The change in the use of the land was immediately noticeable. As the cane fields in the north of the colony grew, the French began to kill off or move the herds they had raised there since 1685 to supply meat for the colony. Unlike the other sugar colonies in the Lesser Antilles, where the plantations were established on uninhabited land, the sugar plantation owners of Saint-Domingue had to compete with cattle ranchers, who refused to move their herds unless they were given similar land on other parts of the island. To encourage the first sugar plantations, Ducasse annulled the original concessions of rangeland and reappropriated fertile land on the northern plains for the first sugar companies. The cattle ranchers were given new land to the east, closer to the Spanish possessions.

The concession of new rangeland stimulated beef cattle farming. Little by little the herds multiplied and spread toward the east, to the point that in 1712, there were 10,000 head of cattle in the eastern region of the French colony. By 1714 the number had risen to 14,000. This increase in French livestock would have been sufficient to satisfy the meat demand of the sugar plantations of the northern plains of Saint-Domingue had the population of these plantations not continued to grow so rapidly. In September 1701 thirty-five sugar mills were working to full capacity in the French colony. By the end of the year, twenty additional mills were almost operational, and another ninety were under construction.

Despite their flourishing herds of livestock, the French continued to buy Spanish cattle to supply their meat markets and to provide bulls for the transportation of sugarcane to the mills. In 1702 the Spanish exports of livestock, horses, and hides to the French colony increased to 50,000 *escudos* annually. This trade defined the relationship between the two colonies for the next ninety years and helped foster the sugar revolution in Saint-Domingue in the eighteenth century.

CHAPTER 8

Caribbean Sugar Economies in the Eighteenth Century

From Tobacco to Sugar in the British West Indies

One of the consequences of the establishment of new agricultural colonies on the Caribbean islands was the gradual replacement of natural vegetation with domesticated crops. Former jungle and savannas were converted into sugarcane fields or pastures, while in drier areas, tobacco fields alternated with cotton. The seventeenth century was a period of experimentation with new plants and agricultural technology. Some crops, such as cacao, vulnerable to production-slowing diseases, took many years to produce a profit. Ginger, on the other hand, quickly became profitable. It lost its competitiveness, however, when Brazilian ginger saturated the market. Though cotton always had a market, it was never the dominant crop. Instead, it was marginally cultivated in the driest regions of the islands. Likewise, the demand for medicinal plants like drumstick tree fruit and sarsaparilla was always minimal.

Market dynamics and experimentation brought sugarcane to the fore as the most profitable product, but it was also the crop that demanded the heaviest investment. Therefore the transition from tobacco to sugarcane in the Antilles took several decades, since the earliest cane farmers had little initial capital to invest. Moreover, not all landowners wanted to convert from tobacco to cane. Thus sugarcane and tobacco coexisted as the main export crops until the price of tobacco plummeted between 1670 and 1680. From this decade on, the shift to sugarcane proved irreversible.

These transition years were characterized by three important events. The first was the virtual elimination of the ruined tobacco farmers,

forced now to sell their lands to sugar plantation owners. The second was the conversion of Barbados into a monocrop sugar economy. The third was the abandonment of cacao cultivation in Jamaica and the conversion of cacao fields into sugarcane fields.

The emergence of sugar as the dominant product in the Caribbean was accompanied by a change in the labor force from white indentured workers to African slaves. In 1680 Barbados had a population of 38,782 slaves and 2,317 white indentured servants. Four years later the number of slaves had increased to 46,000, while the number of indentured workers remained about the same.

By then Barbados had an elite class of 175 sugarcane planters who owned more than half of the island's slaves. This group represented less than 7 percent of Barbados's 2,311 sugarcane planters. Jamaica and the Leeward Islands also fell quickly under the domination of large plantation owners. In 1670 Jamaica had 724 landowners, among whom 102 owned holdings as large as the elite plantations on Barbados. In sharp contrast, Nevis, St. Kitts, Montserrat, and Antigua together could boast only twenty large plantations.

