Land Use in the Caribbean from the Mid-Nineteenth Century to 1950

Reinaldo Funes Monzote

Plantation agriculture, particularly those dedicated to cane sugar, emerged as the primary land use in the insular Caribbean during this period. However, it was not a homogenous process across the region. The British, French, and Danish colonies entered a phase of stagnation or decline with sporadic rebounds as a result of the abolition of slavery, the appearance of new cane sugar producers in the Caribbean and other tropical areas, the expansion of beet sugar in Europe, and the liberalization of trade in the metropolises. These were small islands where the agricultural frontier could not be extended, except for larger ones such as Jamaica.

The most significant expansion, therefore, was in the sugar plantations of the Hispanic Antilles, Cuba, Puerto Rico, and the Dominican Republic, with the aim of increasing the export of sugar to the United States and international markets. But it was not a simultaneous process either. Cuba, since 1830, has been the world's largest producer of sugar for almost the entire period. Puerto Rico experienced its first boom between the 1820s and 1860s and then another in the first half of the twentieth century. The Dominican Republic took the same path beginning in the last third of the nineteenth century in a more diversified economic context. The three countries formed the so-called "(North) American sugar kingdom" after the consolidation of the northern neighbor's hegemony over the seas and lands of the Caribbean (Williams 1984; Ayala 1999).

The fact that sugar plantations continued as the principal land use in the insular Caribbean had to do with the territorial scale. The Greater Antilles: Cuba (110,992 km^2), Hispaniola (76,484 km^2), Jamaica (11,424 km^2), and Puerto Rico (8,897 km^2) cover 88 percent of the region's land area. The presence of extensive plains in Cuba and other Hispanic Antilles provided favorable conditions for the constant increase of sugar plantations, together with the occupation of some interior valleys. On most of the islands, the mountainous relief covers about 75 percent of the territory, except in Cuba, the Bahamas, Cayman, and some of the Lesser Antilles, where the proportion is inverse. The highest altitude is located in Hispaniola (3,175 m), followed by Jamaica (2,257 m). This has influenced the vulnerability of soils to erosion, after the protective cover of natural vegetation was eliminated. Another aspect to consider is

that many of these soils tend to be deficient in nutrients, due to the rapid decomposition and recycling of organic matter derived from plant cover. Ignorance of real agricultural potential led to a long learning process plagued by practices harmful to soil conservation and fertility, unlike the expertise demonstrated by native communities. The region is characterized by a wide range of soil types, occupied regardless of their agricultural potential, based on the level of organic matter, drainage conditions, natural fertility, etc. They tend to appear intermixed, although some general lines can be noted, such as the fact that alluvial soils are more present in the Greater Antilles or that a range of volcanic soils can be found in the arc of the Lesser Antilles (European Union 2015).

In a general sense, the main land uses in the insular Caribbean can be subdivided into agricultural and livestock, to which this chapter is dedicated. In addition to sugarcane, there are other export crops such as tobacco, coffee, cacao, bananas, cotton, peppers, citrus fruits, arrowroot, nutmeg, and those dedicated to domestic consumption, such as rice or corn. Livestock farming has received less attention in historical studies, but it includes a large part of the domestic animals that have been part of the Columbian exchange in its various stages. As part of the debate on the Anthropocene in the Caribbean archipelago, one can also talk about land uses for urban purposes, for road and hydraulic infrastructure, or more recently for tourist occupation. This built environment, however, had a relatively lower impact until the 1950s.

Due to space limitations, this chapter focuses on the material occupation of land through agriculture and livestock without going into greater detail on aspects of interest such as the process of land appropriation and the institutional legal framework that this implies, scientific studies, or the political, social, or cultural dimensions of land use. Two sections are dedicated to the sugar agro-industry: the first to the expansion of slave sugar plantations and the second to the central mills since the end of the nineteenth century. The third section deals with other commercial crops with an important presence on the islands, and the fourth one deals with livestock activity. Finally, a brief overview of the state of the debate on agrarian reform in the Caribbean at the end of the period is provided.

Towards the beginning of the nineteenth century, a division could be established between the Spanish islands and those belonging to other metropolises in terms of land tenure. In the latter, private appropriation for plantations prevailed, although this does not exclude the existence of other forms of crown ownership or of livestock farms and small peasant units. In the Hispanic Antilles, cattle ranches (*haciendas*) dominated with common customary uses of pastures, forests, and waters. Therefore, one of the characteristics of this period was the elimination of these forms of original tenure towards a commodification of land owned in usufruct by the most influential groups of local power (Balboa 2013).

The appropriation of land brought about the proliferation of land surveying to delimit agricultural units. Higman's book, *Jamaica Surveyed* (2001), studies hundreds of maps and plans of plantations during the eighteenth and nineteenth centuries. The dominance of large plantations, the absentee character of many planters eager to visualize their distant possessions, and the financial capacity to pay for the work of delimiting and measuring land explains this rise in Jamaican land surveying. The political and economic power of the plantocracy allowed them to control the superstructural aspects of land tenure and settlement patterns, hoarding the soils with the highest fertility that were best placed for export.

In Cuba during the nineteenth century, as part of the process of dissolving old cattle haciendas to give way to more intensive land uses, land surveyors also produced thousands of plans and maps as a means of securing agrarian ownership. These forms of representation fulfilled other functions, such as showing the internal subdivisions of the estates and facilitating the organization of labor. Sometimes because of their aesthetic value, they were displayed on the walls of rural mansions as a symbol of the territorial power of the owners (Funes and Piqueras 2023).

