The Tobacco and Cotton South, 1600–1900

The study of the Tobacco and Cotton South from the perspective of environmental history considers the relationships among soil, slavery, and the plantation and sharecropping systems. In the southern United States, human activity profoundly affected an environment of long growing seasons, fertile soils, and abundant rainfall. These advantages resulted in massive outputs of staple crops, primarily tobacco and cotton, as well as rice and sugar. This chapter examines changes in the land that occurred in the Chesapeake area under tobacco cultivation in the seventeenth and eighteenth centuries, and in the Deep South as cotton production spread inland following the 1793 invention of the cotton gin. On large plantations, slavery, and later sharecropping, fostered class distinctions and racism, generating social and political tensions. The system was also threatened by the vulnerability of soils to depletion and erosion, and the susceptibility of tobacco and cotton crops to insect infestation.

The Chesapeake Environment and Indian-European Relations

Nature's fecundity greatly impressed the English who first settled on the southeastern coast of North America—first on Roanoke Island (present-day North Carolina) in 1585 and then permanently, in 1607, further north at Jamestown (present-day Virginia) near the mouth of Chesapeake Bay. Off the coast of the future state of North Carolina, Arthur Barlowe reported in 1584 that his expedition encountered "so sweet and so strong a smel, as if we had been in the midst of some delicate garden." And on Roanoke Island, the soil was "the most plentiful, sweete, fruitful and wholesome of all the world." The following year, Governor Ralph Lane of Roanoke Colony told of a land that abounded in "sweete trees," "pleasant gummies," and "grapes of such greatness" as not found in all of Europe.
The first colonists in North Carolina and Virginia encountered not only a fertile environment, but flourishing populations of Native Americans living in densely settled, communal villages. Artist John White’s drawings at Roanoke (1585 and 1587) and Captain John Smith’s descriptions at Jamestown (1607) vividly portrayed the eastern woodland Indians’ hunting, fishing, and horticulture centered on the “three sister” triad of corn, beans, and squash that had migrated north from Mexico.

Through a variety of rituals and practices, Indians extracted a livelihood from the natural dower. When the first edible ears of green corn appeared in August, a festival of all-night dancing celebrated and propitiated the corn mother. In the forests, they practiced a long-fallow strategy of preserving fertility by moving their villages and clearing new fields while the old fields recovered. Although hunters periodically burned the forest undergrowth to increase the deer population, they prepared for the hunt with rituals that imitated their prey. In 1564, for example, French artist Jacques Le Moyne portrayed the Timucua hunters of Florida, disguised with deer heads and skins, engaged in a face-to-face encounter with actual deer across a stream.

The first intimations of irrevocable change for Native Americans came from introduced diseases. In 1588, Thomas Hariot noted in his descriptions of Roanoke: “Strangely it happened that within a few days of our departure the people began to die very fast. In some towns twenty people died, in some forty, in some sixty, and in one sixscore... And the strange thing was that this occurred only in towns where we had been ... and it happened always after we had left.” The reasons, unknown at the time, were the first epidemics of contagious diseases (smallpox, whooping cough, measles, scarlet fever, chickenpox, mumps, and influenza) associated with Europeans and their livestock that would sweep through indigenous communities. A century later in 1705, Robert Beverley cataloged the diseases and devastation that had “wasted” the Indians of Virginia, reducing their number to less than “five hundred fighting men.” He noted further that “They have on several accounts reason to lament the arrival of the Europeans.... The English have taken away great part of their Country and consequently made every thing less plenty amongst them. They have ... multiplied their Wants, and put them upon desiring a thousand things, they never dreamed of before.”

The Anglo-American transformation of southern soils and forests began around Chesapeake Bay, where colonial plantations and docks sprang up along a labyrinth of navigable rivers, which made easy both local travel by boat and direct trade with Europe. The first permanent settlement, Jamestown, was established in 1607 on the James, southernmost of the great rivers that flowed from the Appalachians eastward into the bay. Paralleling it to the north on Virginia’s western shore were the York, the Rappahannock, and the Potomac. Still farther north, ringing the head of the bay in Maryland, were the eastward flowing Patuxent, the southward flowing Susquehanna, and the westward flowing Choptank, Nanticoke, and Poconos.

The original settlers — many too genteel to work and dazzled by dreams of finding gold — might have been starved out but for a fortuitous discovery. A craze was sweeping Europe for smoking the dried leaves of the Native American tobacco plant, which Spanish conquerors were bringing back from the West Indies. In 1614, an experimental planting by John Rolfe (also known for marrying the Powhatan Indian princess Pocahontas) proved that the sandy loams of the Chesapeake tidewater produced a sweeter smoke, and within a few years a fabulously profitable tobacco boom was transforming Virginia society. By 1617 Governor Thomas Dale had to stave off famine by decreeing that all who planted tobacco must also plant at least ten acres of grain.