The concentration of property in Barbados and the loss of fertility of the land forced many tobacco cultivators and white indentured workers who had finished their contracts to immigrate to Jamaica and to the Carolinas in North America. In 1664, when Thomas Modyford, one of the large planters of Barbados, was appointed governor of Jamaica, a group of immigrants left with him. Many more emigrated from Barbados during the final decades of the seventeenth century.

Fearful that others would come to Jamaica to establish themselves as competitors in the sugar market, some Jamaican landowners quickly bought up the best land in an effort to block the creation of new plantations. Although they owned the largest holdings in all the English Antilles, the Jamaican planters could not equal the sugar production of their counterparts on Barbados until 1720. During these years, Jamaica had a scarce population of white manual laborers and even fewer major English investors. For this reason, during the first sixty years of its history as the largest British colony in the Caribbean, Jamaica ranked second in sugar production. Knowing that the likelihood of obtaining land was poor, very few white workers were willing to emigrate from Great Britain to Jamaica.

Another factor that delayed Jamaica's economic growth during the second half of the seventeenth century was the domineering presence of pirates in Port Royal. These unruly freebooters made the colony undesirable for agricultural colonization. The War of the League of Augsburg (1688–1697) and the War of Spanish Succession (1701–1715) turned Jamaica into a militarized zone. During the latter conflict, French and Spanish attacks on English trading ships in the Caribbean put Jamaica under the constant threat of enemy invasion. The Jamaican economy was also affected by frequent uprisings of organized runaway slaves, which terrified sugar plantation owners and destabilized life on the plantations.

Despite these difficulties, the planters gradually increased their sugar production to meet the European demand.[1] Sugar consumption in Europe grew rapidly, and the English became the main consumers and reexporters of sugar at the beginning of the eighteenth century.

The Rise of Sugar as a Commodity

By then sugar slowly but surely had ceased to be merely a medicine and a culinary curiosity for the rich. It had turned into a popular item in the diet of the middle class and the poor. At the beginning of the eighteenth century, it was already clear that this was an irreversible change. The caloric value of sugar was more efficient than that of flour and animal fat. Everyone, rich and poor alike, consumed sugar in tea, coffee, chocolate, syrups, jams, and marmalades. When tea eventually surpassed beer as the most common drink in England, the importance of sugar increased as a major ingredient in the English diet.

The extraordinary rise in the demand for sugar in Europe spurred the rapid expansion of sugar production in the Antilles. As sugar became more abundant, however, prices fell 70 percent. The reduction in the price of sugar between 1645 and 1680 led to an increase in sugar consumption in Europe. Between 1660 and 1700, sugar consumption quadrupled. This excess demand brought about a surge in the world sugar supply, particularly in the Caribbean, where production also quadrupled during this period.

The War of the League of Augsburg broke the cycle in which increas-

es in production were followed by drops in the price of sugar. The war destabilized navigation in the Caribbean and caused sugar prices to double, until they reached their highest point of the century on the London market.[2] Wildly fluctuating prices stimulated production for almost a quarter of a century, that is, from 1689 up until the end of the War of Spanish Succession in 1715. These fluctuations encouraged speculation and attracted new producers, including the new French investors in Saint-Domingue.

Despite large oscillations, the price of sugar consistently fell during the first three decades of the eighteenth century. As a result, demand continued to grow, with consumption tripling between 1700 and 1740. Planters responded by increasing production, which in turn kept prices low, motivating Europeans to consume even more sugar. When prices began to rise again in 1734, sugar consumption was already well established in Europe, and consumers were no longer willing to do without sugar, regardless of price increases.[3]

Monoculture and Land Concentration

This increase in European sugar consumption in the eighteenth century led to the proliferation of the sugar monoculture and land concentration in the Caribbean. Barbados was the first among the sugar-producing islands to feel the effects of monoculture. By 1680 the islanders already had to import their food, lumber, and draft animals. In Barbados, as in the rest of the English Antilles, the development of a sugar monoculture coincided with the consolidation of the landowning elite. In 1712 Barbados had 1,309 sugar plantations and 485 sugar mills, but by 1750 the number of sugar plantations had declined to 536 and the number of sugar mills to 356, without a decline in sugar production or acreage cultivated.