The Slave Sugar Plantations

In the eighteenth century, the sugar revolution, which began in several of the Lesser Antilles in the middle of the previous century, shifted to French Saint Domingue (or Haiti) and British Jamaica in the Greater Antilles. The first, formed in the east of Hispaniola after the treaty of Ryswick in 1697, registered an increase of just over 10,000 tons in the early 1720s, to 60,000 tons in the 1760s, and close to 80,000 tons around 1790. The second was lower in the same period, with an average of 40,000 tons at the beginning of the 1770s and 60,000 at the end of the 1780s (Higman 2021). This productive leap occurred as a result of the massive importation of slaves and the occupation of territories suitable for agriculture, along with the same processes of massive deforestation and environmental degradation that occurred before on smaller islands.

Saint Domingue was the symbol of the most extreme and opulent plantation society at the end of the eighteenth century. In the midst of the process of the French Revolution of 1789, a great rebellion of enslaved people broke out in this colony in 1791, which years later led to the formation of the Republic of Haiti in 1804. According to the European worldview, it was then the richest colony in the world. In truth, however, it only benefited a small elite of whites and mulattos, together with the metropolis. In 1789, its population was 40,000 white people, 28,000 Mulatto or free Black people, and 452,000 enslaved Black people, who represented more than 85 percent of the total.

After the declaration of independence, sugar production did not recover in Haiti, despite attempts to resume it. In Jamaica, planters took advantage of the situation to increase harvests to a maximum of 100,000 tons in 1804, obtained from about 700 plantations (Higman 2021: 166). By 1820, the island accounted for 25 percent of total Caribbean exports. The British colonies in the region together contributed 55 percent, more than half of it in sugar (Bulmer-Thomas 2018: 104–108).

From that decade onward, Jamaican sugar production began a prolonged decline. One of the factors was the end of the slave trade in 1807 and then the abolition of slavery in 1834 by the British, whose effects were not homogeneous. Whereas planters managed to retain possession of most of the land, former enslaved people had fewer options to find other sources of work and livelihood, as was the case in Barbados, Saint Kitts and Nevis, Trinidad, Antigua, and Saint Lucia, which achieved productive increases. For example, Barbados went from 8,837 tons in 1815 to 50,958 tons in 1894. On other islands, production declined steadily without ever recovering for the rest of the century. In the 1820s, Jamaica produced about 70,000 tons, but this decreased by the 1890s to less than 20,000 tons (Williams 1984: 366).

The process of abolishing slavery continued in 1847 with the Swedish island of Saint Bartholomew and the following year it reached the French islands of Guadalupe and Martinique, together with the Danish islands of Saint Thomas and Saint Croix. In 1863, the Dutch insular possessions (such as Aruba and Curaçao) and the mainland (Suriname) joined this process. Since then, only Puerto Rico (until 1873) and Cuba (until 1886), both under Spanish rule, maintained the slavery system. The end of forced labor could have affected the decline of plantations in some of these colonies, but it did not always happen that way due to other technological or organizational factors were involved.

Cuba, with a territory four times larger than Haiti (27,755 km^2) and about ten times that of Jamaica, became the great global sugar producer in the nineteenth century. In 1828, its output was similar to that of Jamaica, around 73,000 tons, but by the end of the 1860s, it exceeded that amount ten times. In 1894, Cuba alone supplied two-thirds of Caribbean sugar. But although the volume of regional production increased about five times between the beginning and the end of the century, its place in the global sugar trade fell from 80 percent to less than 10 percent in this same period (Bulmer-Thomas 2018: 117).

The Cuban sugar revolution based on the slave plantation system coincided with a new historical framework represented by the beginning of the first industrial revolution (Funes 2020a). Thus, the island was one of the first colonial territories linked to the birth of modern agribusiness and the expansion of frontiers producing food or raw materials linked to the industrial era, hence a key setting of what is now called "second slavery" (Tomich 2004). The application of steam engines in *trapiches* (mills) went from 26 in 1827 to 1,070 in 1862, along with their constant increase in power. Since the 1840s, mechanization began in the boiler house with vacuum evaporation

trains, and in the 1850s, the use of centrifuges in the final phase began. In 1837, the first railroad was inaugurated on the island, and since that date, an extensive network has been created in sugar-producing areas to transport products to ports, where steamboats were common for trade with the United States early on.

The use of steam as a driving force, together with the importation of duty-free coal since 1848, meant a major change in production conditions. In addition to reducing, in relative terms, the need for labor from human muscle and draft animals, it led to an internal reorganization of the plantations to expand the sugarcane fields, corresponding to the greater processing capacity. In addition, a large part of the demands for food, clothing, or technology could be met through importation. The new era helped to keep slave plantations standing despite the abolitionist movement, competition from other producing areas, and the downward trend in commodity prices, more pronounced in the case of sugar (-1.2 percent per year between 1820 and 1900) (Bulmer Thomas 2018: 129–131).

Steam engines were the best alternative in areas where water currents were very scarce or non-existent and where attempts to use wind power failed, in contrast to the extensive use of both energy sources in other Caribbean islands. The rapid adoption of steam power in Cuba contrasts with English colonies in the Caribbean, such as Jamaica and Barbados, where producers recognized that the machines could not operate efficiently because of the difficulty of achieving the balance between the size of the sugarcane fields and the grinding capacity (Zogbaum 2002: 51).

