture is limited to the sandy and salty border near the beach and to topography too hilly for machine cultivation and irrigation.

The purpose of the Lafayette project is to subdivide the lands into units less than 500 acres in size operated by the agricultural workers themselves united in a number of coöperatives. Up to June, 1937, eight land coöperatives covering a total of 3,000 acres were organized. Its members work in the field and receive normal wages and steady work, in addition to part of the net profits of both the agricultural and manufacturing aspects of the sugar business. The Lafayette sugar mill is also partially owned by the land coöperatives together with a coöperative of

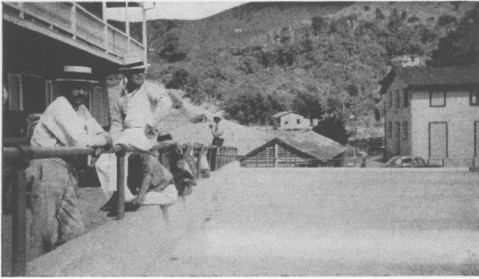


FIGURE 6.—In a coffee farm near Adjuntas. The cement floor in the foreground is used for drying coffee. Coffee grows under shade on the hillsides of the background.

*colonos* grinding in Lafayette (Figure 5). Although it is still early to judge the achievements of the new type of coöperative organization, the Lafayette project stands out as a far-reaching experiment of vast social and economic significance. It has all the physical factors needed to make it an efficient business enterprise: level topography, excellent irrigated soils, and a good crop in sugar cane. Success largely depends on the coöperative spirit of the administrators and workers alike in an enterprise which can serve as a "yardstick" for the whole sugar cane industry of the Island.

#### MEDIUM-SIZED COFFEE FARM

The evolution of coffee farming during this century is entirely different from the successful development of the sugar cane industry. From a predominant position as leading crop during the 19th century, coffee has lost to sugar, and even to tobacco, leading places in the export trade. Gradual loss of the European markets, through tariff restrictions and quotas imposed on Puerto Rican coffee, and absence of protection in the United States market, combined with disastrous effects of hurricanes, have curtailed both coffee production and prices received by the farmer. However, coffee farming is still important in the agricultural economy of Puerto Rico; for one-fifth of the Puerto Rican farms it is still

the main source of income. These farms included, in 1935, 22 per cent of the total farm acreage, 25 per cent of the cropland, and 16 per cent of the total capital invested in farm lands and buildings. About 45,000 workers, 18 per cent of the agricultural workers of Puerto Rico, depend on the coffee farms for their existence. In the rainy west central mountains at altitudes of 1,300 to 3,000 feet, coffee dominates use of the land. Cultivated on hillsides where soil is constantly rejuvenated, Puerto Rican coffee is of excellent quality, as a result of mild sub-tropical temperatures, abundant but seasonal rainfall, and excellent methods employed in its preparation for market (Figure 6).

The typical coffee farm is medium-sized; most of the coffee is produced in 150 to 175-acre farms. (Medina, V. y

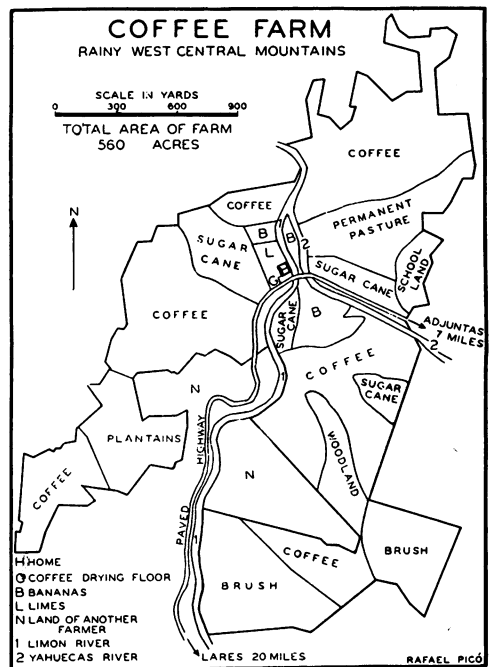


FIGURE 7.—Sugar cane, bananas, and limes are cultivated mainly in the narrow flood plain of the Limon and Yahuecas Rivers; coffee grows on smoother hillsides, while more rugged areas of the farm are brush covered. This farm is considerably larger than average but shows the present tendency toward diversification of crops in the coffee region.