The concentration of land in the hands of a small sugar-producing minority is one of the best-documented phenomena in the history of the British West Indies in the eighteenth century. The Leeward Islands were also turned into sugar plantations, with little land used for the production of food or other commercial crops. In St. Kitts, the conversion of land to sugarcane plantations became more intense after 1713, when

France ceded its rights to the island to Great Britain under the Treaty of Utrecht. From then on, land on St. Kitts previously occupied by the French was distributed among the British planters. By 1784 almost all the cultivable land of St. Kitts was planted with sugarcane under the ownership of only 120 planters. Between 1713 and 1784, sugar exports from St. Kitts increased sixfold and continued to rise during the last years of the eighteenth century.

Nevis, Montserrat, and Antigua, three Leeward Islands that had abandoned tobacco farming, also saw a decline in the number of sugar plantations, accompanied by a rise in their average size, in the eighteenth century. In Nevis, there were close to 100 sugar plantations in 1719, but by the end of the century the concentration of land and the emergence of larger plantations had reduced their number to fewer than 50. In Montserrat after 1729, sugarcane occupied 98.6 percent of the available land—a dramatic indicator of the extent of the monoculture on this island. In 1729, when a census of population and property was taken, it was discovered that only 30 plantations occupied almost 90 percent of the land planted with sugarcane and accounted for 75 percent of all sugar mills. Montserrat also continued to increase its sugar production from some 1,800 tons in 1729 to 2,750 tons in 1764.

In Antigua, the administrative capital of the Leeward Islands, the concentration of land into the hands of a landowning elite was less marked due to a land distribution policy enacted by the first plantation owners. In addition, unlike certain other islands of the British West Indies, Antigua had always maintained a low proportion of absentee cane farmers. For several generations, a small group of twelve families maintained control of the best sugar-producing lands. Antigua, however, was the only British island in the Leeward Islands where the number of plantations grew in the eighteenth century, rising from 150 in 1706 to more than 300 in 1764. Nevertheless, as was true on other islands, sugarcane monoculture in Antigua resulted in the gradual decrease of the white population and the accompanying growth of the slave population.[4]

Jamaica manifested the same characteristics of a monocultural sugar colony: a declining white labor force and an increasing number of black slaves, as well as an expanding sugar economy. To reduce the danger of slave revolts, the colonial authorities tried to increase the white popula-

tion of Jamaica. With this purpose in mind, they enacted the so-called deficiency laws, which obliged the large landowners to maintain a minimum number of white workers on their plantations.

These laws were numerous. The first ones were approved at the beginning of the eighteenth century in response to the failed efforts to compel landowners to sell part of their lands to new cane farmers in order to broaden sugar production. Thanks to these laws and to the pressure from British consumers, the colonial government of Jamaica permitted poor cane farmers to immigrate from the Leeward Islands and Barbados, and offered them marginal land in the north and east of the island.

The deficiency laws helped Jamaica's white population grow throughout the eighteenth century, but always in a smaller proportion than the black population. In 1673, at the beginning of the sugar revolution, Jamaica had some 7,800 whites; one century later, in 1774, its white population had slightly more than doubled, reaching approximately 18,000. During the same period, the number of enslaved blacks in Jamaica grew almost twentyfold, from 10,000 to more than 193,000.

The number of plantations and the volume of sugar production increased steadily during the eighteenth century, but the Jamaican planters always agreed to control the quantity of land used for sugar to prevent prices from dropping. Therefore, when sugar prices began to rise after 1734, consumers and merchants in England supported new legislation submitted to the British Parliament that would require the Jamaican planters to sell or rent their uncultivated land to new cane farmers.

The major Jamaican absentee landowners, who were organized into a powerful parliamentary group in London, resisted these pressures and managed to keep their large estates intact for the rest of the century, only gradually increasing their production. Due to its landmass, Jamaica could have been the leading sugar colony in the Caribbean in the first half of the eighteenth century, but that title belonged to the French colony of Saint-Domingue.