The creation of semi-mechanized mills in Cuba enabled savings in the consumption of firewood through the use of sugarcane bagasse as fuel and access to charcoal. However, these changes could imply less concern for maintaining forest reserves within plantations. In fact, the system of clearing and burning the forest to establish new sugarcane fields remained the fundamental way to obtain high agricultural yields well into the twentieth century.

Many contemporaries warned about the negative consequences of the rapid advance of the sugar frontier, both for maintaining production conditions and for economic, climate, and environmental considerations. Influential scientists such as Francisco de Frías y Jacott , Ramón de la Sagra, and Álvaro Reynoso called for the introduction of a more rational and scientific agriculture, based on pillars such as fertilizers, irrigation, drainage works, and the introduction of new agricultural implements. Their memoirs and books proposed solutions for the demand for fuel and remedies to reverse the loss of fertility. In the words of the Count of Pozos Dulces, the soils of Cuba were being exploited like an open-pit mine.

In the also Spanish Puerto Rico, there was a shorter boom in slave sugar plantations between the 1820s and 1860s. Several authors highlight the institutional changes since the enactment of the Royal Decree of Grace in 1815, which opened the door to the immigration of foreigners (from friendly Catholic powers) to favor the inflow of capital, granted tax advantages, and liberalized trade in order to promote

commercial agriculture. Sugar-producing areas in Puerto Rico were mostly concentrated in the coastal plains of the south and west of the island, around the towns of Ponce, Guayamas, and Mayaguez. In the mid-nineteenth century, its production represented 20 percent of world exports, only behind Cuba and Brazil (Scarano 1992: 39–41).

However, from then on, investment in sugar began to decline in favor of coffee. Factors such as the flow of exports from Cuba to the United States, the lack of capital, and the slower introduction of industrial technologies such as railways played a role in this regard (Bergad 1978: 65–67). In 1867, 420 mills existed in Puerto Rico, of which 161 (38 percent) had steam engines, 239 oxen (57 percent), and 20 were hydraulic (5 percent) (Cabrera 2010: 312–313). Proportions similar to those of the eastern half of Cuba around 1860, with 120 of steam (40 percent) and 178 of oxen. But far from the large sugar plantations of western Cuba, where there were 829 mills with steam engines (87 percent).

The contrast was greater considering the large investments needed for mechanized mills with vacuum evaporation trains in the boiler house and centrifuges. In 1860, 64 of these existed in Cuba, equivalent to 5 percent of the total, but already contributing 15 percent of the harvest. Despite the differences, the use of steam power also increased pressure on forests in Puerto Rico for firewood. For this reason, the Spanish crown complied with producers' demand by authorizing the tax-free introduction of coal in December 1848, a measure applied shortly before in Cuba (Cabrera 2010: 305–308).

The Era of Power Plants

In the second half of the nineteenth century, organizational changes began in the Caribbean sugar agro-industry, linked both to technological modernization and to the process of the abolition of slavery. Following the model of the beet sugar industry, the trend was towards the creation of central factories (*el /la Central*) and the separation of agricultural and industrial tasks. Development was concentrated on larger modern units, while sugarcane areas were expanded based on various ownership regimes and diverse scales. This is how the so-called colonists appeared, either former mill owners or peasants who could now access the sugar business.

The formation of central mills covered all the producing islands of the Caribbean. The French Guadeloupe and Martinique were pioneering examples after the abolition of slavery in 1848, thanks to the financial support of banking institutions created with funds intended to compensate planters. Over the next three decades, production doubled to about 50,000 tons in Martinique in 1875 and 57,000 tons in Guadeloupe in 1882. The British Isles, on the other hand, took longer to embrace these changes. To give a case, at the beginning of the twentieth century, Barbados main-

tained about 450 plantations that still mostly used windmills and produced about 50,000 tons (Zanetti 2018: 23).

Due to the territorial scale demanded by large sugar mills, centralization had a greater impact on the Hispanic Antilles. In Cuba, this process began after the Ten Years' War and in the context of the end of slavery between 1880 and 1886. The first central mills were installed both in areas of former slave plantations in the west and in areas of the wooded border in the center-east, where agricultural estates were abandoned during the war. With the contribution of the first central mills and the McKinley tariff, which favored the entry into the United States of sugar from the Antilles, the number of tons produced exceded a million for the first time in 1894.

The U.S. occupation of Cuba between 1898 and 1902 created the basis for a new sugar expansion. The Platt Amendment, an appendix imposed on the signatories of the 1901 Cuban constitution that would govern the Republic inaugurated on May 20, 1902, granted the neighboring power the right of intervention and other prerogatives. A year later, the signing of a trade reciprocity agreement granted tariff advantages to Cuban sugar in exchange for a reduction in tariffs on various products. Under these auspices, large U.S. corporations made investments to install central mills in the provinces of Camagüey and Oriente, where extensive livestock farming and vast wooded areas predominated. From 1900 to 1914, twenty-five new central mills were inaugurated, and from 1915 to 1926, another fifty were established. Among these were the so-called *colosos* (giants), due to their large installed capacity: fifteen in Camagüey and twelve in the Oriente provinces. The 1914 harvest was 2,244,500 tons, and in 1925, it rose to 5,200,800 tons. To provide sugarcane to these huge latifundios were crossed by extensive private railway networks (Funes 2008: 218).

The sugar expansion at the beginning of the twentieth century in Puerto Rico and Santo Domingo had similar characteristics. Puerto Rico was declared a U.S. tariff territory in 1901, providing an immediate stimulus to the industry. From just over 50,000 tons, production rose to 200,000 tons in 1905. At the beginning of the First World War, it was 400,000 tons, an amount that increased to more than one million tons from 1934. For this reason, marginal lands where the ecological impact was greater were occupied, such that the need to seek other economic alternatives was already clear in the 1920s (Picó 1986: 238).

