Soil Survey

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Edgefield County South Carolina

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Bureau of Chemistry and Soils

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SOIL SURVEY OF EDGEFIELD COUNTY, SOUTH CAROLINA

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COUNTY SURVEYED

Edgefield County is in the western part of South Carolina. It is very irregular in shape. The Georgia-South Carolina State line forms a part of the western boundary (fig. 1). The total area is 485 square miles, or 310,400 acres.

This county lies largely within the Piedmont Plateau, and a small part is in the Atlantic Coastal Plain. Edgefield, the county seat, is located approximately in the geographic center of the county and is about 80 miles southeast of Greenville, 60 miles west of Columbia, and 25 miles north of Augusta, Ga.

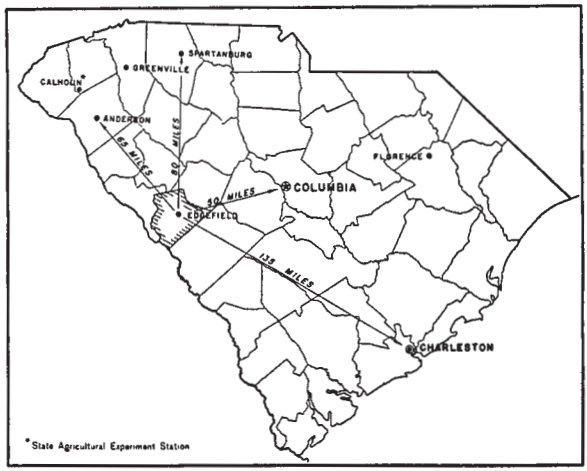

FIGURE 1.—Sketch map showing location of Edgefield County, S. C.

The relief is characterized by nearly level, undulating, gently rolling, rolling, hilly, and broken areas. The county consists of two plains, the northern plain, or Piedmont Plateau, underlain by crystalline rocks; and the southern plain, or Atlantic Coastal Plain, underlain by beds of unconsolidated sand, clay, and gravel.

A narrow continuous drainage divide extends from Johnston south through Trenton and thence more or less parallel to United States Highway No. 25 to the Edgefield-Aiken County line. Two miles west of this divide and roughly parallel to it, is the border between the Piedmont Plateau and the Atlantic Coastal Plain sections. In general, the relief of this watershed ranges from nearly level or undulating to rolling and steep near the larger streams.

The section lying within the Atlantic Coastal Plain has a noticeably smooth relief. Here, the principal streams are South Fork Edisto River and Shaws, Horse, Log, and Shaver Creeks, the last two of which flow west into Stevens Creek; the others flow south.

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The Piedmont Plateau is by far the more thoroughly dissected part of the county. The areas having the most broken, steep, and hilly relief occur along Savannah River and Stevens, Turkey, Rocky, Beaverdam, Horn, and Log Creeks, which constitute the major drainage channels in this section. All the creeks mentioned have numerous tributaries, along which, for a short distance from the major streams, are areas of similar broken relief. The area west of Edgefield, between Beaverdam Creek and the headwaters of Ray, Lloyd, Gundy, and feeder streams of Horn Creek, ranges from undulating to rolling or hilly. The northwestern part of the county, between the McCormick County line and Little Mountain Creek, is, for the most part undulating or gently rolling, with steep areas near the larger drainageways. A wedge-shaped area lying north of Edgefield, between Little Mountain Creek and the border of the Atlantic Coastal Plain north of Johnston, is for the most part rolling and hilly. The larger streams have carved valleys from 75 to 225 feet below the general surface of the upland, and the smaller creeks and streams have cut valleys ranging from 25 to 100 feet in depth. The numerous intermittent drainageways have cut back into the smoother and higher areas and have formed V-shaped gullies.

Practically all the streams, except the small intermittent drainageways which are actively cutting back into the higher ridges, are bordered by narrow strips of nearly level bottom land subject to overflow during seasons of heavy rainfall. In some places along Savannah River and Turkey Creek, Stevens Creek, and other large creeks, steep, severely eroded broken slopes extend to the water's edge and no first-bottom land has developed. In a few places the larger streams have reached temporary base level, but most of them have sufficient fall to develop water power, as evidenced by the water-operated mills and gins built on their banks. Only a few of the mills are in use at present.

All the county is naturally well drained, with the exception of a few well-defined saucerlike sinks, or depressions, and some of the first-bottom land. Every farm is connected with some stream or an intermittent drainageway.

The highest elevations above sea level are 669 feet at Johnston and 620 feet at Trenton. A recent benchmark, set in the court of the town square at Edgefield, records an elevation of 530 feet. A permanent benchmark at Gilgal Church, situated between Turkey and Rocky Creeks in the northwestern part of the county, records an elevation of 412 feet. A temporary benchmark 1¼ miles southeast of the Southern Gold Mine in the extreme northern part of the county records an elevation of 480.6 feet. The lowest elevation recorded is 180 feet, at the mouth of Stevens Creek on Savannah River. These elevations indicate the general lay of the land and the flow of drainage to the southeast and southwest.

The original forest, through which the first white man traveled in 1690, consisted primarily of longleaf pine on the sandy soils of the southeastern part of the county, and shortleaf pine and several species of hardwoods in the northern part. The present forest is almost entirely second or third growth and consists predominantly of shortleaf pine, with a smaller proportion of hardwoods. The stands of

hardwood range from very sparse to dense. In most places the underbrush is dense and of little value.

Edgefield County was formed in 1793,[1] from territory known as "Ninety-six District", which included a large part of northern South Carolina ceded by the Cherokee Indians to the white settlers in 1755. For some time afterward, the county as then formed was known as Edgefield District. Parts of the original county were taken to form a part of Aiken County in 1871, Saluda County in 1896, part of Greenwood County in 1897, and part of McCormick County in 1917. In 1922 minor changes were made in the McCormick-Edgefield County line.

The earliest permanent settlement in the territory now included in Edgefield County was made in 1748 and was probably along Savannah River in the vicinity of the mouth of Stevens Creek or in the vicinity of Edgefield. The immigrants who settled in the area during the following years or until the expulsion of the Indians from northern South Carolina in 1761, came from Pennsylvania, Maryland, Virginia, North Carolina, and Georgia, or were refugees from the vicinity of Charleston during the Revolutionary War. They were of English, German, Scotch, Irish, Welsh, and French descent. After Edgefield County was established, the population increased rapidly.

In the early days, much of the land was worked largely by slave labor, in large plantations, many of which were self-supporting, separate communities. The chief crops were corn, small grains, rice, indigo, tobacco, some cotton, and sweetpotatoes. Cotton did not become a leading crop until several years after the invention of the cotton gin by Eli Whitney in 1793, and it has been the basis of agriculture since that time.

The 1930 census reports the total population of Edgefield County as 19,326, of which all are classed as rural. The density of the population is 37.3 persons a square mile. Edgefield, the county seat, is the largest town, with a population of 2,132. Johnston, the next in size, has a population of 1,072, and Trenton has 369.