The French Sugar Business

The success and continuous expansion of the French sugar industry in the Caribbean in the eighteenth century was partially due to the French government's policy of allowing the production of semirefined sugar in the Antilles (known as *sucre blanc* by the French and clayed sugar by the English). This product was somewhat more expensive than the *muscovado* sugar, but many consumers preferred it because it cost less than refined sugar and was of better quality than *muscovado*.

Other factors also explain France's rise in the sugar market. While England dominated the world sugar market in the second half of the seventeenth century, West Indian *muscovado* sugar competed directly with Brazilian sugar in Europe. As long as sugar production in Barbados and the West Indies exceeded Great Britain's internal demand, English merchants were able to reexport the surplus. When the War of Spanish Succession ended in 1714, the rise in internal demand forced the British to cut sugar exports. The European market was then quickly captured by the French, who consumed less sugar per capita and offered a better product at lower prices than the British. The wars between France and Great Britain in the eighteenth century created fluctuations in the volume of sugar reexported to the rest of Europe, but the French tended to dominate the market because they sold semirefined sugar at low prices.[5]

Even from a mercantilist perspective, the French government's policy was much more logical than that of the English. In April 1717 the French government rejected the demands of the sugar refiners in France who wanted to limit the colonies to the production of *muscovado* sugar, as was the case in the English colonies. Instead, the French government eliminated the colonial trade monopoly held by a few companies since the seventeenth century and opened up the colonial market to merchants and traders of the thirteen largest ports in France, giving them exclusive rights to trade with the French colonies.

The Letters Patent of April 1717 restricted colonial trade to French nationals only and prohibited foreigners from selling or buying in the colonies. At the same time, import taxes on West Indian sugar were fixed at 2.5 pounds *tournois* per hundredweight of *muscovado* sugar, and 8.0 pounds *tournois* per hundredweight of refined sugar. These taxes

were far lower than those paid by English importers, who were charged as much as 7.5 pounds sterling per hundredweight of *muscovado* sugar and 15 pounds sterling per hundredweight of semirefined sugar. The French government also reduced the export taxes on this latter product to a mere 3 percent.

This fiscal policy led to a gigantic increase in French production in the following decades. Martinique, for instance, quadrupled its production from 5,192 tons in 1721 to more than 20,000 tons in 1750. In the meantime, Saint-Domingue increased its production from 9,700 tons in 1720 to 36,959 tons in 1767. This made it possible for France to reexport far more sugar as well. While France was reexporting between 15,000 and 17,000 tons of sugar in 1730, by 1790 it was able to reexport as much as 62,000 tons.[6]

Financing the Sugar Industry

An enormous investment was required to produce such large amounts of sugar. When the West Indian sugar industry was in its early stages, Dutch merchants provided the capital. After the Navigation Laws and L'Exclusif were enacted, English and French merchants began to finance sugar production, mostly after their governments expelled the Dutch from their colonies in the second half of the seventeenth century. In London, Liverpool, and Bristol, and in Le Havre, Nantes, Bordeaux, and Marseille, merchants who were interested in controlling the sugar supply for their refineries formed numerous companies that loaned money to West Indian sugar producers. These merchants served both as moneylenders to the sugar producers and as direct buyers of their sugar.

The initial financing of the Caribbean sugar industry was achieved with European commercial capital. Since money was scarce in the West Indies in the seventeenth and eighteenth centuries, the merchants demanded payment from the planters in the form of sugar and other colonial products. The planters considered such a system beneficial because their sugar had a guaranteed buyer, and they were assured of constant credit, which allowed them to invest in the expansion of their plantations, if needed. The merchants liked the system because with it

they secured the supply of sugar and could thus speculate on future prices. In those cases when the planters incurred debts with the merchants, those debts were guaranteed by future deliveries of sugar.

In spite of the reciprocal advantages of this system, the planters complained that they were constantly indebted to the merchants and had no control over the price of their product. Therefore the planters wanted to emancipate themselves from their original creditors. To do this, many West Indian planters abandoned their plantations and returned to Europe. Planters also marketed sugar on their own through commission agents, who put the product on the market and placed the planters' revenues in special accounts.