In the Dominican Republic, with no tariff advantages in the U.S. market, the jump was less spectacular, from 51,000 tons in 1899 to 100,000 tons in 1920 and to about 400,000 tons between 1929 and 1935. As in Cuba, huge wooded areas were cut down. The treeless landscape in the plains of San Pedro de Macorís, La Romana, El Seibo, and later Barahona, Azua, and Puerto Plata dates back to this period (Moya Pons 1994). From the Dominican sugar plantations, raw material was also sent to Puerto Rico, where the availability of territories to expand plantations was lower and the supply of sugarcane was more dependent on the use of fertilizers and irrigation on a large scale (García Muñiz 2005: 185).

The stock market crash of 1929 and the subsequent economic crisis had a severe impact on the Caribbean. Only Puerto Rico achieved an increase in its exports as a territory of the United States. Some of the British colonies also benefited from protectionist measures in the metropolitan market and the help of modern technologies such as the railway, which reduced production costs. In Trinidad, there was an increase from 40,000 tons in 1870 to 154,000 tons in 1936, favored by the expansion of peasant agriculture and contract workers from India. Jamaica had just 5,000 tons exported in 1913, but the investment of British refiners such as Tate & Lyle in the island brought a rapid increase in production to 178,000 tons in 1945 (Higman 2021: 225).

In Cuba, sugar production fell by half in the 1930s. Under these circumstances, the rejection of monoculture and its economic, social, political, and ecological consequences was increasingly widespread. One of the most pressing problems was the scarce local production of basic foods in both Puerto Rico and Cuba. A study at the time found a greater degree of self-sufficiency in Haiti, where the peasant population produced their own food, and in the Dominican Republic, with a more diversified agriculture that achieved surpluses of rice and livestock products. Jamaica had a more diversified agricultural landscape, although it still imported large quantities of flour, rice, fish, or dairy products (Shaw 1943).

The concentration of agrarian ownership by large sugar corporations or through the leasing and control of independent suppliers was the hallmark of the new era of plantations dominated by the central mills. Therefore, it is not surprising that it was associated with the dispossession of peasants, the restriction of access to land for former slaves or their descendants, and a great deal of rural conflict, as well as demands for agrarian reform in several of the countries where sugar governed.

Other Agricultural Land Uses

At different stages or territories, the sugar agro-industry was accompanied or replaced by other crops for commercial or subsistence purposes. Several already had a significant presence in exports since the eighteenth century or even before, such as tobacco, coffee, cotton, or cocoa. Others began to take off thanks to the new era of steam and the rise of mass consumption in industrial nations, such as bananas.

Haiti was the world's leading coffee producer towards the end of the eighteenth century. This crop was concentrated in mountainous areas, in part because the plains were dedicated to sugar. A Swiss visitor around 1780 pointed out that the owners of the coffee plantations had already exhausted half of the mountains they cultivated, completely changing the climate of the colony (D'Ans 2011: 185). The environmental impact of this crop continued after the revolution, when the export

of coffee was reactivated through small producers, both due to the cultivation of new slopes and the enormous use of firewood.

Jamaica and Cuba set out to fill the gap in the coffee market after the Haitian revolution. The former briefly became the main exporter thanks to the occupation of new areas in the Blue Mountains (Higman 2021: 166). But it was replaced by the rise of Cuba and the coffee recovery of Haiti beginning in the 1820s. Cuba experienced production peaks between that decade and the beginning of the next. However, both Caribbean islands were soon relegated by Brazil, the world's new coffee powerhouse since 1830. The rest of the century saw the addition of production in Java and Ceylon (Sri Lanka), as well as Central America, Venezuela, and Colombia. This explains why Caribbean participation in the coffee trade was also in decline, going from 30 percent in 1830 to 5 percent in 1900 (Bulmer-Thomas 2018: 117).

The Cuban coffee boom had a lot to do with the occupation of the flat lands in the south-west of Havana, based on medium and large slave plantations. Further west, coffee plantations were installed in the foothills of the Sierra del Rosario, several of which were founded by by French-Haitian planters. In the midst of the already evident decline, two strong hurricanes in 1844 and 1846 crossed those territories and destroyed numerous plantations. Another production area was located in the Sierra Maestra, in the east of the country, with a strong influence of Haitian emigrants. Since 1840, this area represented the majority of the Cuban production. Erosion in mountain areas was considerable, and it is no accident that low yields were discussed early on among the causes of coffee's decline.

In the insular Caribbean, only Haiti and Puerto Rico managed to maintain high volumes of coffee exports in the second half of the nineteenth century. The first country retained its leadership until the first half of the twentieth century. In Puerto Rico, production increased from the 1870s, and until the end of the century, exports used to be above 20,000 tons, with a maximum of 26,290 tons in 1896. Its main markets were Cuba and Spain, which absorbed about 75 percent of the total in 1876, although the proportion decreased due to shipments to France, Germany, Great Britain, and Italy. By 1898, 40 percent of cultivated land was dedicated to coffee and only 15 percent to sugar. Coffee farms were mostly managed by the owners, while a high percentage of the sugarcane fields were on leased lands (Bergad 1978: 66–70).