Descartes, S. L.: "El Problema Cafetero de Puerto Rico" Servicio de Extension y Division de Economia Agricola. Enero, 1937 [Unpublished manuscript]. Furthermore, 70 per cent of the total cropland is cultivated by owners; whereas in the sugar cane areas the proportion is only 31 per cent. Undoubtedly the factors of a less valuable crop without protected market in Continental United

J. M.: "Facts on Results from Coffee Farming in Puerto Rico During 1934 and 1935"—Mimeographed Report No. 7, Division of Agricultural Economics, University of Puerto Rico, August, 1937.) Because of difficulties encountered in marketing coffee the farmer has turned to other crops to supplant or complement his main crop with other sources of income. Several crops have



FIGURE 8.—In the upper Añasco Valley sugar cane occupies the narrow flood plain while coffee grows on hillsides in the background.

States, and rugged topography which presents obstacles to large-scale farming, use of machinery, and transportation, and probably some elements of the labor supply have not induced outside capital to invest in the coffee region, nor formation of corporations to control vast areas within it.

A typical coffee farm shows also more diversity in land utilization than is prevalent in sugar cane farms (Figure 7). Coffee normally covers from one-third to one-half of the total farm area but inter-cultivated with it are shade trees, bananas, and oranges. (Garcia,

been tried, especially plantains, limes, vanilla, citrons, and further intensification in bananas. Sugar cane has also invaded this mountainous region and in the more level river valleys or peneplain areas it can be seen growing, sometimes even above the coffee of the hillsides (Figure 8). A large percentage of the farm is utilized very sparingly if at all. Extensive areas are covered with woodland and brush, furnishing charcoal and cord-wood, two typical minor products of the coffee region much in demand throughout the Island, a timber-starved land.



### SMALL FARMS AND HOMESTEADS IN THE TOBACCO INDUSTRY

Unrestricted entrance to the protected United States market has stimulated growth of the tobacco industry, only to a less extent than sugar cane production. In 1934, Puerto Rico was one of the leading sources of filler tobacco for the United States; its crop being 40 per cent the total filler tobacco produced in the United States and its possessions. (Nolla, J. A. B.: "Primer Informe Anual del Instituto del Tabaco de Puerto Rico." *Revista de Agricultura de Puerto Rico*, Vol. XXIX, No. 1, 1937.) Physical features in the most important region, the humid east-central mountains of Puerto Rico, have also contributed to the success of tobacco farming. Mild sub-tropical temperatures and protective mists assure a very high grade of filler tobacco. Light early winter rains of the sprinkle type brought by the northerly or northeasterly trade winds provide sufficient moisture for growth of tobacco, a winter crop. At

the same time, a less humid late winter helps the tobacco harvest. Soils used for tobacco are generally slightly heavy in texture, but as most of the tobacco is planted on steep slopes or on terraces, drainage is excellent (Figure 9).

The typical tobacco farm is small, the smallest type of unit producing an important export crop in Puerto Rico. According to the 1935 Census about one-fourth of the Puerto Rican farms had tobacco as the main source of income; a larger number of farms than those growing sugar cane or coffee as the main crop. However tobacco farms included only 13 per cent of the total farm area or of the cropland in Puerto Rico, and the value of its fixed capital was only 8 per cent of the total. Nevertheless, tobacco farms in that year gave employment to 15 per cent of the agricultural workers of the Island, showing that tobacco is an intensive crop requiring a great deal of manual labor. In recent studies of hundreds of tobacco farms made by the Division of Agricultural Economics of



FIGURE 9.—Typical scene in the La Plata Farm after purchase and subdivision by the Puerto Rico Reconstruction Administration. Each of the cement houses is inhabited by a homesteader's family which plants tobacco, as shown in the right foreground, plantains, corn, sweet potatoes, "yautias," and other food crops. Tobacco barns in the background.

the University of Puerto Rico it was revealed that the average size for the very small farms was 14 acres, while the larger-sized group averaged only 63 acres. (Toro, Jr., Emilio del: "Brief Facts on Tobacco Farming in Puerto Rico in 1935-36 and 1936-37." Mimeographed Report No. 11, Division of Agricultural Economics, University of Puerto Rico, January, 1938.) There is certainly a marked contrast with the sugar cane estates covering thousands of acres; even the typical tobacco farm is only one-third as large as the typical coffee farm. A fairly large proportion of the tobacco growers (47 per cent) own their farms, while other large groups (31 per cent) are tenants or share-croppers on the lands belonging to other farmers.