The two systems coexisted for many years, but eventually the system of commission agents prevailed. Large sugar-marketing houses run by commission agents received the sugar from the West Indies and placed it on the European market at prices fixed in London, Amsterdam, or Nantes, not in the West Indies. The planters never succeeded in freeing themselves from the need for commercial credit, but the mobility with which they operated in the European financial sector permitted them to seek other sources of financing. Alternative credit sources became so numerous in the eighteenth century that the financing and distribution mechanisms of colonial profits became extremely complex.

Organization of the Slave Trade

Over time, all the economic sectors of Great Britain and France ended up either directly or indirectly involved in colonial commerce and the slave trade. Initially, European governments were closely associated with the merchants who organized the first slave-trading companies. In England, the first such company was the short-lived Royal Adventurers into Africa, founded in 1660, followed by the Royal African Company in 1672. The latter had a monopoly on the slave trade until the company was abolished in 1698 due to the complaints of the Caribbean planters about the high prices of the company's slaves.

In 1689 the planters protested that the Royal African Company had raised the price of slaves up to twenty pounds sterling per slave from an average price of twelve to fourteen pounds sterling in Barbados and

Jamaica. The company argued that the maintenance costs of their outposts on the African coasts made it difficult to reduce the price of slaves. The company also imposed strict repayment conditions for slaves bought on credit. This quickly led to an increase in smuggled slaves, who could be bought in exchange for sugar.

Given the scarcity of slaves in the colonies, many merchants and absentee planters formed their own companies to participate in the slave trade. The struggle between the West Indian planters and the Royal African Company ended in 1698, when the British Parliament authorized the free flow of slaves to the New World. From then on, individual traffickers had to buy a license from the company and pay a fee equivalent to 10 percent of the value of each slave transported. Between 1680 and 1708, the Royal African Company brought 64,156 slaves into the British colonies, while during the first ten years of the so-called 10 percent system, independent traffickers are estimated to have sold almost 90,000 slaves in Jamaica, Barbados, and Antigua.

The 10 percent system was abolished in 1712, when the British government eliminated the monopoly held by the Royal African Company and allowed all merchants to procure slaves in Africa and transport them to the West Indies. From then on, there was an abundant supply of slave labor for the English sugar colonies. Most of the English slave traders were concentrated in Liverpool, London, and Bristol and, to a lesser extent, in Lancaster and Manchester.

In France, the slave trade evolved in a similar manner, and monopolistic companies also had to give way to individual traders. The first company that dealt in the trade was the Compagnie des Indes Occidentales. This company enjoyed a monopoly until it was supplanted in 1685 by two other companies, the Compagnie du Sénégal, founded in 1672, and the Compagnie de la Guinée, founded in 1685. These companies controlled the slave market in the French Antilles for many years, directed by various groups of businessmen in Paris and Rouen who were closely connected to Louis XIV.

These French consortia were never able to meet the colonies' demand for slaves. For this reason, the price of slaves went up more than the sugarcane planters were willing to tolerate. This situation provoked protests and revolts in Martinique, Guadeloupe, and Saint-Domingue. Pressure from merchants in the main ports of France and the threat of smugglers

convinced the French government of the need to eliminate the monopoly. In January 1716 King Louis XV issued the first Letters Patent in relation to the slave trade, allowing merchants in the ports of Nantes, Rouen, Bordeaux, La Rochelle, and St. Malo to put together expeditions to traffic slaves between France, Africa, and the Antilles, paying a tax of 20 pounds *tournois* per slave imported to the colonies. This tax was utilized for the construction and maintenance of French outposts on the African coast. Later on, other ports, such as Le Havre, Honfleur, Lorient, and Marseille, were also authorized to trade slaves. After the Letters Patent were issued, the French slave market became highly dynamic and was able to supply sufficient manual labor precisely when the sugar industry of Saint-Domingue was rapidly expanding.

Although some companies engaged in the slave trade retained exclusive rights in certain zones of Africa, many independent traders preferred to operate in these areas, even if they had to pay for their licenses. In this manner, they avoided the dangers of the British, Portuguese, and Dutch domains.