Fernando Picó (1979) highlights the environmental impacts in Puerto Rico of the process of occupying the Utuado mountains by moneylenders and hacienda owners who sought to take advantage of the upward trend. One explanation is that precious woods made it possible to finance plantings in the early years. Problems of loss of fertility and erosion did not take long to appear. On the other hand, the intensive planting of coffee trees led to the neglect of subsistence crops and animal husbandry, increasing dependence on imports and the impoverishment of the workers' diet (Picó 1979: 59).

When Puerto Rico passed to U.S. sovereignty in 1898, coffee entered a phase of stagnation, and in the following three decades, it was reduced to 24 percent of cultivated land. In contrast, the area of sugarcane increased more than three-fold. One of the effects was that workers began a migration to the new sugar areas of the coastal plains controlled by U.S. corporations. By 1929, four of these corporations owned 68 percent of the land dedicated to sugar on the island (Bergad 1978: 78).

Other significant commercial crops were tobacco and cacao. Cuba was the largest tobacco producer since the first colonial centuries and maintained that status after becoming a republic. The main tobacco region is located in the province of Pinar del Rio in the west. In part, this location had to do with the displacement of small producers due to the expansion of sugar in the Havana region. Coincidentally, however, their soils were very suitable for the plant. Although there is a consensus that production depended on small family units and free workers, it also involved forced labor and there was no shortage of larger-scale slave plantations (López 2015).

In the Dominican Republic, a tobacco boom began in the 1840s. The Cibao Valley region in the north of the country was the scene of a close relationship between small and medium-sized rural producers and merchants from Santiago de los Caballeros and Puerto Plata, the main regional port, who provided credit to access agricultural productions for foreign trade. The late arrival of sugar plantations in the country and their preference for plains limited competition for resources with the peasant economy of this region, although this was not exempt from threats such as logging.

The land commercialization process that shaped the peasant society of Cibao in relation to the market involved the disappearance of traditional communal land for the benefit of the more affluent peasants (San Miguel 2012). On the contrary, poor farmers were deprived of access to resources and were displaced to marginal areas or were forced to rely on illegal hunting and logging as a means of livelihood. At the end of the nineteenth century, the fall in the price of tobacco led many producers and merchants to turn their attention to cocoa and coffee, which were more lucrative Peasant families reinvested the benefits of the tobacco economy in cacao, but large-scale plantations controlled by foreign firms were also created. In 1907–1908, this crop ranked as the country's first export item (Moya Pons 2008: 405).

Cocoa and coffee maintained their weight in Dominican exports until the crisis of the 1930s, when farmers focused on producing food. The weakness of the state and the coincidence of interests between the peasantry and the commercial elite contributed to the persistence of an economy based on small production and not on latifundios (San Miguel 2012). Peasants occupied ecological niches where it was possible to combine subsistence agriculture with commercial agriculture without interference from plantations.

The expansion of the peasantry in other islands, such as Jamaica and Trinidad, had similarities and differences with the Dominican case. There it was not a ques-

tion of the dissolution of communal haciendas but of the decline of the plantation economy and its conversion into other economic activities or the occupation of new spaces. In the second half of the nineteenth century, many former enslaved people became peasants. In Trinidad, migrants from India joined, who had access to land after fulfilling their contracts and went on to supply sugarcane to central sugar mills. Indian villages also participated in the cocoa boom between 1880 and 1920 and began cultivating rice on a commercial scale (Watts 1987: 506–511).

In Jamaica, small properties with less than 15 acres (about 6 hectares) increased from 50,000 in 1870 to 185,000 in 1930. In this sense, the colonial government's policy of legalizing occupied land played an influence, as well as the opportunities, since 1895, to buy crown land on credit (Higman 2021: 225–226). The peasantry was key to the boom in the export of bananas as a new cash crop starting in 1876. The main centers were located near the north coast from the Montego Bay area in the west to Puerto Antonio in the east, where the infrastructure for shipping was created. Railroad branches to both cities were installed to serve the banana areas that exported to the United States and that began shipping to England in 1897 (Zanetti 2018: 106)

The banana business towards the end of the nineteenth century included areas of eastern Cuba, the Dominican Republic, and Trinidad. After the U.S. occupation of Cuba, this crop was relegated to the enormous potential of sugar. But in other cases, that country's military presence was essential to promote bananas. This was the case in Haiti in 1935 when Standard Fruit was awarded a contract for twenty-five years to promote large plantations, although the Second World War frustrated expectations (Higman 2021: 227). Small farms were key to banana exports from islands such as Dominica, Guadeloupe, and Saint Lucia.

The list of crops could be more extensive, including several marketed abroad at different stages and which, for some islands, represented the main source of income. To those already mentioned, cotton, rice, citrus fruits, pineapple, coconut, potatoes, along with other native and African tubers, vegetables, or fruit trees are added. In Saint Vincent, cotton and arrowroot stood out; in Granada, nutmeg and cocoa; in Barbados and Nevis, ginger; in Dominica, lemon juice; in Jamaica, pepper, ginger, and logwood (Watts 1987). In the Isle of Pines, to the south of Cuba, U.S. American colonies were established at the beginning of the twentieth century and fostered citrus and pineapple plantations.

Transitions in Livestock Farming

Plantations might be the most visible form of land use, but on several islands, livestock tended to occupy more space. This had to do with their ability to adapt to areas with lower agricultural potential, as well as their contribution to the plantation system itself. At the same time, in these years, there were major transformations in

the management and use of animals. On the one hand, traditional free-rearing haciendas gave way to more intensive practices, through fenced pastures (paddocks) or stables to produce milk. On the other hand, steam technology, and later the internal combustion engine, entailed the gradual replacement of traction and transport by animals.