This county is fairly well supplied with railroad transportation. The Georgia & Florida Railway, running from Augusta, Ga., through Greenwood, traverses the entire length of the county, serves the town of Edgefield, and has seven sidings in rural districts. This railroad now carries freight only. The Southern Railway, running from Augusta to Columbia, through Trenton and Johnston, has a spur from Trenton to Edgefield and affords passenger service. Bus service is also maintained. Paved or oil-treated Federal or State highways traverse the county in several directions. The county highways, which reach nearly all sections, are surfaced with sand-clay and are graded all-weather roads. The rural mail service is excellent. There are rural post offices at Morgana and Pleasant Lane. Telephone service in the rural districts is poor, except in the vicinity of Johnston. Rural schools and good church buildings are located in convenient places. School children are transported by bus to Edgefield, Trenton, and Johnston, each of which has a high school.

[1] RAMSAY, D. HISTORY OF SOUTH CAROLINA FROM ITS FIRST SETTLEMENT IN 1670 TO THE YEAR 1808. 2 v. in 1, illus. Charleston. 1858.

The chief industry centers around cotton. There is a good-sized mill at Edgefield. The privately owned gins, located at convenient places throughout the county, are adequate for ginning the cotton crop. A cannery is at Johnston. All the asparagus crop, which is the largest special crop grown, is handled by a growers' association and shipped directly to northern markets.

CLIMATE

The climate of Edgefield County is typical of the southwestern counties of South Carolina and is mild and healthful. The prevailing winds are from the west. The mean annual temperature at Trenton is 63.7° F. Warm weather generally begins early in May and lasts through September. The highest temperature recorded is 106°, which occurred in June; but summer temperatures above 100° are rare and of short duration. The average dates of the last and first killing frosts are March 20 and November 15, respectively, giving an average frost-free season of 240 days. Killing frosts have been recorded as late as April 17 and as early as October 24.

The precipitation is well distributed throughout the growing season. Normally it is less in the spring than in the winter, which is favorable for the planting of crops. The largest amount of rainfall occurs during the summer, when it is most needed for growing crops, and the lightest during the fall, when comparatively dry weather is essential for picking cotton and gathering other crops. Droughts are not frequent; the only serious droughts reported recently were in 1925 and 1928.[2]

The relief is such as to cause only slight differences in climate over the county. Farmers in the northern part are generally several days later in planting their crops in the spring, owing to the character of the soils in this section and not to the higher elevation. The climate is not affected by the ocean or other large bodies of water. As the ground freezes to only a slight depth and cold spells are of short duration, farm work can be carried on during the greater part of the winter; and wheat, oats, rape, clover, turnips, collards, and other crops can be grown successfully.

Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation, as recorded by the Weather Bureau Station at Trenton, which may be considered representative of climatic conditions throughout the county.

[2] Statement made by the county agricultural agent.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Trenton, Edgefield County, S. C.*

[Elevation, 620 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1933)	Total amount for the wettest year (1929)	Snow, average depth
	° *F.*	° *F.*	° *F.*	*Inches*	*Inches*	*Inches*	*Inches*
December	47.4	76	8	3.78	1.24	3.29	0.2
January	46.7	77	9	3.62	1.80	3.61	.2
February	47.4	78	−4	4.88	4.81	10.27	1.6
Winter	47.2	78	−4	12.28	7.85	17.17	2.0
March	55.9	90	19	4.40	1.84	9.33	(1)
April	63.1	93	30	3.41	1.16	3.13	(1)
May	71.6	101	40	3.26	1.52	6.50	0
Spring	63.5	101	19	11.07	4.52	18.96	0
June	78.2	106	48	4.40	1.97	4.54	0
July	80.1	104	56	5.74	7.39	8.49	0
August	79.3	103	49	5.25	3.65	1.04	0
Summer	79.2	106	48	15.39	13.01	14.07	0
September	75.3	104	44	3.64	2.91	10.65	0
October	64 7	95	29	3.02	3.85	9.69	0
November	54.8	84	23	2.45	1.05	3.87	(1)
Fall	64.9	104	23	9.11	7.81	24.21	0
Year	63.7	106	−4	47.85	33.19	74.41	2.0

[1] Trace.

AGRICULTURAL HISTORY AND STATISTICS

From such reliable information as is obtainable, the area including the present site of Edgefield County was at one time the hunting grounds of the Cherokee, Monongahela, and Yuchi Indians who planted corn in small fields along the larger stream bottoms and banks. For the greater part of their food, however, the Indians relied on wild game from the surrounding forests and fish from the nearby streams.

The earliest permanent settlement in the county, of which we have record, was made in 1748. It was about one-half mile north of the present site of the county seat. Augusta, Ga., was founded in 1736, and a ferry was established across the Savannah River between Augusta and Hamburg in 1765. A vigorous effort was made by Governor Johnson at that time to settle this country. The principal crops grown by the early settlers were corn, oats, rye, wheat, and minor crops to supply food for the family and feed for the hogs, sheep, cattle, and work animals. Later, indigo, tobacco, flax, and cotton were grown and hauled overland to Charleston. This practice, however, did not flourish, on account of the long hazardous journey through Indian-infested country. After the construction of better roads and the extermination of hostile Indians in 1761, many cattle and horses were raised on the bottom-land pastures and were driven to the markets of Charleston. In the period between the Revolutionary War and the Civil War, agriculture developed with rapid strides.

Among the first crops to be grown and exported after the country became more settled, was rice, but its production in this county never flourished to a great extent. Indigo also was among the first commercial agricultural products, but from 1776 on, its production became unprofitable on account of keen competition from foreign countries. Furthermore, about this time cotton gained the attention of farmers, but the increase in its production was gradual until the cotton gin came into practical use and railroad transportation was established. Until 1792 or shortly after, corn was an important export crop. From 1845 to 1860 the average farm combined the production of cotton and grain with the raising of livestock, and farm products from all or any of these three sources were sold in the market. Since 1860, cotton has been grown almost to the exclusion of other crops.

Table 2, taken from the Federal census reports, indicates the general trend of the acreage devoted to crops since 1919. Statistics for previous years are not comparable because of extensive changes in the boundaries of the county.

TABLE 2.—*Acreage of principal crops in Edgefield County, S. C., in stated years*

Crop	1919	1929	1934	Crop	1919	1929	1934
	Acres	*Acres*	*Acres*		*Acres*	*Acres*	*Acres*
Cotton	49,923	28,263	21,120	All hay	5,694	1,064	5,367
Corn	33,819	22,658	28,983		*Trees*	*Trees*	*Trees*
Oats	9,694	1,865	2,335	Peaches	27,138	7,648	14,503
Wheat	2,093	1,204	4,055	Apples	6,935	3,286	1,000
Sweetpotatoes	1,128	832	1,018	Pears	1,244	871	528
Asparagus		1,102	(1)	Pecans	1,940	3,932	(1)
Dry peas	4,697	546	4,637				

[1] Not reported.

The census figures readily indicate the order of importance of the different crops. The acreage in wheat, oats, and hay has fluctuated, but that devoted to corn has been the most stationary. In 1929 cotton, corn, oats, wheat, and hay were the leading crops, ranking in order of their acreage. The effort to grow crops needed for consumption on the farm is reflected in the shift in the relative acreages in 1934 to the following order: Corn, cotton, hay, dry peas, wheat, and oats.