At the beginning of the eighteenth century, slave traders used a triangular trading circuit. After trading manufactured goods for slaves on the African coasts, ship captains would transport the slave cargoes to the West Indies and sell them to planters in exchange for sugar. The ships would return to England and France with the sugar, and the cycle would begin again.

In the mid-eighteenth century, the slave trade began to lose its triangular character, as shipbuilders learned to design special ships called West Indiamen that were exclusively dedicated to travel back and forth between the European ports and the West Indies. These carriers were larger than the typical slave ships and had a different deck layout. Slave ships, which the French called *négriers*, now traveled directly from Africa to the West Indies without needing to return to England or France fully loaded with sugar. Sugar transportation was gradually separated from slave transportation, as many *négriers* returned to Europe in ballast or with very little cargo to start the cycle again. Slaves were paid for in Africa principally with Asian fabrics but also with manufactured goods produced in the main industrial cities of England and France. The most important of these articles were clothes and textiles, gunpowder and munitions, iron and copper bars, knives and other metal

utensils, brandy, wine and rum, glass, tobacco, pipes, ornaments, and even toys.

At each stage of the cycle, the entrepreneurs stood to gain: the industrialists whose goods were traded in Africa and the West Indies, the merchants who sold slaves to the planters in exchange for sugar, and the refiners and sugar traders who sold sugar to European consumers. In many cases, the entire process was handled by a single firm, whose trade was dictated by the availability of European manufactured goods, African slaves, and West Indian sugar.

The financing of colonial development, which began with an infusion of European capital to develop the first sugar plantations, ended up reversing itself, with the colonies financing their own economic growth as well as contributing to the development of commercial and industrial capitalism in Great Britain and France.

The accumulation of capital in Europe contrasted greatly with the lack of investment in infrastructure on the Caribbean islands. Absentee planters were hardly interested in public works, and little was maintained beyond the plantations. The roads were primitive, the cities had no significant public buildings, schools were almost nonexistent, and hospitals were scarce. The plantation owners put all of their efforts into developing and preserving the sugar plantations, as they became the center of colonial life in the British and French Antilles. Travelers who visited the West Indies in the eighteenth century agreed that life there revolved around the plantations and that production was sustained only by the incessant labor of the slaves.

Credit existed in different forms and served to maintain the diversity of the planters' capital resources. Capital was invested almost equally in three areas: slaves, land, and means of production, including machinery, tools, buildings, and supplies. Land and buildings constituted fixed capital, but slaves, machinery, tools, and supplies had to be constantly replaced. Therefore, the financing of the slave trade became the main axis of the colonial economy.

Slave Demography and the Economics of Slavery

As the life expectancy of slaves was relatively short, plantation owners had to maintain high levels of manual labor to meet production. High mortality rates and low birth rates caused an annual decline in the black population on the plantations, estimated between 2.5 and 5.0 percent. In other words, if a plantation stopped periodically replacing its slaves, they could all disappear within twenty years. Female slaves were therefore valued from early on, since they could contribute to the reproduction of the slave population.

Illness, abortions, and excessive work kept slave women's fertility at a very low level, and the West Indian planters discovered that the natural reproduction of slaves was not a reliable source of labor. Nonetheless, planters continued to import African female slaves because many worked well as cane cutters, having come from societies where women were in charge of agricultural tasks. They were also used as domestic servants.

About 35 percent of the slaves imported to the British Antilles in the eighteenth century were women, 51 percent were men, and the rest were boys and girls. In the French Antilles, the proportions were similar. In total, the French imported more than 1.3 million slaves to the Antilles between 1701 and 1790, while the British imported close to 1.1 million during the same period. The price of slaves varied constantly over the course of the eighteenth century but always tended to rise. Thus the cost of the average slave in the British West Indies was fourteen pounds sterling in 1707, thirty-four pounds sterling in 1775, and forty-seven pounds sterling in 1791.