The Powhatan Indians, whose crops and seed reserves had been raided by the English, turned against the colonists in the Virginia Massacre of 1622, destroying many of the James River settlements and killing a third of the English population. Revenge was only temporary, however, and the Indians, decimated by disease, were soon drawn into the European trading system, supplying the colonists with deer hides in exchange for kettles, knives, blankets, and clothing. According to environmental historian Timothy Silver, “Indians showed an uncanny ability to hang onto traditional methods of exchange, incorporating Europeans and their goods into the long-established native culture and economy.... Although both groups participated willingly, disease and liquor — the effect of which white traders might not have foreseen but exploited nonetheless — helped tip the balance in favor of the European system.”

Tobacco Cultivation

Tobacco culture — though it saved the colonists — was hard on both soils and the forests that replenished them. Sandy loams enriched by silt and clay made the tidewater floodplains ideal for growing tobacco, corn, and wheat. But these soils could be cultivated only after cutting away the richly diverse coniferous/deciduous forests on which their fertility depended. Most serious in the long run was the loss of the deciduous oaks and flowering understory...
trees — poplar, tulip, dogwood, sweet gum — that for eons had brightened the forest with blossom in spring, kept it shaded and moist through summer heat, and enriched its thick humus of leaf litter each fall. Plantations used pines (lobolly, longleaf, and pitch) for building and to supply the tar, pitch, and turpentine required by the sailing ships that carried their products to market. The Atlantic white cedar and bald cypress of wet lowlands were converted into roofing shingles. Diverse hardwoods — black, red, and white oak, red maple, and hickory — became barrel staves, farm implements, and fuel.

Tobacco plants used up, in three or four years of successful harvests, the fertility so slowly banked by forests. Then fresh land had to be cleared and planted. For several generations, however, forests and fresh soil were so abundant that their depletion did not seem a problem. With tobacco markets insatiable and land readily available, the only barrier to wealth was finding workers for the laborious processes of planting, cultivating, pruning, harvesting, and curing.

The process of producing the finest tobacco demanded meticulous attention. First, flat trays of a rich mould sown with seeds produced seedlings to be set out in early spring, when the danger of frost had passed. After the soil was loosened and pulverized by plow or hoe, it was heaped into hillocks, into which the seedlings were individually set. When the plants were four to five inches high, they were thinned, transplanted, and allowed to grow to about a foot in height. After a month, they were pruned, topped, and replanted about four feet apart. Painstaking labor was required to hoe the soil around them and to strip away the suckers that sprouted on their stems and the hornworms that could destroy their large leaves. As the ripening leaves turned brown, starting with those lowest on the plant, workers harvested the leaves and heaped them in piles to sweat. They then hung the leaves in bundles from the rafters of a tobacco barn and dried them for several weeks over a fire, which circulated warm air around them. Two more weeks of sweating in heaps brought the tobacco to its peak of quality, after which it could be packed tightly into large barrels called hogsheads for shipment to Europe.

Talk of tobacco dominated the lives of planters. Everyone knew, shared, and conversed in common cultural terms, employing a language and set of assumptions about the characteristics of the tobacco crop. A shared vocabulary pertained to techniques, methods, and times that certain tasks were to be performed, such as removing suckers and tobacco hornworms, a major pest for the crop. Most planters had several fields at some distance from each other, often accessible only by boat. The planters or their overseers made regular circuits around their holdings to inspect the crop. Since tobacco plants were set out in sequence at different times, planters kept careful records of planting and production schedules for each field. A planter’s entire life was caught up in the routine of planting, harvesting, and marketing tobacco.

The labor for these important tasks was supplied, at first, by young English immigrants who wanted to get in on the tobacco boom but were too poor to pay for their passage to the New World. These “indentured servants” signed an indenture or contract promising to work, for four to seven years, for the planter who paid the ship captain for bringing them over. For a time this system enabled servants, after working out their indentures, to graduate into an increasingly comfortable society of small to middling-scale tobacco planters. Gradually these planters learned to build more comfortable houses and to secure their subsistence and broaden their diets by raising corn and wheat, and by importing from Europe historian Alfred Crosby’s “portmanteau biota” of plants for vegetable gardens and orchards, as well as cattle and pigs that could graze in the forest.

But opportunities for indentured servants to graduate into plantership soon dried up as population increased and the more successful planters began locking up vast tracts of the remaining fresh lands to insure perpetuation of their use-up and move-on mode of tobacco production. Increasingly, former servants had to content themselves with subsistence farming on small tracts of less fertile land farther inland, often beyond the “fall line,” where getting tobacco to market became difficult as rivers became un navigable, plunging over the last shelf of upcountry rock to the flat tidewater plain. More fatefully, the rising class of tobacco nabobs were discovering a new source of cheaper, more exploitable labor, supplied by black Africans.