Even since the advent of the cotton boll weevil in 1920, cotton, because of the existing natural and economic conditions, is the logical cash crop. The introduction and successful growing of asparagus as a cash crop in the vicinities of Trenton and Johnston is an exception to cotton as a major cash crop. According to the 1930 census, the asparagus grown in these localities in 1929 averaged $95 an acre as compared to $32.50 an acre for cotton. Small grains, hay and forage, the minor crops, such as garden crops for home use, truck crops—except asparagus—and fruits, are grown largely to meet the demands of home consumption on the farm. The county agricultural agent reports that 90 percent of the pecan crop and from 1,000 to 2,000 bushels of the soybeans grown in the county have been sold annually during recent years. The total acreage devoted to garden crops has more than trebled during the last decade.

Table 3 gives the value of the different agricultural products in 1929.

TABLE 3.—*Value of all agricultural and livestock products by classes in 1929 and of livestock in 1930, in Edgefield County, S. C.*

Crop	Value	Livestock and livestock products	Value
Cereals	$396,694	Mules and burros	$282,827
Other grains and seeds	17,477	Cattle	227,535
Hay and forage	20,573	Swine	67,934
Vegetables	285,125	Horses	40,103
Fruits and nuts	15,397	Sheep and goats	3,072
All other field crops	1,375,494	Dairy products sold	87,201
Forest products	99,132	Poultry and eggs	190,901
		Wool	292
Total	2,209,892	Total	899,865
		Total agricultural products	3,109,757

There were 2,817 farms in the county in 1935, and the average value of farm land (including buildings) was $19.67 an acre. The average size of farms decreased from 128 acres in 1880 to 56.3 acres in 1920, since which time it has increased to 83.5 acres (in 1935). Considerable farm land has been abandoned since the advent of the cotton boll weevil, and more recently, owing to the low price of cotton, land formerly in cotton is now planted to asparagus and other crops.

The 1935 census report shows that in 1934 wheat was threshed from 4,055 acres and produced 34,777 bushels as compared with 1,204 acres and 12,850 bushels in 1929. Oats showed a yield of 52,834 bushels threshed from 2,335 acres in 1934 and 50,106 bushels threshed from 1,865 acres in 1929. Only a small proportion of the oats grown, however, is threshed. Oats were cut and fed unthreshed to livestock from 7,273 acres in 1929 and from 10,042 acres in 1934. There was a slight increase in both acreage and production of rye.

Hay showed a decided increase from 1,064 acres and 897 tons in 1929 to 5,367 acres and 2,781 tons in 1934. The acreage of corn increased, although the yield decreased during the same 5-year period.

The fact that the soil and climate are adapted to several other important crops, as evidenced by the census data of former years, is the redeeming feature in the present state of agricultural depression for the cotton grower. The county agricultural agent reports that the present-day farmer is buying hay, corn, oats, and mixed feeds, which could be grown in the county where a market is already developed for them. More beef, pork, and other livestock and their products could be produced.

In 1934 the county agricultural agent reported all farmers were using commercial fertilizers of 3–8–3, 4–10–4, and 5–4–5 mixtures;[8] approximately 20 percent of the farmers buy the separate ingredients and mix them on the farm, which operation during that year saved them $5 a ton. Three carloads of dolomitic limestone were used by a local fertilizer company at Trenton this year. This company uses

[8] Percentages, respectively, of nitrogen, phosphoric acid, and potash.

this limestone as a filler in the 5–4–5 formula which is used by the farmers who grow soybeans.[4]

According to the 1930 census, 2,465, or 90.4 percent, of the farms in the county purchased commercial fertilizers amounting to $317,502, 626 farms purchased feed amounting to $47,214, and 719 farms hired farm labor at a cost of $116,135.

The proportion of tenancy has remained very much the same since 1900. In 1935, 27.7 percent of the farms were operated by owners, 72.2 percent by tenants, and 0.1 percent by managers.

On the owner-operated farm, the farmer and his family do most of the work, and they hire extra help by the day when necessary, at 50 to 75 cents. The majority of the tenants are Negroes. On the tenant-operated farm, some form of share-crop system is used almost exclusively, very little rent being paid in cash. The more common terms of rental are that the owner furnishes land, work animals, and one-half of the fertilizer, in return for which he receives one-half of the crops. This plan is more desirable for the landowner, as it allows him to exercise more rigid control over the management of his land. Another common agreement is for the sharecropper to furnish all the seed, fertilizer, and work animals, and receive in return three-fourths of the crop. The cash rental is one bale of cotton for each one-horse farm. The terms of tenancy depend on how much the owner furnishes in the way of seed, fertilizer, and work animals, and whether or not he insures his tenant a season's food supply.

On most tenant farms the buildings include a dwelling—generally a one-story house, a barn to house the work animals and cattle, a corncrib to shelter corn or threshed grains, and a chicken house. On many farms there is a shed which is used for various purposes. Dwellings on the farms operated by owners are two-storied and are kept well painted, the barns are fair sized, and the other buildings and sheds are kept in good repair.

The tenant farmer generally works with one-horse implements, including a turning plow, a stalk cutter, a disk or drag harrow, cotton and corn planters, a fertilizer drill, and a wagon. He cultivates the cotton and corn with a one-horse plow with sweeps, shovels, half shovels, or bull tongues. On larger farms, disk harrows, mowing machines, hay rakes, and a one-row harvester for reaping the soybeans are used. Only a very few farms have riding cultivators, threshing machines, tractors, or grain binders.

SOIL-SURVEY METHODS AND DEFINITIONS

Soil surveying consists of the examination, classification, and mapping of soils in the field.

The soils are examined systematically in many locations. Test pits are dug, borings are made, and exposures, such as those in road or railroad cuts are studied. Each excavation exposes a series of distinct soil layers, or horizons, called, collectively, the soil profile. Each horizon of the soil, as well as the parent material beneath the soil, is studied in detail; and the color, structure, porosity, consistence, texture, and content of organic matter, roots, gravel, and stone are

[4] See footnote 2, p. 4.

noted. The reaction of the soil [5] and its content of lime and salts are determined by simple tests. The drainage, both internal and external, and other external features, such as the relief, or lay of the land, are taken into consideration, and the interrelation of soils and vegetation is studied.

The soils are classified according to their characteristics, both internal and external, special emphasis being given to those features influencing the adaptation of the land for the growing of crops, grasses, and trees. On the basis of these characteristics soils are grouped into mapping units. The three principal ones are (1) series, (2) type, and (3) phase. Areas of land, such as alluvial soils, undifferentiated, have no true soil characteristics and are called (4) miscellaneous land types.

The most important group is the series which includes soils having the same genetic horizons, similar in their important characteristics and arrangement in the soil profile, and developed from a particular type of parent material. Thus, the series includes soils having essentially the same color, structure, and other important internal characteristics, and the same natural drainage conditions and range in relief. The texture of the upper part of the soil, including that commonly plowed, may vary within a series. The soil series are given names of places or geographic features near which they were first found. Thus Cecil, Norfolk, and Chesterfield are names of important soil series.

Within a soil series are one or more soil types, defined according to the texture of the upper part of the soil. Thus the class name of the soil texture, such as sand, loamy sand, sandy loam, loam, silt loam, clay loam, silty clay loam, and clay, is added to the series to give the complete name of the soil type. For example, Norfolk sandy loam and Norfolk sand are soil types within the Norfolk series. Except for the texture of the surface soil, these soil types have approximately the same internal and external characteristics. The soil type is the principal unit of mapping, and because of its specific character it is generally the soil unit to which agronomic data are definitely related.