Some modern studies question the profitability of the slave trade, but there is abundant evidence indicating that the profits increasingly attracted new merchants over time. Between 1738 and 1744, the French bought slaves in Africa for 300 pounds *tournois* on average, and could sell them in the Antilles for almost 615 pounds *tournois*. Half a century later, between 1783 and 1789, the average cost of acquiring a slave in Africa was about 750 pounds *tournois*, but that individual could then be sold in the French Antilles for 1,325 pounds *tournois*. Still, these were gross profits, and to determine the real profitability of the slave trade one needs to take into account other factors, such as the mortality of the Africans crossing the Atlantic, the expense of the expeditions, and other financial costs, such as interest payments.

Recent studies show that mortality on ships declined consistently from 20 percent at the end of the seventeenth century to 5 percent at the

ity rate between 10 and 15 percent on a shipment of 300 slaves would have reduced the profits of the expedition by 20 to 30 percent. Nevertheless, even with higher mortality rates, the slave trade must have been profitable; otherwise, it would not have attracted so much capital investment over such a long period of time.

The most serious problem investors faced was not selling slaves or colonial products, but recuperating credit given to merchants, shipbuilders, and planters, many of whom had a tendency to accumulate debts. As the eighteenth century advanced, planter and merchant debts to European financiers increased steadily. This caused many European investors to complain about the dubious commercial practices of their West Indian debtors.

Investor complaints led the British Parliament to enact the famous Credit Act of 1732. The Credit Act established that land, sugar plantations, and slaves owned by West Indian planters could be used to repay loans. The act simply repeated a common practice in England that permitted the use of land to repay debts. This law broadened the collateral base for loans to planters and English merchants, allowing capital to flow more easily.

Due to low, stable interest rates (around 5 percent during the eighteenth century), large amounts of capital were available for investment in colonial ventures. The permanent availability of capital stimulated the continuous growth of the West Indian sugar plantations, particularly in Jamaica and Saint-Domingue. The number of sugar plantations in Jamaica rose from 124 in 1701 to 651 in 1768,[7] and in Saint-Domingue it rose from 170 in 1716 to 793 in 1785.[8]

Technological Changes: The Jamaican Train

The eighteenth century witnessed an increase not only in the number of the plantations but also in their size and productivity. While the average sugar plantation in the English Antilles in 1670 produced 11.8 tons of sugar per year, a century later production had quintupled to 56.6 tons.

The sugar plantations' increase in productivity was due to a technological innovation called the "Jamaican train." The sugar mills that

employed this system heated their boilers on a train of furnaces designed with an innovative variable heat firing system. Boiling of the cane juice started at lower furnace temperature. As the water content of the juice evaporated, it passed to other boilers sequentially heated at higher furnace temperatures until the semifinal product, molasses, was obtained. In this manner, the removal of impurities from the cane juice was regulated more efficiently than with the traditional system, which used a separate oven for each boiler fed by separate fires and required more labor. Sugar was made by decanting and crystallizing the molasses later.

The Jamaican train helped extract more sucrose from the cane juice. The origin of the Jamaican train is still debated. From its name, it is conventionally assumed that it originated in Jamaica, although some scholars believe it came from Saint-Domingue, where it was also called the "French train." Others claim that this innovation began in Barbados. No matter where it first originated, the Jamaican train was the model for the majority of the sugar mills built in the West Indies in the eighteenth century.

Thanks to the Jamaican train, the technology for making sugar became standardized, allowing today's scholars to conduct comparative analysis across plantations and colonies. Sugarcane planted in the Antilles (*Saccharum officinarum*) stayed the same until the last decade of the eighteenth century, when new varieties were introduced from Asia and the Pacific Islands, particularly Tahiti. The cultivation methods, transportation systems, and management of slave labor also remained constant. There was no significant variation from island to island with regard to the techniques for sedimentation, crystallization, or the drying and packing of sugar for export to European ports.

Interisland technological similarities led to substantial homogeneity in plantation work as well. When an island changed hands due to wars, the sugar plantations continued to function without changes in the manufacturing process or in the quality of the sugar. One of the reasons sugar became a "commodity" was its relative physical uniformity. Even if there were visible differences in quality between the *muscovado* and semirefined sugars, these differences disappeared following the refining process in Europe. The final result was the same: a more or less brownish grainy substance with the same taste and sucrose content.