In the Lesser Antilles, opportunities for raising animals were more limited. It is not surprising that there was a flow of animals to the so-called sugar islands of the British or other European powers, either legal from North American colonies and metropolises or illegal from Hispanic territories in the Caribbean basin. Although on several of these islands it was possible to use wind or water to move the mills, the demand for animals for transport or food was still considerable.

In the same Lesser Antilles, the link between the islands of Antigua and Barbuda can be mentioned. In the first, during the period from 1900 to 1960, sugar and cotton represented 84 percent and 8 percent of exports respectively. However, Barbuda is more affected by drought and this made it less attractive for commercial agriculture, such that livestock farming on common land had greater economic value (Berleant-Schiller 1977).

Extensive livestock farming without fences and with free access to forests, waters, and pastures in so-called communal haciendas dominated the Spanish colonies until the end of the eighteenth century. From then on, the process of dissolution of these original haciendas accelerated. This disappearance occurred in a staggered manner, beginning in Puerto Rico and Cuba with the plantation boom of the nineteenth century. In the Dominican Republic, the process was delayed by the events in Hispaniola following the Haitian revolution and its incorporation into the Republic of Haiti (1821–1844). It is said that in the context of the war crisis at the end of the eighteenth century, the ideal of a supposedly more egalitarian social life dominated by the *señores de hatos* (cattle ranchers) in a *hatera-conuquera* society (a mixture of cattle ranching and small farms for subsistence and commercial farming) opposed to the plantation model was renewed in the Hispanic part (González 2011: 132–133).

The most significant thing in this period was the formation of paddocks as specialized units to supply the domestic market. One of the most extensive studies on this process is written by Shepherd (2009) on the economic and social relevance in the eighteenth and nineteenth centuries of the pens in Jamaica. This type of farm was dedicated to raising livestock, especially cattle and horses, for plantations and population centers on much more limited areas of land through planting pastures of African origin, such as guinea-grass, and food crops.

After the abolition of slavery and the decline of Jamaican plantations, cattle farming experienced a renaissance linked to the meat and milk market. Many of the original sugar farms were converted to raise animals and the number of paddocks increased from 378 in 1844 to 604 in 1881 (Shepherd 2009: 220). This trend was more marked towards the end of the nineteenth century both by the possibilities of the

domestic market and by the demand of Cuba after the wars of independence, as well as to provide equines to other British islands.

In Cuba, paddocks also multiplied during the nineteenth century as sugar plantations advanced eastward. The increase in these units covered both the areas of slave plantations and the areas where extensive livestock herds and corrals still prevailed. In the former, they were created in areas adjacent to mills and plantations as subsidiary units to maintain the teams of oxen and other working animals. In the latter, they were the product of the subdivision of the original haciendas to initiate a more intensive upbringing.

The introduction of steam engines and railroads meant a reduction in the demand for animal traction, affecting the main livestock areas. As an alternative, producers introduced reforms in breeding systems with the planting of artificial pastures and the introduction of new breeds from the United States, such as Durham or Shorthorn, for the meat market. However, these efforts were limited by the large importation of animal products such as *tasajo* (jerky) from South America and U.S. American lard. Even from 1859, livestock began to enter from Honduras and the Tampa area of Florida to supply slaughterhouses in Havana (Funes 2020b).

It is not surprising that livestock areas were the scene of the first war of Cuban independence, the Ten Years' War (1868–1878). After the war, there was a rapid recovery of the herd based on paddocks and the importation of specimens from the Caribbean and the United States. With the new war of independence between 1895 and 1898, livestock in the country fell to its minimum levels. But once again, the facilities for importing cattle, especially from the Caribbean basin itself, were the basis for the cattle herd to go from less than one million heads in 1899 to about five million in three decades. A large part of these animals went to sugarcane carts in large sugar latifundios and sugarcane colonies until they began to be replaced by trucks.

Protectionist policies since 1927 and the economic crisis of the 1930s contributed to a boom in livestock farming to supply the domestic market with meat and milk. The modernization of slaughterhouses since the end of the nineteenth century, the use of railways and then trucks for transporting animals, together with refrigerators, expanded the livestock business. In terms of management, the most important innovation had to do with the popularization of zebu cattle (*Bos Indicus*) from the beginning of the century and their crossing with Creole cattle. The adaptability of this species to tropical conditions favored the expansion of livestock latifundios. During this period, the acquisition of valuable specimens of Brahman cattle from Texas and Florida, considered the first breed of cattle created in the United States, for the improvement of meat farming in Cuba began (Funes 2023).

The dairy industry also had a boost from the late nineteenth century with the importation of Holstein-Friesan and other cattle with greater dairy potential, such as Jersey and Brown Swiss. The expansion of specialized stables in cities then began. Another big change was the arrival of pasteurization and the appearance of the

first dairy factories. The crisis of the 1930s also contributed to the increase in dairy farming, in parallel with the idea of milk as the perfect food with a more democratic consumption.

An assessment by Jaime Bagué on the livestock sector in the Caribbean around 1929 indicated that the British and French colonies had undertaken a task of selecting, caring for, and feeding cattle. New breeds were introduced in Jamaica and laws were enacted to protect their health and facilitate their propagation. From 1910, crossbreeding began at the Hope government farm, where it was determined that the Jersey breed had the greatest potential. Five decades later, Jamaica Hope was declared a new dairy breed (80 percent Jersey, 15 percent Sahiwal – Zebu –, and 5 percent Holstein). In Guadalupe, through interbreeding, immunization, and adequate nutrition, the average production per cow went from 4 to 10 liters in the 1920s (Bagué 1929).