Slavery and Southern Agriculture

The change in the labor system from indentured servants to slaves had been foreshadowed in 1619, when twenty black Africans were sold as indentured servants from a Dutch ship anchoring at Jamestown. It did not take planters long to discover that black servants were more exploitable than white servants. Unfamiliar with the dominant language and culture, they were less able to know and defend their legal rights under the indenture system. If abused by masters, they were less able to run away and blend in with
the general population. More serious was the white majority's racist prejudice against blacks. As historian Winthrop Jordan argues in *White Over Black* (1968), the English of this period associated blackness with dirt and foulness, putrefaction of meat and garbage, black magic, and the Black Death (bubonic plague) that had decimated European populations in the fourteenth century.

How slavery emerged from indenture is indicated by scattered legal documents and court decisions. When three servants, one of whom black, ran away in 1640, a Virginia court sentenced the two whites to three additional years of indenture and the black to servitude for life. In 1682 another court ratified widespread practice by declaring that all blacks not Christian when purchased were enslaved for life; by this time their offspring were consigned to slavery also. Slavery had emerged as an institutionalization of racism, a system in which skin color and physical characteristics legitimated bodily ownership. Planters promoted this development because it enabled them to buy, for not too much more than a seven-year indenture, a lifetime of defenseless labor, along with that of the laborer's descendants. With these developments, blacks multiplied from 1.9 percent of Virginia's population in 1620 to 22 percent by the end of the century.

The wealth produced by this system of labor is suggested by Virginia planter William Fitzhugh's letter describing his tobacco plantation in 1686. He had a thousand acres, most of it in marshes and thickets not yet cleared, but 300 acres of which were plantable. Beyond this plantation, he had another 22,000 acres on which the soil had not yet been broken and another 1,500 acres in several different places. He had thirty young, vigorous slaves capable of mating and reproducing and therefore of adding to his capital. His thirteen-room plantation house was surrounded by dairies, stables, barns, and hen houses. He had a large orchard with apple and other fruit trees, which could be harvested to feed plantation workers, and a large vegetable garden, as well as cattle, hogs, horses, and sheep. He also had a grist mill for grinding corn and wheat for the plantation's grain supply. He had 250,000 pounds of tobacco on hand, and his plantation could be expected to produce 60,000 pounds per year.

The eighteenth century brought the opulence of this plantation system to a peak. By the time of his death in 1732, planter Robert "King" Carter (1663–1732) was the richest man in colonial Virginia and a member of the House of Burgesses. He owned 300,000 acres of land in numerous parcels along the Rappahannock and Potomac Rivers and as far west as the Blue Ridge Mountains. As a middleman between traders and planters, he possessed seven hundred slaves, a twenty-five-fold increase over those held by Fitzhugh a few decades earlier. He had 2,000 head of cattle and swine and several hundred sheep scattered over dozens of holdings. Carter's barns also accommodated a hundred horses, used as draft animals, for overseeing his holdings, and for travel. His numerous offspring intermarried with others in the planter gentry, cementing the family's power and influence. Carter's grandson, Robert Carter III (1730–1804) maintained a townhouse in Williamsburg and a plantations at Nomini Hall on the Potomac River. The plantation annually consumed 27,000 pounds of pork, twenty beef cattle, 550 bushels each of wheat and corn, four hogheads of rum, and 150 gallons of brandy. In the winter three pairs of oxen daily hauled enough wood to keep twenty-eight fires burning continuously in the main house and outbuildings. Carter had inherited 100 slaves from his grandfather, and by 1785, through their natural reproduction, he possessed 466 slaves.

The southern slave system suggested a dichotomy between mind and body, culture and nature. Historian Ronald Takaki, in *Iron Cages* (1979), argues that slavery exhibited a major contradiction between culture and nature, exemplified in William Shakespeare's play, "The Tempest" (1611). Caliban—a dark, deformed individual—lives on an island taken over by Prospero, who exiles Caliban and forces him to work. Caliban, whose mother is African, is portrayed as resembling the devil—he is dark and vile in nature, eliciting fears of violence. Such fears could be quelled, it is implied, by developing the intellect's control over the base nature of the body, the savage animal, and indeed nature itself. "America," argues Takaki, "became a larger theater for the *The Tempest*... Far from English civilization, [colonists] had to remind themselves constantly what it meant to be civilized—Christian, rational, sexually controlled, and white." A dichotomy between civilization and the natural world thus began to emerge, in which the white civilization of England represented the highest level of the intellect and purity, while the African slave stood for the unruliness of nature and the body. Such cultural constructions lay at the root of a plantation system that exploited both slave and soil.