A phase of a soil type is a subgroup of soils within the type, which differ from the type in some minor soil characteristic that may, nevertheless, have important practical significance. Differences in relief, stoniness, and the degree of accelerated erosion are frequently shown as phases. For example, within the normal range of relief for a soil type, there may be areas which are adapted to the use of machinery and the growth of cultivated crops and others that are not. Even though there may be no important differences in the soil itself or in its capability for the growth of native vegetation throughout the range in relief, there may be important differences in respect to the growth of cultivated crops. In such an instance the more sloping part of the soil type may be segregated on the map as a steep phase. Similarly, soils having differences in depth may be mapped as phases even though these differences are not reflected in

[5] The reaction of the soil is its degree of acidity or alkalinity, expressed mathematically as the pH value. A pH value of 7 indicates precise neutrality; higher values indicate alkalinity and lower values acidity.

the character of the soil or in growth of native plants. Norfolk sand, steep phase, and Norfolk sandy loam, deep phase, are examples of such differences.

The soil surveyor makes a map of the county or area, showing the location of each of the soil types, phases, and miscellaneous land types, in relation to roads, houses, streams, lakes, section and township lines, and other local cultural and natural features of the landscape.

SOILS AND CROPS

The geographic position of Edgefield County is such that approximately the northern five-sixths of its area lies in the Piedmont Plateau, and the remaining one-sixth is in the upper Atlantic Coastal Plain, or so-called "sand-hill" region. The soils in the northern part, methods of tillage, and the crops successfully grown are essentially similar to those of the Piedmont Plateau generally in South Carolina. The southern part of the Piedmont Plateau section slopes toward and borders on the fall line. The relief is gently rolling, rolling, or hilly. All this part of the county, except the first-bottom land and a very few small areas of flat upland, is naturally well drained.

In the rest of the county, below the fall line, the soils, methods of tillage, and crops successfully grown are similar to those of the general upper Atlantic Coastal Plain, or sand-hill region. Here the relief is nearly level or undulating and becomes gently rolling or rolling at the headwaters and along the major drainage channels. With the exception of a very few small depressed areas, or sinks, the soils have excellent surface and internal drainage.

The greater part of the soils of this county have been under cultivation at one time or another. The more rugged areas bordering the major drainage channels, adjoining McCormick County, and west and southwest of Edgefield, are the least cultivated sections.

The percentage of abandoned land is greatest in the rugged areas just mentioned. Fewer abandoned farms are northeast and north of Edgefield. Considerable erosion and gullying has taken place on the abandoned land, and, not only the surface soil, but, in many places, the entire subsoil has been removed. Reclamation of the land for agricultural purposes would be expensive and slow. Supervised reforestation, such as is being planned for nearly the entire western half of the county by the United States Forest Service, appears to be the logical use of the steep, broken, and gullied lands. The present desertion of farm lands may be attributed largely to the advent of the cotton boll weevil about 1919 or 1920 and to the marked decline in cotton prices which began shortly after that time.

The extensively as well as the intensively cultivated part of the county lies east and southeast of the towns of Edgefield, Trenton, and Johnston. It comprises very largely the Coastal Plains section.

Several varieties of oaks—white, post, red, black, blackjack, and water—in addition to hickory, chestnut, walnut, elm, cedar, maple, locust, poplar, yellow poplar, and a few other trees of the deciduous hardwood class, constituted the virgin stand of timber in the Piedmont Plateau section of the county. They grew rather far apart

and were of large diameter.[6] Beech, birch, willow, ash, black gum, sweetgum, and a few cedars and sycamores grew on soils of higher moisture-holding capacity. A very few shortleaf pines grew among the deciduous trees, either on the uplands or less well-drained slopes and bottoms. The undergrowth of the virgin forest consisted of a legume (probably wild pea vine), wild strawberry, and cane.

The virgin timber on the Coastal Plain soils consisted of a heavy growth of longleaf pine, together with a few oak and hickory trees.

At present, the second- or third-growth timber includes shortleaf or oldfield pine; post, black, and blackjack oaks; sweetgum; and a small amount of hickory on the drier soils of the upland. Willow, beech, birch, ash, poplar, black gum, sweetgum, and a few walnut and sycamore grow on the soils occupying the lower or wetter areas.

Practically all of the merchantable timber has been cut. The more recently abandoned areas support little vegetation except wild and tame grasses, broomsedge, briers, and a very scattered and young growth of shortleaf pine, oak, and hickory.

In 1935 the agricultural statistics report 70.9 percent of the county in farms. An average of approximately 41.8 percent of a farm is devoted to cultivated crops.

From the vicinities of Red Hill and Colliers a belt of country about 6 or 7 miles wide extending eastward to Edgefield, together with the entire sector of the county lying between lines projected east and south of the town of Edgefield and extending to the Saluda and Aiken County lines, respectively, constitutes the most thickly populated and the most intensively cultivated section.

For many decades cotton has been the dominant crop from the point of view of both acreage and cash value. Corn, oats, hay, and wheat rank next, in the order mentioned. The subsistence crops are in many instances insufficient to meet the demand of farmers, and corn and hay are purchased. Considerable interest is being manifested in the growing of more feedstuffs and food for home consumption. All the major crops are grown on nearly every farm except on broken or steep land, on first-bottom land, and to a certain extent on the deep sands in the extreme southeastern part of the county. First-bottom lands, however, are excellent for the production of corn. In the southeastern part of the county, asparagus has become an important crop on many farms. Soils, climate, economic conditions, and geographic location determine the distribution of crops. The gray sandy lands, or soils with sandy loam surface soils overlying clay or sandy clay subsoils, however, are preferable for the production of cotton because they warm early in the spring, are responsive to fertilizers, and the cotton makes an earlier start and matures earlier than on the heavier soils. There are several reasons why cotton is the leading cash crop: It finds ready sale at all times, it may be easily stored at a low cost, and it is the one crop on which credit can be obtained. It is a crop that cannot be handled entirely by machinery, and cheap labor is available.

Asparagus is the second most important cash crop, although it has been grown on a commercial scale but a comparatively short time (since about 1918). It is grown most successfully on the better

[6] See footnote 1, p. 3.

quality well-drained soils with sandy loam surface soils and sandy clay subsoils. These soils respond readily to heavy applications of commercial fertilizers, barnyard manure, or green manures provided by leguminous cover crops.

Perhaps no county of equal size in South Carolina has so large a number of soil types or so great differences between the types as Edgefield County. This is due to the fact that the county comprises parts of both the Piedmont Plateau and Atlantic Coastal Plain regions. The soils in the Piedmont Plateau section differ from those of the Coastal Plain in the materials from which they are derived and particularly in the texture and structure of the subsoils. The Piedmont Plateau section is underlain by two distinct kinds of rocks, the granitic and the Carolina slate formations, which differ in composition and have given rise to two important groups of soils.

The soils and particularly the subsoils derived from the weathered products of the granites contain a comparatively high percentage of potash. These soils occur mainly in the southwestern and western parts of the county and are members of the Cecil, Appling, Durham, and Wilkes series.

Throughout the granites are small dikes of dark basic rocks which have given rise to dark-red soils—Davidson clay loam and to less extent Iredell loam. These soils contain more lime and less potash than the Cecil soils.