Diversification of land utilization is another desirable feature of the tobacco farm. Usually only one-fourth of the cropland is planted to tobacco, although it constitutes 90 per cent of the total farm sales. Corn is usually planted in the spring after the tobacco has been harvested; thus the same land yields two crops a year. Bananas, plantains, beans, sweet potatoes, and yautías are also planted in the tobacco farm as secondary crops.

There is practically no absentee-ownership in the agricultural phase of the tobacco industry, now that the Puerto Rico Reconstruction Administration has purchased the lands of the absentee-owned corporation operating in the La Plata Valley. Absence of the problem can perhaps be explained by marked fluctuations in the tobacco market which can be borne better by a diversified farm than by a one-crop specialized large farm. Furthermore, the mountainous environment and the prevalence of small farms do not encourage acquisition of extensive blocks for huge estates. Also, tobacco farming includes several operations which en-

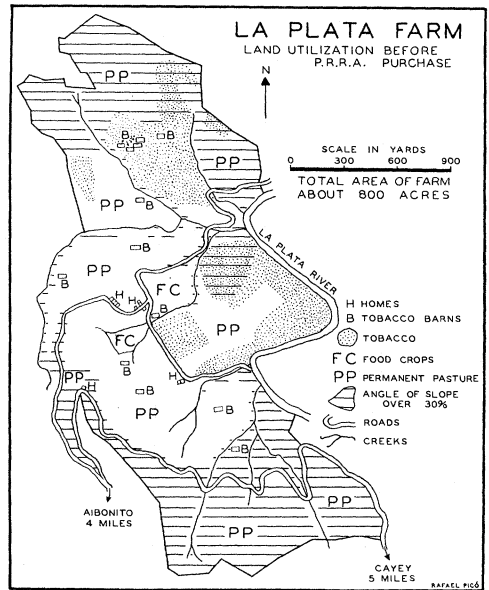


FIGURE 10.—About two-fifths of the farm consists of very steep slopes, some of them over 60 per cent, formerly cultivated to tobacco or covered by poor pasture. Even large areas of the more arable terrace or flood plain lands were utilized sparingly. Food crops covered small acreage. (Adapted from a soil map by the Puerto Rico Reconstruction Administration.)

gage the labor of women and children of the small landowner's family without the cash outlay necessary in a large farm operating on a commercial basis.

In the La Plata project of the P.R.R.A., we see another attempt to eliminate large farms and absentee ownership. Formerly, an area of 4,322 acres of land in the La Plata River watershed was held by an absentee-owned corporation which had attempted to produce wrapper-leaf tobacco and for various reasons had failed (Figure 10). The farm was used very sparingly. In 1935, the P.R.R.A. bought this property in order to subdivide it into small homesteads five to ten acres in size. About 450 homesteads will be created in all, 271 of which were already occupied in June, 1937 (Figure 11). Tobacco will continue to be the main cash crop, but many other crops which were little cul-

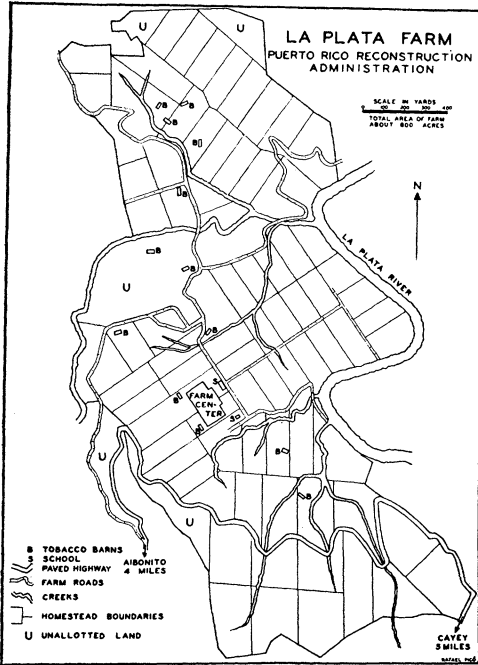


FIGURE 11.—In all 86 homestead farms were established, ranging in size from ten and thirteen acres in the more rugged northwestern and southern slopes, to four and six acres in the terraces and river bottom lands (see Figure 10). Part of the unallotted lands are used by the Central Service Farm and for reforestation purposes. (Adapted from a map by the Puerto Rico Reconstruction Administration.)