Southerners depended on slave bodies and slave knowledge for cultivation not only of tobacco, but also of rice, which became a mainstay of agriculture in tidewater South Carolina and Georgia in the eighteenth century. Varieties of rice from West Africa and Madagascar were introduced into South Carolina during the 1690s via the Chesapeake and the West Indies. Planters employed African cultivation methods, including clearing the land with fire, threshing with flails, and husking the grain with mortar and pestle.
Historian Daniel Littlefield states: “[B]efore Carolina was settled, Englishmen were aware that Africans possessed the technical knowledge to produce this crop and … from the earliest period of successful rice production in South Carolina a relationship developed between this region and rice-growing regions in Africa.”

After early prohibitions against slavery were lifted in Georgia in 1751, rice planters from South Carolina and the West Indies moved into the tidewater low country. Georgia planters grew rice in swamps, employing methods that South Carolinians had learned from their slaves, including diking rivers to create impoundment ponds and building floodgates to regulate water flow. Planters also expanded into sugarcane, indigo, and sea island cotton production, creating several integrated landscapes of production. “As they were molded out of the low-country environment by planters and their slaves,” writes environmental historian Mart Stewart, “plantations constituted agroecological systems that restructured biological processes for agricultural purposes. … Those who created these systems had to manage them carefully to maintain the balance of energy inputs and outputs necessary for continued productivity.”

Southerners defended slavery on both biological grounds — that blacks showed more resistance to diseases such as malaria and yellow fever — and on environmental grounds — that they were more suited than whites to working in hot humid climates. Both arguments were problematic. Of the former, Silver points out the cost paid by southerners: “Although planters could use African biological defenses to good advantage and sometimes cited these characteristics as justification for using slave labor, … newly arriving blacks served as carriers for new strains of disease.” And Mart Stewart, in “Let Us Begin with the Weather?” (1997) challenges arguments that “hitched together the cultivation of certain plants, the institution of slavery, and a climate [southerners] also deemed ‘peculiar.’” He asserts instead that southerners invented a regional weather at odds with local weather observations in order to justify the use of slaves in fields and swamps. “Those farmers and planters who kept records … have left rich documentation of the extraordinary diversity of climates in the region.” Stewart concludes that “the regional weather they made was more distinctive than the weather they got. Indeed, when Southerners used climate to legitimize a social order, they did not begin with the weather, but ended with it, and ended … with an argument of such force and conviction that it long survived the storm of the Civil War.”

Soil Exhaustion in the Tobacco South

Historian Avery O. Craven, in Soil Exhaustion in the Agricultural History of Virginia and Maryland, 1606–1860 (1926), maintained that “soil exhaustion and tobacco cultivation went hand in hand.” Tobacco rapidly depleted the soil, hence luxuriant crops could be grown for only three or four years. Soon after planting, soil nutrients — especially nitrogen and potassium — began to decline and soil microorganisms created toxins that poisoned tobacco plants. Soil fungi and root rot resulted from continual planting in the same soils. Manure, which could have supplied nitrogen, was in short supply, as cattle were left to roam in the woods; in any case, planters believed that it spoiled the taste of the tobacco. With the loss of potassium, the soil became acidic, the land was abandoned, and pine, sedge, and sor-
rel — indicators of acid soils — took over. Because of the use of the hoe and the continuous scratching of the surface of the soil, erosion became common, resulting in the vast, deep gullies observed on abandoned tobacco lands by eighteenth-century travelers.

Timothy Silver points out that colonists adapted to the problems of soil depletion by changing their farming methods. "As the landscape around them changed, colonists frequently had to adjust and readjust their goals and methods to correspond to ecological reality. When Virginia and Maryland colonists planted tobacco, the demanding weed exhausted their fields in only a few years. Planters adjusted first by planting corn on the worn tracts and then by allowing them to lie fallow. That worked until the population and labor force grew too large to allow depleted fields adequate time to recover. Colonists then shifted tactics again, growing more wheat and seeking to fill eroded ditches or replenish their fields with manure."¹¹

By the late eighteenth century, an agricultural improvement movement began to take shape. Planters, such as George Washington and Thomas Jefferson, experimented with rotation systems, using wheat, corn, and clover fallows to refurbish worn-out lands. Nitrogen-restoring crops, such as beans, cowpeas, and lucerne, were also planted on exhausted plots. Barnyard manure and green fertilizers were spread on fields, and contour plowing was initiated. To counter acid soils, plaster of Paris, guano, and marl were purchased and applied to fields. Virginia planter Edmund Ruffin (1704–1865) advocated using marl or "calcareous manure," a form of lime made from oyster shells, to add alkalis that would reverse soil acidity. Using products such as marl, however, was both expensive and labor-intensive, and failed to find favor with most planters.