The Carolina slates and associated rocks, which underlie the northern part of the county, are very fine grained, and the soils derived through the weathering and decomposition of these slates are silty and floury in texture and practically free from sand particles, except fine sand or very fine sand. These soils are members of the Georgeville, Alamance, Goldston, and Orange series.

In the Coastal Plain section, the surface soils and subsoils are dominantly more sandy than those in the Piedmont Plateau section, due to the fact that the underlying materials from which the soils are derived consist of unconsolidated beds of sand and clay. The Marlboro, Magnolia, and Greenville soils have heavier sandy clay materials beneath the subsoils than the material beneath the subsoils of the Norfolk, Orangeburg, and Ruston soils. This heavier material has influenced both the surface soils and the subsoils.

In many places along the border of the Piedmont Plateau and the Coastal Plain, a shallow layer of the coastal-plain material covers the heavy stiff clay subsoil which has developed from the weathered products of the underlying decomposed rock materials. These soils are classed as members of the Bradley and Chesterfield series.

The soils, on the bases of color, texture, structure, drainage, and crop adaptations, are placed in the following six groups: (1) Soils with gray sandy surface soils and red or yellow clay subsoils, (2) soils with red clay loam surface soils and red clay subsoils, (3) soils with gray or brown silt loam surface soils and yellow or red silty clay loam subsoils, (4) soils with gray or brown sandy loam surface soils and red or yellow friable sandy clay subsoils, (5) soils with gray sand surface soils and yellow or brown sand subsoils, and (6) miscellaneous soils and land types.

In the following pages the soils are described in detail, and their agricultural relationships are discussed; their location and distribution are shown on the accompanying soil map; and their acreage and proportionate extent are given in table 4.

TABLE 4.—*Acreage and proportionate extent of the soils mapped in Edgefield County, S. C.*

Soil type	Acres	Per-cent	Soil type	Acres	Per-cent
Cecil sandy loam	6,848	2.2	Norfolk sandy loam, deep phase	2,752	0.9
Cecil sandy loam, eroded phase	18,304	5.9	Ruston sandy loam	10,112	3.3
Cecil coarse sandy loam	5,824	1.9	Ruston sandy loam, deep phase	1,920	.6
Bradley sandy loam	5,952	1.9	Orangeburg sandy loam	7,296	2.3
Appling sandy loam	1,536	.5	Norfolk sand	13,248	4.3
Appling coarse sandy loam	1,152	.4	Ruston sand	1,984	.6
Durham sandy loam	2,880	.9	Wilkes sandy loam	10,432	3.4
Durham coarse sandy loam	2,496	.8	Worsham sandy loam	640	.2
Chesterfield sandy loam	10,816	3.5	Cecil clay loam, broken phase	25,472	8.2
Cecil clay loam	24,512	7.9	Georgeville silty clay loam, broken phase	2,432	.8
Davidson clay loam	1,536	.5	Norfolk sand, steep phase	2,752	.9
Georgeville silty clay loam	37,568	12.1	Hoffman sandy loam	2,240	.7
Georgeville silt loam	11,392	3.7	Grady sandy loam	1,344	.4
Alamance silt loam	10,176	3.3	Congaree silt loam	3,392	1.1
Goldston silt loam	45,120	14.5	Iredell loam	320	.1
Orange silt loam	3,840	1.2	Alluvial soils, undifferentiated	20,992	6.8
Marlboro sandy loam	2,176	.7			
Magnolia sandy loam	4,544	1.5	Total	310,400	
Greenville sandy loam	448	.1			
Norfolk sandy loam	5,952	1.9			

SOILS WITH GRAY SANDY SURFACE SOILS AND RED OR YELLOW CLAY SUBSOILS

This group may be subdivided into two groups on the basis of the color of the subsoil. The first subgroup includes Cecil sandy loam; Cecil sandy loam, eroded phase; Cecil coarse sandy loam; Bradley sandy loam; Appling sandy loam; and Appling coarse sandy loam; all of which have red stiff but brittle, yet crumbly, clay subsoils. The soils in the second subgroup are Durham sandy loam, Durham coarse sandy loam, and Chesterfield sandy loam. They have yellow moderately friable sandy clay or stiff but brittle clay subsoils. Their relief ranges from nearly level, undulating, and slightly rolling to rolling or sloping, and both surface and internal drainage are excellent. These soils are easy to till, and light farm implements meet the needs for most crops grown. Areas of these soils are for the most part too small and too irregular in shape to warrant handling with tractor power and improved machinery. A very few of the larger more nearly level or undulating fields might be extensively cultivated by using the Mangum type of terrace. The soils of this group, as a whole, are widely scattered in all parts of the county, except the northern part which is underlain by the Carolina slate formation.

The sandy character of the surface soils, which range in texture from coarse sandy loam to sandy loam and include a very few widely scattered areas of fine sandy loam, allow the absorption of considerable rainfall and at the same time allow rapid internal drainage, resulting in the early warming of the soils in the spring. The structure of the subsoils makes them retentive of large quantities of moisture. Organic matter and mineral plant nutrients are very low in these soils because of their sandy texture and thorough leaching.

The mellowness, the friability, the ease with which they are handled, the early date at which crops may be planted, and their response to commercial fertilizers are desirable characteristics, which make them the second most prized land for cotton in the county. The acreage devoted to corn, oats, and forage crops is therefore less than it otherwise would be, and these crops are grown largely for home consumption. These soils may be built up to a fairly high state of productivity and be made to produce excellent yields of corn, small grains, and forage crops, either through the growing and plowing under of green manures or legumes or by using large applications of commercial fertilizers.

Although the degree of acidity is not a highly important factor in the production of crops such as those commonly grown on these soils, it becomes a matter of concern when the growing of legumes is attempted. Tests for soil acidity made in the field [1] indicate that all the surface soils of the soils of this group are moderately or highly acid, and those with coarse sandy loam surface soils are relatively more acid.

On the surface and mixed with the surface layers of the soils of this group, are small areas of gravel consisting largely of more or less angular quartz fragments which range in diameter from one-half inch to 5 inches. A considerably larger and more evenly distributed quantity of angular quartz fragments is strewn over the surface and included in the surface layers of Cecil coarse sandy loam, Durham coarse sandy loam, and Appling coarse sandy loam. Chesterfield sandy loam and Bradley sandy loam are especially gravelly southeast and east of Johnston. Areas where the small rounded quartz gravel occurs in sufficient quantities and over large enough areas to be shown on the soil map are shown by gravel symbols, but in no place does the gravel content of the surface layer greatly hinder cultivation.

The physical characteristics of these soils and their response to fertilizers render them desirable for the production, generally speaking, of nearly all the crops commonly grown, except asparagus. They are recognized as among the best soils for cotton, particularly in the Piedmont Plateau section of the county. Cotton matures earlier on these sandy soils than on the clay loam soils, which is a great advantage under conditions of boll weevil infestation. The soils may be cultivated earlier in the spring and sooner after rains than the heavier soils of the Piedmont Plateau section. The Coastal Plain soils, however, warm several days earlier in the spring and may be cultivated with even less lapse of time after rains.

Cecil sandy loam.—Cecil sandy loam is widely scattered on the comparatively smooth interstream areas or divides in the southwestern part of the county and in the vicinity of Edgefield.