tivated in this farm are being planted by the homesteaders (Figure 12). The future of this project looks hopeful. The homesteaders have been established on the land after a careful process of selection. They have been given a good start with a farm, a cement house, and livestock. For all of these they will pay gradually; even a term of twenty years is allowed for payment of house and land. As the farmer has a good cash crop in tobacco with accessible markets, and opportunity to work outside his little farm in near-by larger private farms needing laborers, he will probably earn money to defray his cash expenses. At present he is further helped by the P.R.R.A. through a Central Service Farm which furnishes, for small pay-

ments, seeds, agricultural implements, use of the barn, and other services which some central organization can best manage for the use of the numerous small homesteads. Land concentration, absentee ownership, and excessive, unjustified crop specialization are being dealt another heavy blow in the La Plata project.

CONCLUSIONS

The future of Puerto Rico's land tenure system seems to trend toward greater decentralization of management, further subdivision of land and elimination of absentee ownership. A powerful force towards these objectives has been the P.R.R.A. whose activities should be furthered to include other land projects. Now that Federal and Insular governments are earnestly attempting to enforce the Acts of Congress limiting corporate holdings to 500 acres, the strengthening of the above or some other agency is vitally needed to face the problem of the breaking of the large

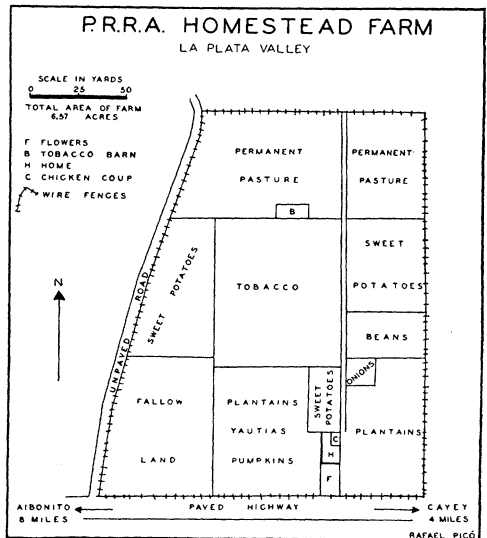


FIGURE 12.—Land utilization in a typical homestead farm. Tobacco is the main cash crop and there are plenty of food crops for family use and for sale.

sugar cane estates if they are outlawed by judicial action, as a result of the cases now being tried before court. (Since May, 1900, corporations operating in Puerto Rico have been prohibited by act of Congress to control over 500 acres of land. Throughout this century this limitation has been either openly violated or evaded by sugar corporations. Only a few years ago did the Insular Government decide to enforce the law and the Insular Attorney General brought proceedings against some of the corporations. The first case tried was decided in favor of the government [August, 1938] in the Supreme Court of Puerto Rico but the defendants have appealed to the Federal District Court of Boston.)

The great problem of the near future is to determine the proper farm type for each geographic or crop region. Shall the land be managed by coöperatives, medium-sized independent farmers, or

homesteaders? More research upon the problem is necessary, for each zone must be treated separately in light of its geographic and economic characteristics. Probably in the sugar cane areas coöperatives and fairly large-sized *colono* farms will form the most efficient types wherever large units are required for production. In the coffee zone probably more homestead farms will be created as subsistence units to place the laborers on the land. In tobacco areas the presence of a large number of sharecroppers demand their establishment in farms of their own. In the latter zone the land tenure problem is, nevertheless, fairly well solved, and the small farm should continue to be the backbone of the farming economy of the region.

*Note:* Part of the material used in the article, especially the illustrations, is taken from the author's unpublished dissertation *The Geographic Regions of Puerto Rico* presented at the School of Geography of Clark University as partial fulfillment of the requirements for the Ph.D. degree.