The extent of southern soil exhaustion has been questioned by geographer Carville Earle in "The Myth of the Southern Soil Miner" (1988). Earle argued that some eighteenth-century tobacco farmers did rotate crops, following tobacco with rotations of corn, wheat, peas, and beans. They also used a long fallow system in which fields were left in fallow to recover for some twenty years. Earle maintains that small farmers had first-hand knowledge of local conditions and used the method of trial and error to combat soil exhaustion, rather than relying on agricultural improvers. Those who worked the land, rather than scientists, were better able to devise solutions. "A variety of evidence documenting southern sensitivity to agronomic practice and soil conservation," Earle asserts, "contradicts the image of an historically invariant soil miner."¹²

The Cotton South

By the end of the eighteenth century, slavery was becoming moribund. The soils of the Tobacco South were moving toward depletion, and other crops such as wheat and corn were being grown in their place. The African slave trade was banned in 1807. Some southern slave owners wanted to free their slaves, but after the invention of the cotton gin in 1793, the cotton boom renewed the spread of slavery. The slave population increased through natural reproduction, augmented by smuggling and the illegal slave trade.

An important period in southern agriculture was the one-hundred-year interval between the advent of the cotton gin in 1793 and 1893, when the boll weevil crossed the Mexican border and moved into Texas. The cotton gin had enormous influence on the development of the South, helping to prolong slavery and allowing the South to develop a strong regional economy. The boll weevil helped to undercut that dominance, forcing post–Civil War farmers to diversify and pushing many sharecroppers off the land and into the North and West.
The cotton gin was the idea of the widow of Revolutionary General Nathaniel Greene and of Eli Whitney, a young Yankee inventor who visited Greene’s Georgia plantation. Mrs. Greene proposed that he construct a machine to separate the sticky seeds from short-staple cotton. Sea island cotton, grown on islands along the coast of Georgia, had long fibers (1.625 to 2 inches long), with easily removed, smooth seeds. But inland short-staple cotton (with 0.625- to 1-inch fibers) and long-staple cotton (1.125 to 1.75 inches) had sticky seeds that were difficult to separate from the cotton fibers. Eli Whitney, perhaps following the suggestion of Mrs. Greene, constructed a machine to do just that.

The cotton gin greatly accelerated the process of removing the seeds from the cotton bolls. Prior to the invention of the gin, slaves — under the direction of an overseer — sat in groups, picking the seeds out of the cotton by hand. The gin allowed cotton to be deposited by slaves in a container on its top, where wire brushes separated the sticky seeds from the lint. It emerged free of seeds and ready to be bailed and shipped. Early gins were operated by horses or mules, which turned the cranks, but were replaced during the nineteenth century by steam engines.

Cotton production spread rapidly across the lower South. In 1791, just two years prior to the invention of the cotton gin, southern cotton production was 5 million pounds per year, 33 percent of which planters exported. By 1860, just prior to the Civil War, it had skyrocketed to 1.75 billion pounds per year, 80 percent of which was sold abroad. Until 1812, inland cotton production was focused primarily in Georgia and South Carolina, but by 1860 the entire region of the South, as far west as eastern Texas, contained acres of cotton. The United States was the largest cotton-producing area in the world, and cotton was the country’s leading export.

Cotton played an important role in the emergence of an international market economy in the United States. The market revolution and transportation revolutions of the 1820s made sectional economic development possible. New England began to focus on textile manufacturing, using the South’s cotton. In 1790 Samuel Slater brought the idea for a spinning jenny from England to New England, and in 1815 Francis Cabot Lowell introduced the power loom for weaving. The two inventions provided an efficient method of producing cotton thread and weaving it into cloth. The Northeast became the first industrial sector to specialize in manufacturing textiles. Concurrently, the Midwest and the Old Northwest, north of the Ohio Valley, began to develop wheat, while Pennsylvania and the Great Lakes areas focused on coal, iron, and copper production. Sectional development made it possible for the South to concentrate on cotton, as well as tobacco, indigo, rice, and sugar.

Environment and Society in the Cotton South

Cotton required a 200-day frost-free growing season and rainfall amounts of 50–60 inches per year. The area of commercial cotton production extended south and west of the northeastern boundary of North Carolina, bypassing the Appalachians and skirting the northwestern border of Tennessee, from where it crossed the Mississippi River to the Arkansas Ozarks and north-central Oklahoma, and then southward into eastern Texas. North of this line (for example, in Virginia and the Nashville region of Tennessee), it could be grown in mild years or for household use. The cotton belt encompassed four major soil regions: the eastern coastal plain, the gulf coastal plain, the central alluvial valleys, and the western prairies.

Despite the transformation initiated by the cotton boom, throughout the nineteenth century the South remained primarily rural. Landscape architect Frederick Law Olmstead (designer of Central Park in New York City), who traveled through the South in 1853 and in 1856 published A Journey in the Seaboard Slave States, observed that the South was in such a poor state of development that even in Virginia one could travel for hours without seeing evidence of habitation. "One has to ride through the unlimited, continual, all shadowing, all-embracing forest, following roads in the making of which no more labor has been given, than was necessary to remove the timber." Throughout the nineteenth century, that situation continued to be the state of nature in much of the rural South.