The surface soil in cultivated fields, to a depth ranging from 5 to 7 inches, is light grayish-brown or brownish-yellow light sandy loam or loamy sand. In most places, a 1- to 3-inch layer of yellowish-red or reddish-yellow friable heavy sandy loam or sandy clay occurs between the surface soil and the subsoil. The subsoil is red stiff but brittle clay extending to a depth ranging from 25 to 34 inches. The clay is hard and breaks into irregular-shaped lumps

[1] Determined by Hellige soil indicator solution.

when dry, but it is sticky when wet. It is permeable to air and water, and plant roots have no difficulty in penetrating it. Below the red clay is yellowish-red or light-red friable clay streaked or banded with yellow, which contains a small quantity of coarse sand grains and a few small mica scales. This layer varies greatly from place to place in the depth at which it occurs and in thickness. It is underlain by mingled yellow, red, and very light gray soft disintegrated and partly decomposed materials which grade into the light-colored granite, gneiss, or schist rock.

On the larger smooth areas, the surface soil contains a noticeably larger quantity of fine material. In places of more sloping or rolling relief, particularly along Savannah River, Stevens Creek, and Horn Creek, the proportion of coarse material increases, and much coarse sand and fine quartz fragments occur on the surface in narrow strips or ridges and on some slopes. At the bases of slopes, the light sandy surface layer may range in thickness from 10 to 14 inches, and in some places the clay subsoil ranges from only 10 to 16 inches in thickness and directly overlies rock. Scattered here and there and concentrated in some spots are small quantities of small white or brown angular quartz fragments and some quartz rock. Such areas are shown on the soil map by gravel symbols.

A few small areas of Cecil fine sandy loam are included with mapped areas of Cecil sandy loam. Such bodies occur almost exclusively within a belt 3 or 4 miles wide, beginning at a point about 2 miles east of Edgefield and extending westward from that town, paralleling the southern border of the Georgeville, Alamance, Goldston, and Orange soils, to Stevens Creek. The use, methods of tillage, and fertilizer treatments of these included bodies and the resulting crop yields on them are very similar to those of the typical soil. Throughout areas of Cecil sandy loam are small spots, locally called "galled spots", in which the sandy covering has been removed in part or wholly, thereby exposing the red clay subsoil.

Cecil sandy loam warms quickly in the spring and can be cultivated soon after rains. It is retentive of soil moisture and applied plant nutrients. It is considered the earliest soil in the Piedmont Plateau part of the county, owing to its sandy texture, mellow structure, and good drainage throughout.

Probably from 65 to 75 percent of the land is in cultivation, of which about 60 percent is devoted to cotton, about 20 percent to corn, about 10 or 15 percent to oats and wheat, and the rest to sweetpotatoes, fruit, pecans, and home gardens.

Cotton yields from two-fifths to three-fourths bale an acre, when fertilized with from 275 to 350 pounds of a 3–8–3 or 4–10–4 commercial fertilizer, usually applied 1 week before planting, and 100 pounds of nitrate of soda (a part of which may be sulphate of ammonia) are used as a side dressing.[8] Corn in general is not fertilized, but it receives a side dressing of approximately 100 pounds of nitrate of soda an acre. It yields from 15 to 20 bushels an acre. Oats generally do not receive fertilizer at the time of sowing, but a top dressing ranging from 75 to 125 pounds of nitrate of soda is applied the last of February or the first of March. A

[8] Crop yields and the quantities and kinds of fertilizers applied have been verified by the county agricultural agent.

large proportion of the oats is fed in the sheaf or is cut green and cured for hay, and the oats threshed for grain yield from 12 to 25 bushels an acre. Hay crops on this soil may be either oats cut green and cured or oats and peas, and the yield is 1 to 1½ tons an acre with no fertilizer or nitrate of soda applications. Very few farmers apply barnyard manure or turn under green manures on this soil to enrich it, but such treatment would be very beneficial to the soil and would increase crop yields. The rotation most commonly practiced is corn 1 year, cotton 2 years, oats 1 year, and a hay crop 1 year. The combined acreages of oats, corn, and hay, however, are never large enough to cover all the land occupied by cotton each year. In general, no systematic crop rotation is practiced.

In normal seasons, Cecil sandy loam generally produces a fair crop of cotton before the boll weevil becomes destructive. This is a desirable soil for growing truck crops, pecans, orchard fruits, and small fruits. Since a part of the land has undulating, sloping, or rolling relief, it is very important that such areas be kept well terraced, in order to avoid washing away of the sandy surface layers during heavy rains. The broad-based, or Mangum, type of terrace might be used to allow the use of tractors and other improved farm machinery.

Cecil sandy loam, eroded phase.—The eroded phase differs from typical Cecil sandy loam mainly in the variability of the thickness of the sandy loam surface covering which overlies the red clay subsoil. It represents areas of Cecil sandy loam which have been poorly managed and subjected to erosion and washing because of their slightly more undulating, sloping, and rolling relief, more rapid and thorough surface drainage, and slightly higher elevation. The subsoil is identical with that of the typical soil.

Plowed fields present a spotted appearance, and numerous small bodies of exposed reddish-brown or pale-red sandy clay or clay loam are intermingled with larger areas of light-gray sandy loam. The sandy surface covering is deep enough in many places to cover the greater part of the underlying clay when the soil is undisturbed, but when the land is plowed, the red subsurface material is turned up. The dappled or spotted effect, characteristic of the eroded phase of Cecil sandy loam, is emphasized when a freshly plowed field has just received a good shower of rain.

Areas in which clay or sandy clay is exposed are not handled with the same ease as is the typical sandy loam. Internal drainage is less rapid; consequently warming is slower in the spring. The occurrence of many of these spots in a field necessitates several days' delay in planting.

Included with this soil in mapping are small areas of the eroded phase of Cecil fine sandy loam, which are closely associated with the still smaller corresponding areas of Cecil fine sandy loam included with Cecil sandy loam. The use, tillage, fertilizer treatments, and crop yields of these two eroded phases are not unlike.

Yields of the various crops grown on Cecil sandy loam, eroded phase, are slightly lower than those obtained on typical Cecil sandy loam; otherwise the two soils are very similar and are used to about the same extent for cultivated crops. The land is planted to the

same crops in practically the same proportionate acreages and is fertilized in much the same manner.

Well-kept terraces are very important on this type of land, in order to prevent further entrenchment by erosion and a consequent increase in the size of the areas having exposed subsurface clay layers. The eroded soil occurs in larger areas than typical Cecil sandy loam, but it is very closely associated with that soil. The use of tractors or other improved farm implements is feasible.

Cecil coarse sandy loam.—The surface soil of Cecil coarse sandy loam is gray, grayish-yellow, or slightly reddish yellow coarse sandy loam or coarse loamy sand to a depth ranging from 5 to 11 inches. In some places the lower part of the surface layer is reddish-yellow heavy coarse sandy loam or coarse sandy clay loam. The subsoil is red stiff but brittle and moderately crumbly clay containing a noticeable quantity of coarse quartz sand. The material in this layer generally is not so dark a red as that of Cecil sandy loam. At a depth ranging from 25 to 35 inches, the red clay grades into light-red or yellowish-red friable heavy sandy clay or clay, which, at a depth ranging from 40 to 55 inches, is underlain by variegated light-red, yellow, and very light gray soft disintegrated parent rock.