In the Hispanic Caribbean, the picture was less flattering with rudimentary practices such as the use of fire in the grasslands of Cuba and the Dominican Republic. Bagué differentiated between private producers, with a greater interest in beef cattle, and governments, who sought to promote the dairy industry. In the Dominican Republic, the Moca Experimental Station, with an agriculture college and demonstration fields, had undertaken the acclimation of imported stallions, selling them later at cost to local ranchers.

In Puerto Rico, the sugar boom had affected livestock, as many meadows were replaced by extensive sugarcane fields, leading to an increase in the price of meat and milk. Since the creation of the Department of Agriculture and Labor in 1917, measures began to be taken, such as the elimination of ticks and the importation of purebred specimens. The most widespread was Holstein, followed by Jersey and Guernsey, which began the modernization of the dairy farms that supplied the main cities (Bagué 1929).

A 1946 report by the Anglo-American Caribbean Commission presented the situation of livestock in European and U.S. American colonies in the region. The situation was very varied, and progress had been made since the 1920s. Topics such as traction animals, the number of horses, mules, and donkeys, and the importation of water buffalo for that purpose into Trinidad were included. The improvement of cattle farming for meat and milk focused much of the attention, but species such as pigs, sheep, and poultry also appeared. The report reflected the changing landscape in animal husbandry, where traction animals were losing importance and interest in animal protein was growing. Processes that can be studied based on the implications for land use of livestock intensification that encompassed all the islands.

Final Note

In August 1944, the symposium "*Tenencia de la tierra en el Caribe*" (Land Tenure in the Caribbean) was held in Mayagüez, Puerto Rico, sponsored by the Caribbean Research Council, a technical body of the Caribbean Commission. Representatives of the British colonies (Jamaica, Antigua, and British Guiana), the United States (Virgin Islands and Puerto Rico), as well as delegations from Suriname (Holland), Haiti, the Dominican Republic, and Cuba participated. Most of the works were dedicated to the Puerto Rican case, where an agrarian reform was being implemented as a result of the Land Law of Puerto Rico of April 26, 1941 (Caribbean Commission 1946a).

With the approval of the Foraker Act of April 2, 1900, which declared Puerto Rico an unincorporated territory, the U.S. Congress established a limit of 500 acres (202 ha) to prevent land grabbing by large capitals and to favor its division. However, that provision was breached, and in the following years, sugar corporations came to control much of the best agricultural land in the country. This created a great pressure on resources because three-quarters of the population was linked to agriculture and had to occupy mountainous areas to survive, which increased deforestation and erosion.

Land concentration reached its climax in the 1930s, when 50 percent of sugarcane areas were controlled by four large U.S. American companies. 0.4 percent of the farms produced 56 percent of the harvest, an indicator of the predominance of latifundios. In addition, there were low salaries, seasonal employment – less than half the year –, precarious housing, and other ills. In the preamble to the 1941 Land Law, it was written that sugar latifundio had spread their tentacles over their vast domains, limiting the circulation of money and annihilating communal life. The prevailing economic structure created material misery and moral degradation, requiring an agrarian policy that would result in "a greater and more equitable distribution of the country's natural wealth and greater freedom and economic dignity for the inhabitants of the rural area."

This diagnosis can be applied to a large part of the Caribbean region, whose best lands were dominated by large sugar or banana corporations, mostly U.S. American. But there were variations between the Antilles. The presentation on Haiti at the symposium gave a historical account of land tenure, which after the revolution passed almost entirely to the new state due to the confiscation of property from French colonists. The free delivery of plots and the facilities for their lease or purchase them helped promote peasant farms, while the sale of land to foreigners was prohibited. The latter would change with the Constitution of 1918, signed under the U.S. American occupation.

The Dominican Republic submitted a report that highlighted efforts to establish the "sanitation" of property since the creation of the *Tribunal de Tierras* (Land Court).

Through this body, the tenure of more than a third of the Dominican territory had been clarified. One of the policies was the creation of agricultural colonies, with government support through the delivery of seeds, animals, and farming tools. Although cash crops dominated exports, led by sugar, ownership was more distributed. Of the cultivated land, 16.9 percent was occupied by bananas and *guineos* (unripe banana), 9 percent by sugar, and with about 6 percent each, cocoa, corn, and cassava. Pastures covered 36.1 percent of the area.

The most extreme case was that of Cuba, a symbol of sugar monoculture to the point that the slogan "without sugar there is no country" became famous. The 1946 agricultural census recorded an area on farms covering nearly 80 percent of the national territory, but of these only 21 percent were cultivated. 57 percent of cultivated land was dedicated to sugarcane, followed by bananas (10 percent), corn (7 percent), coffee (3.8 percent), as well as tobacco, beans, peanuts, and sweet potatoes. A large part of the areas on farms was occupied by pastures (42 percent), where cattle ranching on latifundios reigned.

The representative for Cuba stated that about 50 percent of the national territory and 25 percent of the arable land remained uncultivated. In 1937, the distribution of state land began, but without the expected fruits because they were poorly located, of low quality, and lacked means of communication. Three years later, the 1940 constitution, drafted by the various political forces, agreed to the elimination of latifundios and recognized the social function of private property, with the purpose of placing agrarian production in Cuban hands and protecting farmers. But the law that would indicate the maximum extension for a person or legal entity remained pending. At that time, the speaker wrote, the limit would be greater than the 500 acres of the Puerto Rican agrarian reform.