The cotton plantation system required level or gently rolling hilly land. The big house was situated on a hill to catch the breezes in the hot summer months and to survey the owner’s domain. Slave cabins were located below, near the fields and often near the marshes and meandering rivers that drained the land. The system itself depended on a supervisor, overseer, or manager, working under the direction of the plantation owner, and a supply of cheap, controllable labor. Production centered around single crops easily cultivated in fairly routine ways, in what environmental historian Albert Cowdry has called the "row-crop empire." In the American South, these crops were primarily tobacco, cotton, rice, indigo, and sugar.

The word plantation originally meant a colony, such as Plimoth Plantation in Massachusetts. The term, however, evolved to mean a privately
owned estate. Southern plantations were often hundreds of acres in extent. Mules were the preferred beasts of burden, and small landowners were often called two-mule farmers. Mules as well as horses pulled the heavy wagons loaded with bales of cotton, each of which weighed 250 pounds. Larger plantations had gin houses, with geared wheels operated by mules. Other important technologies for manipulating the environment included bull-tongue plows, shovels, hoes, cultivators, and harrows.

As the Cotton Kingdom boomed and planters expanded their holdings, slaves were marched across the South in gangs under the supervision of overseers, along trails on either side of the Appalachians or crowded onto boats that sailed around Florida to Louisiana and Mississippi. The journeys were sometimes depicted as happy travels, with people playing violins and banjos. They were not. Conditions were gruesome and families were separated.

By 1860, slaves were housed on plantations all across the South. Twenty-five percent of whites were slaveholders—approximately 10,000 families. Of those, 88 percent owned fewer than 20 slaves, the rough cut-off point for employment of an overseer. Most families who did own slaves had fewer than 20, and some had only two or three. Yeoman farmers, who comprised two-thirds of southern families, for the most part owned no slaves at all. The rest of the southern population was made up of mulattoes (often the sons or daughters of white plantation owners) and free blacks, many of whom were the descendants of slaves manumitted in the eighteenth century.

Cotton Production

Southern life was centered on cotton planting and harvesting. Whether by slaves, yeoman farmers, or sharecroppers, cotton was planted in April, with the seed scattered at about 100 pounds per acre. Seedlings came up about 10 days later and, after the third leaf appeared, workers hoed the ridges to remove the weeds and loosen the soil closest to the plant. Short, light bull-tongue plows were used to turn up the earth between the rows. Plowing continued to alternate with hoeing to remove the weeds around the young plants. The cotton began to appear on the lowest parts of the plant in July, with the main cotton-harvesting season beginning in September and continuing into December. On larger plantations, black slaves picked most of the cotton. Yields on good soil were about one and a half bales per acre, a bale equaling 250 pounds of cotton.

The main cotton pest, before the advent of the boll weevil in 1893, was the cotton bollworm, a moth larva of the order Lepidoptera. The worm penetrates the outer leaves and destroys the cotton boll before it can develop. The bollworm goes through several stages of larval development, after which it pupates and metamorphoses into a moth. Control of the bollworm was managed by gangs of slaves moving through the fields and removing and killing the larvae, a labor-intensive form of pest control similar to methods used by Indians. Prior to the early twentieth century, there were no insect control poisons available.

The production system in the Cotton South differed from that of the Tobacco South. In the Tobacco South, slave labor was task-oriented and individualized, while in the Cotton South it was gang-driven. Tobacco was planted in hills and squares on fresh lands that were then abandoned after 3 to 4 years owing to worn-out soil, whereas cotton was planted as a row crop, often in rotations alternating with corn. The major pests for tobacco were tobacco homworms, fungi, and soil toxins, while those for cotton included the cotton bollworm and later the boll weevil. The Tobacco South was fueled by the African slave trade, whereas slavery in the Cotton South was the result of natural reproduction and the illegal slave trade. The Tobacco South was a part of early mercantile capitalism, or long-distance coastal trade with England and the Netherlands, while the Cotton South rose with industrialization, supplying raw materials for factories in England and New England. Tobacco was a luxury item and narcotic, while cotton was a fiber that became an everyday necessity for clothing.