The largest development of this soil is in the extreme southern part of the county, mainly in the section between Stevens Creek and Savannah River, known as "Skipper's Georgia." In this section the land is rolling, strongly rolling, or sloping and hilly. A smaller development is on the isolated granitic formation in the extreme northwestern part of the county. Here the land is undulating or gently rolling. Scattered here and there in this section are large coarse-grained pink or gray granite boulders ranging from 3 to 30 or more feet in diameter. A few of these are almost entirely exposed and are lying on the surface, but most of them are partly covered. They are indicated on the soil map by rock outcrop symbols.

Considerable very coarse sand and fine angular quartz fragments are strewn over and mixed with the surface layer of Cecil coarse sandy loam. In places angular quartz fragments, ranging from 1 inch to 5 inches in diameter, occur on the surface; and, where extensive, such areas are indicated by gravel symbols on the map.

Cecil coarse sandy loam is comparatively inextensive, but agriculturally it is a rather important soil. Approximately 95 percent of the land is cultivated. The proportions devoted to cotton, corn, oats, wheat, hay, and other crops are similar to those of Cecil sandy loam; but yields are reported to be from 5 to 12 percent lower. Organic matter is greatly lacking in this soil. The fertilizer treatment is similar to that recommended for Cecil sandy loam.

Bradley sandy loam.—The surface soil of Bradley sandy loam consists of a 5- to 9-inch layer of gray or yellowish-gray sandy loam underlain by a 2- to 5-inch transitional layer of yellowish-red heavy sandy loam or sandy clay loam, containing some fine gravel. In a few places the surface soil is shallow and has a brown cast. The subsoil is red stiff but brittle clay that breaks into large irregular shaped clods which are rather easily crushed to a fine granular mass. Beginning at a depth ranging from 29 to 36 inches, the subsoil is streaked or banded with yellow or grayish yellow and contains a

small quantity of medium sand and coarse sand and a few mica scales. Below a depth ranging from 50 to 60 inches is light-yellow, grayish-yellow, or very light gray soft disintegrated partly decomposed rock. The lower part of the soil is developed from materials produced by the weathering of disintegrated granite, gneiss, and micaceous schists, and the surface soil from water-laid Coastal Plain material. On the surface of this soil and mixed with the surface layer, in places, is considerable angular and rounded quartz gravel, but there is no gravel in the subsoil or substratum. The granite, gneiss, or schist formations are deeply weathered.

Bradley sandy loam is not an important nor an extensive soil. It occurs in small widely scattered areas along the border between the Piedmont Plateau and the Coastal Plain sections. The Coastal Plain deposits originally were thin or they have been eroded, leaving a thin layer of sandy soils overlying the residual subsoil and rock formations of the Piedmont Plateau. The largest areas of this soil are east and southeast of Edgefield.

The relief is undulating, rolling, or steeply sloping on breaks to stream bottoms. Both surface and internal drainage apparently are well established.

Approximately 40 percent of this soil is in cultivation to the crops commonly grown, except asparagus, and the remainder is in forest consisting of shortleaf pine and hardwoods.

The crop yields, fertilizer treatments, and tillage methods are similar to those of the contiguous soils. Yields are perhaps three-fourths as large as those obtained on Cecil sandy loam, under similar fertilization and cultural treatment. The kind and quantity of fertilizer used on Cecil sandy loam will be equally suitable for Bradley sandy loam, as this soil is closely allied, in subsoil characteristics, to the Cecil soils.

Appling sandy loam.—To a depth ranging from 3 to 6 inches the surface soil of Appling sandy loam, in cultivated fields and when moderately dry, is light-gray or very pale yellowish-gray mellow friable loamy sand or light sandy loam. This is underlain by a 5- to 12-inch layer which consists of light-yellow loamy sand in the upper part and yellow sandy loam in the lower part. This material grades into salmon-colored or orange sandy clay. The subsoil ranges from 9 to 16 inches in thickness and consists of reddish-yellow stiff but brittle clay that breaks into irregular-shaped lumps which are fairly easily crushed to a granular mass. Beginning at a depth ranging from 20 to 30 inches and continuing to a depth ranging from 38 to 44 inches, is banded or streaked light-red, yellow, and gray stiff but brittle moderately friable clay. This material grades into variegated yellowish-red or pink, yellow, and light-gray soft friable disintegrated rock.

Included with mapped areas of this soil are a few small bodies of Appling fine sandy loam. The subsoil of the Appling soils is variable in this county. In many places the salmon-colored or orange sandy clay layer is lacking, and a mottled or streaked light-red and yellow stiff brittle clay immediately underlies the surface soil. In another variation the subsoil layers are similar to those of Durham sandy loam, but they are moderately mottled with red or rusty brown very close to the subsurface layer. A variation is common wherein

the lower three-fourths of the subsoil layers are streaked or banded with almost equal quantities of light-red and yellow clay which continues to a depth near the disintegrated parent rock. In places the surface layers of loamy sand or sandy loam are considerably deeper than typical.

Appling sandy loam is of small extent. The largest areas are southwest of Millers Crossroads in the west-central part of the county. A few small areas lie south and northeast of Edgefield. The rest are widely scattered over the southwestern part of the county and are small.

The relief, the drainage, and the geographic position that this soil occupies relative to other soils are all very similar to those features of Cecil sandy loam.

About 85 percent of the land is cultivated, and the rest is in forest or pasture. This soil is used to grow similar crops as are produced on Cecil sandy loam, receives similar tillage and fertilization, and produces only slightly lower yields. Bright-leaf tobacco can be grown, and the soil is also desirable for the production of sweetpotatoes. Cotton, corn, and oats are the principal crops. About 60 percent of the tilled land is used for cotton which yields from one-half to three-fifths of a bale an acre when an application ranging from 300 to 400 pounds an acre of 3–8–3 or 4–10–4 fertilizer and 100 pounds of nitrate of soda, as a side dressing, are used. Corn generally is not fertilized but receives a side dressing of about 100 pounds of nitrate of soda an acre. Sweetpotatoes are given a liberal application of commercial fertilizer high in potash, or barnyard manure is applied.

Appling coarse sandy loam.—Appling coarse sandy loam differs essentially from Appling sandy loam in its coarser texture. The surface layer is light-gray or gray loamy coarse sand which is underlain by light-yellow or very light brown loamy coarse sand. The subsoil differs principally from that of Appling sandy loam in that it is a coarse heavy sandy clay which is slightly more brittle and crumbly, thinner, and derived from a coarser grained granite or gneiss than the subsoil material of Appling sandy loam.

This soil is of very small extent. It is widely scattered in comparatively small areas throughout the same territory wherein Cecil coarse sandy loam occurs. Several small areas are southeast of Shaw and McKee Bridge, and a few are in the extreme northwestern part of the county.

About 90 percent of the land is cultivated. The crops, yields, methods of handling, and fertilizer treatments are practically the same as those on Appling sandy loam. The coarse sandy loam is slightly more porous than the fine-textured associated soils and is more subject to leaching, and crops suffer more from drought during dry years.