Some years later, in 1959, the Cuban revolution led by Fidel Castro against the dictatorship of Fulgencio Batista triumphed, with broad support from the peasants. After the seizure of power, one of the objectives was to put an end to the *latifundista* (large estate) system and enact an agrarian reform that would establish a limit to rural property and distribute land between peasants and agricultural workers. The limit was set at thirty *caballerías* (402 ha, 990 acres) and up to 100 (1,340 ha and 3,300 acres) for the most productive units. Nevertheless, the great sugar and livestock interests, foreign or domestic, with the support of the United States, raised the specter of communism to join forces against a reform whose origin and purposes had much in common with the one that had previously been applied in Puerto Rico.

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References

Ayala, Cesar. 1999. *American Sugar Kingdom: The Plantation Economy of the Spanish Caribbean, 1898–1934*. Chapel Hill: University of North Carolina Press.

Bagué, Jaime. 1929. "La ganadería en la zona del Caribe." *Boletín de la Unión Panamericana*, October: 1039–1053.

Balboa, Imilcy. 2013. *De los dominios del rey al imperio de la propiedad privada. Estructura y tenencia de la tierra en Cuba (siglos XVI–XIX)*. Madrid: CSIC.

Bergad, Laird W. 1978. "Agrarian History of Puerto Rico, 1870–1930." *Latin American Research Review* 13, no. 3: 63–94.

Berleant-Schiller, Riva. 1977. "The Social and Economic Role of Cattle in Barbuda." *Geographical Review* 67, no. 3: 299–309.

Bulmer-Thomas, Victor. 2018. *Historia económica del Caribe desde las guerras napoleónicas* (Vol. 1–2). Havana: Editorial de Ciencias Sociales.

Cabrera, Lizette. 2010. *De los bueyes a la máquina de vapor. Caminos de la tecnología del azúcar en Puerto Rico*. San Juan de Puerto Rico: Editorial de la Universidad de Puerto Rico.

Caribbean Commission. 1946a. *Caribbean Land Tenure Symposium*. Washington D.C.: Caribbean Commission.

———. 1946b. *Livestock in the Caribbean*. Washington D.C.: Caribbean Commission.

D'Ans, André-Marcel. 2011. *Haití. Paisaje y Sociedad*. Santiago de Cuba: Editorial Oriente.

European Union. 2015. *Soil Atlas of Latin America and the Caribbean*. Luxemburg: Publication Office of the European Union.

Funes, Reinaldo. 2008. *From Rainforest to Cane Field in Cuba. An Environmental History since 1492*. Chapel Hill: University of North Carolina Press.

———. 2020a. "Revolución azucarera y cambio socioambiental en Cuba en tiempos de la Segunda Esclavitud." *Revista UFMG* 27: 124–161.

———. 2020b. "'Un arcoíris en medio de la tempestad'. Visiones del potrero cubano en el siglo XIX." *Mundo Agrario* 21, no. 46.

———. 2023. "The Short-Lived Zebu and Beef Boom in Cuba before the 1959 Revolution. A Socio-Environmental Approach." *Global Environment* 16: 124–140.

Funes, Reinaldo and José A. Piqueras. 2023. *Usos agrarios, mensura y representación en Cuba, siglo XIX*. Havana: Editorial Imagen Contemporánea/Fundación Instituto de Historia Social.

González, Raymundo. 2011. *De esclavos a campesinos. Vida rural en Santo Domingo colonial*. Santo Domingo: Archivo General de la Nación.

Higman, Barry W. 2021. *A Concise History of the Caribbean*. 2nd edition. Cambridge University Press.

———. 2001. *Jamaica Surveyed. Plantation Maps and Plans of the Eighteenth and Nineteenth Centuries*. Kingston: University Press of the West Indies.

López Mesa, Enrique. 2015. *Tabaco. Mito y esclavos. Apuntes cubanos de historia agraria*. Havana: Editorial de Ciencias Sociales.

Moya, Frank, ed. 2010. *Historia de la Republica Dominicana (Historia de las Antillas)*. Madrid: CSIC.

Picó, Fernando. 1979. "Deshumanización del trabajo y cosificación de la naturaleza: los comienzos de; café en Utuado." *Cuadernos de la Facultad de Humanidades* 2: 55–70.

———. 1986. *Historia General De Puerto Rico*. San Juan de Puerto Rico: Ediciones Huracán.

———. 1992. *Haciendas y barracones. Azúcar y esclavitud en Ponce, Puerto Rico, 1800–1850*. San Juan de Puerto Rico: Ediciones Huracán.

Shepherd, Verenne. 2009. *Livestock, Sugar and Slavery. Contested Terrain in Colonial Jamaica*. Kingston: Ian Randle Publishers.

Shaw, Earl. 1943. "The Food Front in the Greater Antilles." *Economic Geography* 19, no. 1: 55–76

Tomich, Dale. 2004. *Through the Prism of Slavery. Labor, Capital and World Economy*. Lanham: Rowman & Littlefield Inc.

Watts, David. 1987. *The West Indies: Patterns of Development, Culture and Environment Change since 1492*. Cambridge: Cambridge University Press.

Williams, Eric. 1984. *From Columbus to Castro: The History of the Caribbean, 1492–1969*. New York: Vintage Books.

Zanetti, Oscar. 2018. *El Caribe: procesos económicos en perspectiva histórica*. Havana: Editorial de Ciencias Sociales

Zogbaum, Heidi. 2002. "The Steam Engine in Cuba's Sugar Industry, 1794–1860." *Journal of Iberian and Latin American Research* 8, no. 2: 37–60.