As in the Tobacco South, soil exhaustion was a problem for cotton farmers. Environmental historian Albert Cowdrey attributes the degradation of southern soils to single crop agriculture: "Row crops bared the soil.... [A]ny system which covers too many fields with the same plant falls afoul of the ecological principle which states that the simplest systems are apt to be the most unstable."14 Soil toxins, parasites, and erosion worked to deplete the land of its nutrients. Historian Eugene Genovese instead places the blame on slavery, arguing that "slavery and the plantation system led to agricultural methods that depleted the soil."15 Slaves were worked to exhaustion in gangs to produce profits for their owners at the expense of the soil. With declining soil fertility, profits also declined, leaving little labor or funds to invest in agricultural improvement. Despite knowledge of the benefits of marl, gypsum, guano, and lime, the slave system was too inefficient and the slaves too overworked for planters to use fertilizers. With soil degradation, Genovese concludes, planters reaped their just desserts for enslaving and
degrading black people. Despite their failure to use more expensive solutions, however, Carville Earle argues that cotton planters used cotton and corn rotations, spread manure on soils, and turned cattle into the fields to restore nitrogen. Soil exhaustion, therefore, was not as widespread as the mythology suggests. Moreover, soil exhaustion did not cease with the end of slavery in the post–Civil War era.

Post–Civil War Sharecropping

After the Civil War (1861–65), black people were freed, the plantation system was reorganized, and many blacks became small farmers or sharecroppers. Because the plantation owner no longer had slaves to work the land, many owners divided their holdings into smaller plots and leased them to poor black or white farmers in exchange for a percentage of the crop. Between 1880 and 1920, the total population engaged in sharecropping expanded dramatically. According to historian Pete Daniel in Breaking the Land: The Transformation of Cotton, Tobacco, and Rice Cultures since 1880 (1985), "the new labor system was a varied but unpatterned blend of illiteracy, law, contracts, and violence.... The sharecropping arrangements varied—from state to state, crop to crop, county to county, and farm to farm—and changed over time with the passage, enforcement, and understanding of laws."16

Sharecropping was a loose term for several farming methods in which southern farmers engaged in some method of borrowing money, tools, or land from an owner. In sharecropping, someone else, such as the planter or absentee landlord, owned the land. Often the owner also supplied the tools, seed, farming equipment, mules, and even the food, in exchange for a percentage of the crop. In tenant farming, which was related to sharecropping, the tenant owned some of the equipment—for example, the mules and the tools—and rented the land in exchange for a portion of the crop. Tenant farming was a step up from pure sharecropping, in the sense that the tenant owned some equipment and tools and could take his capital with him. A third method was the crop lien system, in which the farmer owned the land but borrowed the seed, fertilizers, and perhaps the equipment. In each case, about a third or a quarter of the crop went back to the merchant or landowner who also appropriated clients' assets for failure to repay loans.

During the Civil War, the South had lost much of its market share in the world export system when Great Britain began to import its cotton from countries such as India. But by 1878, the South began to recover its share of the market, and did well for the next two decades. In 1895, however, the almost exponential growth in demand for cotton was beginning to slacken. The total world demand was proportionately less, with the annual increase dropping to about 1 to 3 percent. With the drop in cotton prices, southerners were not as well off as they had been in the prior two decades. On top of this decline, the arrival of the boll weevil created an additional factor of uncertainty, reducing cotton yields by about 50 percent.

The Impact of the Boll Weevil

The boll weevil crossed the border from Mexico into Texas in 1893; ten years later, in 1903, it was poised on the Louisiana border. The boll weevil, a beetle of the order Coleoptera, differed from the cotton bollworm, a moth larva. The weevil went through four stages of development, taking about 25 days to mature. The insects reproduced very rapidly and were extremely resistant to all kinds of weather conditions. If a single pair mated in the spring, it could produce as many as 250,000 offspring by fall. Up to 50 percent survived the winter.

The boll weevil attacked the boll itself. Cotton has three outer leaves, or bracts, surrounding a four-sided husk, or square, in the center of which the boll grows. The weevil made a hole in the square, sucking out the fluids. It then laid its eggs in the square's center, where the new larvae developed. The larvae ate the interior, the cotton boll died, and the bracts began to curl. The interior, instead of producing a cotton boll, began to rot and fell to the ground, releasing the weevils, which then moved on to a new plant. One of the methods of controlling the weevil, therefore, was for farmers to pick up and destroy the squares containing the larvae and mature weevils.

The weevil represented an enormous threat to the economy of the South. Louisiana opened its Boll Weevil Convention in 1903 with a manifesto against the weevil: "The state of Louisiana is threatened on the west by an insect known as the cotton-boll weevil.... If we consider the amount of money that is in circulation, we realize the immense importance of the crop."17 In short, the entire economy of the South was at risk.

In 1887, the U.S. Department of Agriculture established Agricultural Experiment Stations in the land grant colleges and hired Cooperative Extension Service agents to work directly with farmers. With the appearance of the weevil, the Service began to distribute information on how to control
the insect and to educate farmers on techniques that would increase cotton yields and farm income. At the time the weevil first arrived in the South, farmers had no chemical controls, hence management focused on other methods. Scientists worked with farmers to develop labor-intensive approaches. Farmers plowed up fields after the fall harvest and burned the stalks and litter that harbored the weevils, thereby preventing the weevil from overwintering. They released cattle into the fields to eat the leaves, stalks, and litter, at the same time fertilizing the plots with manure. Farmers also initiated new methods of planting. They planted earlier in the season so that the cotton would set its bolls before the weevils multiplied and became too numerous. They also made use of early-blooming and early-setting cotton varieties. And finally, in 1910, planters began to use chemical pesticides, the first being Paris Green (copper acetarsenite). The results were limited in scope, however, owing to variations in commitment and practice among farmers and the resilience of the weevil.

Historian Pete Daniel points out that “the boll weevil did not discriminate by the race of the farmer,” forcing both white and black farmers to seek aid in combating the new agricultural threat. Black extension agents worked with black farmers to bring to their attention improved methods of controlling the weevil and raising crop yields. Black scientist Booker T. Washington, who headed up Alabama’s Tuskegee Institute, developed it into one of the primary institutions in the South to benefit African-American farmers. Through the Tuskegee Negro Conference, county fairs, short courses, and leaflets, he helped to disseminate improved techniques. Another educational method was the Jesup Agricultural Wagon, backed by New York banker Morris Jesup, which traveled throughout the countryside with information for black farmers. Although the new methods were helpful, they were also expensive, and the combination of declining yields and higher costs drove many farmers out of business.

The effects of the boll weevil on southern agriculture were not entirely negative, inasmuch as it forced the diversification of crops and the improvement of farming methods. In Enterprise, Alabama, for example, farmers began to raise peanuts, which, by 1917, had become the area’s major crop. Farmers prospered, harvesting more than a million bushels a year, and marked their success by erecting a statue of the boll weevil, the world’s only monument celebrating a pest.

The boll weevil remains a pest today. In 1993, the Texas legislature, along with other southern states such as Florida and North Carolina, began a boll weevil eradication program. They received funds from the Department of Agriculture for a $3.9 million program in Texas. As a demonstration, 500,000 acres were sprayed with malathion. Boll weevils, along with other insects, were indeed killed. But removal of insect pests led to an outbreak of armyworms that destroyed 90 percent of the cotton crop. As a result, farmers went into debt. Rachel Carson’s 1962 book, *Silent Spring*, and the research that followed it made clear the ecological problems caused by pesticides. Broad-spectrum pesticides kill many insects in addition to those targeted and, when chemicals are concentrated in the food chain, they can negatively affect the numbers of and relationships among other organisms in the environment and create health problems for humans who work the land and consume the products.

**Conclusion**

The study of the environmental history of the Tobacco and Cotton South from the seventeenth through the nineteenth centuries provides a window on the complex relationships among people, crops, labor, and soil. The plantation system depended on marketable crops such as tobacco, cotton, rice, sugar, and indigo; a source of cheap labor found in slavery and later in sharecropping; soils that were exceptionally fertile and whose fertility could be maintained over time; and the control of insect pests to maintain crop yields. The extraordinary yields produced by the tobacco and cotton systems were reinforced by a market system that relied on the South to produce staple agricultural commodities; by a cultural system that justified racism on the ground of biological differences; by power instilled over slaves through violence and the threat of violence; by the planting of monocultures and row crops; and by labor-intensive and later chemical pest controls. In exploring the history of the South from the perspectives of planters and slaves and the roles played by soils and insects, environmental history offers new interpretations of traditional history as well as lessons for the future of nature and humanity.

**Notes**


4 Nature and the Market Economy, 1750–1850

By the eighteenth century in America, two types of economies existed in interaction but also independently of each other—a coastal exporting economy along the eastern seaboard and an inland subsistence-oriented economy, where access to transportation and export markets was limited and costly. During the nineteenth century, a dynamic market-oriented economy arose throughout the United States westward to the Mississippi River that integrated the two sectors. This chapter explores the transition from the coastal exporting and inland subsistence-oriented economies of the eighteenth century to the market economy of the nineteenth century. It investigates the ways writers, poets, philosophers, and artists reacted to the economic development of the country and the ways they perceived nature, wilderness, and civilization.

The Inland Economy and the Environment

The environmental costs of commercial production did not reach most of America until the nineteenth century. Above the fall line and beyond the reach of coastal markets, retreating Indians were supplanted by Euro-American subsistence farmers attracted by cheap land. Their small farms spread over the hills of upland New England, the woodlands of western Pennsylvania, the southern Piedmont, and the valleys of the Blue Ridge and Appalachian Mountains. In these areas, limited production supplied the rude comforts of subsistence, and transportation costs prohibited open-ended production for the market. Economic and social relationships were based largely on bartering and cooperation, as opposed to the commercial exchange found along the coast. By the early nineteenth century, this subsistence culture of small farmers comprised the majority of free Americans.

The virtues of this independent and land-owning citizenry were soon being celebrated as an "agrarian ideal" by French immigrant J. Hector St.