Durham sandy loam.—Durham sandy loam is locally known as "white sandy land." In cultivated fields, the surface layer, to a depth of 6 inches, is light-gray sandy loam or very light loamy sand. In forested areas, the topmost 3 to 5 inches is gray or dark gray, owing to the presence of organic matter. The subsurface layer, to a depth ranging from 10 to 15 inches, is light-yellow or grayish-yellow light sandy loam. The subsoil is yellow heavy sandy

clay or clay from 20 to 25 inches thick. The material in the lower part is light yellow and in places is slightly more friable than that in the upper part. It breaks into irregular-shaped clods which are easily crushed to a friable mass. The subsoil is underlain by mottled or streaked reddish-brown, yellow, and very light yellow slightly compact but brittle clay which continues to the soft disintegrated granite rock.

Along the State highway between Antioch School and Flat Rock School, areas of this soil have a sandy surface covering, ranging from 20 to 30 inches in thickness, over the clay. This soil would have been mapped as a deep phase of Durham sandy loam had it occurred in sufficiently large areas to justify separation. West of Flat Rock School, northwest of Red Oak Grove School, and elsewhere are several small included areas of Durham fine sandy loam. Here and there angular quartz fragments are present over the surface. In a few places where the soil grades into the Appling or Cecil soils, the lower part of the subsoil is mottled and streaked with yellowish brown, yellow, and red.

The largest areas of Durham sandy loam are in a belt from 1 to 2 miles south of and parallel to the southern border of the Georgeville, Alamance, Orange, and Goldston soils. It extends from a point 3 or 4 miles east of Edgefield west to Stevens Creek. Small areas are widely scattered throughout the southwestern part of the county. The relief ranges from almost level to gently rolling and gently sloping. Both surface and internal drainage are good.

A large proportion of the land is under cultivation, and the rest is in forest. The crops grown and fertilizer treatments are similar to those recommended for Appling sandy loam, but yields are lower. In North Carolina and Virginia, this soil is considered one of the best for the production of bright lemon-leaf tobacco. It is well adapted to the production of sweetpotatoes, sorgo, garden vegetables, watermelons, and peanuts.

Durham coarse sandy loam.—The principal difference between Durham coarse sandy loam and Durham sandy loam is the coarser texture of the coarse sandy loam. The surface layer is light-gray or pale yellowish-gray loamy coarse sand or light coarse sandy loam from 6 to 8 inches thick and contains some very coarse sand grains and small angular quartz fragments. It is underlain by a 12- to 16-inch layer of pale-yellow loamy coarse sand. The subsoil differs principally from that of Durham sandy loam in that it is a coarser sandy clay, not so heavy in texture, and slightly more brittle and crumbly. In most places bedrock lies near the surface.

In the vicinity of Sullivan School in the northwestern part of the county, some areas vary from the typical soil in that the sandy surface material is much thicker and large rounded granite boulders and solid rock protrude several feet above the surface. In a few places where Durham coarse sandy loam grades into the Appling or Cecil soils, the subsoil assumes the appearance and characteristics of the subsoils of those types. Another variation in the same locality is one in which the subsoil in some places is very pale yellow or grayish-yellow coarse sandy clay, and both the surface and subsurface layers contain noticeable quantities of coarse sand particles and small angular quartz fragments.

Most areas of this soil are in the vicinity of Sullivan School; a few small bodies are south of Edgefield. Practically all of the land is under cultivation. It has similar relief and, perhaps, has more thorough internal drainage than Durham sandy loam. The crops grown and fertilizer treatments are similar to those on Appling sandy loam, but yields of the staple crops are slightly less. This is also an excellent soil for bright-leaf tobacco.

Chesterfield sandy loam.—The general appearance of a field of Chesterfield sandy loam is very similar to that of Norfolk sandy loam, with which it is associated in many places. The soil is very light gray, especially if the surface is dry. In forested areas, the soil is dark-gray loamy sand or sandy loam, to a depth of 4 or 6 inches, and contains a small quantity of organic matter. Underlying the surface layer and continuing to a depth ranging from 10 to 22 inches is yellow or grayish-yellow sandy loam or loamy sand, in which the sand is not sharp but rather rounded and water-worn. The subsoil is yellow, compact, stiff but brittle, smooth clay which extends to a depth ranging from 40 to 60 inches. The lower part of this layer in places is faintly mottled with light red or reddish brown. The material grades into the partly decomposed granite or gneiss, which is gray, specked with very dark gray or black.

Areas of this soil in the vicinity and southeast of Yonce Mill have a content, ranging from 10 to 25 percent, of small rounded quartz gravel in the surface soil and subsoil. Such areas are indicated on the soil map by gravel symbols.

A belt of this soil, extending from the Saluda County line north of Johnston to Edgefield and south of that town, paralleling the southern border of the soils underlain by the Carolina slate materials, contains only a moderate quantity of gravel which is largely on the surface. The sandy surface covering is considerably thicker and in many places coarser than is typical of this soil elsewhere. Numerous small bodies are widely scattered throughout the Coastal Plain section, bordering the granite or slate rock formations, around drainage headwaters, and along major drainageways associated with Bradley sandy loam. The relief and drainage of these areas are very similar to those of the Bradley soil. Internal drainage is slightly slower due either to seepy conditions or to the heavy slightly compact subsoil. Erosion, in most places, is not excessive or destructive.

Inherently Chesterfield sandy loam is not so strong a soil as Bradley sandy loam. Approximately 75 percent of the land is under cultivation, and the remainder is forested with shortleaf pine and several varieties of hardwoods common to this locality.

The same crops are grown, in about the same proportions, as on the Bradley or Appling soils, but yields of corn and hay are generally slightly lower. Practically the same cultural and fertilizer practices are followed as on Bradley sandy loam or Norfolk sandy loam, which, in places, are contiguous on the same farms. Chesterfield sandy loam, where underlain by a subsoil similar to that beneath Alamance silt loam, produces from one-half to 1 bale of cotton an acre when fertilized with from 300 to 500 pounds of a 4–8–4 mixture. The cotton grown has an excellent quality of fiber.

SOILS WITH RED CLAY LOAM SURFACE SOILS AND RED CLAY SUBSOILS

This group includes Cecil clay loam, Davidson clay loam, and Georgeville silty clay loam. These soils are commonly known as "red lands" or "red clay lands." They occur in the northern or Piedmont Plateau section of the county. Georgeville silty clay loam is the most extensive soil of this group; Cecil clay loam is next in extent; and Davidson clay loam is of comparatively small extent.

The surface soils of the members of this group are red, reddish-brown, or pale-red clay loam or silty clay loam, and the subsoils are red or dark-red stiff but brittle clays. All have good or almost excessive surface drainage, owing to the undulating, rolling, or hilly relief. Internal drainage ranges from fair to good. The moderate degree of friability of the subsoil allows the penetration of air and water, which results in a high degree of oxidation as evidenced by the predominance of red in the subsoils. Because of their clay or clay loam surface layers, these soils do not absorb rainfall so readily as do soils with sandy loam surface layers. When the winter rains penetrate, the water drains away slowly, thereby retarding the time at which the soil dries and warms in the spring, and delays planting. Fruiting of cotton is delayed, and, consequently, much of the late-maturing cotton is destroyed by the boll weevil.

Efficient handling of these heavy soils necessitates strong work animals and heavy farm machinery. Inherently these are the strongest upland soils in the Piedmont Plateau section, and they may be built up to a high state of productivity and maintained in this condition by plowing under barnyard manures and leguminous crops. The clayey character of the surface soil, subsurface soil, and subsoil insures the retention of such parts of the plant nutrients supplied by manure and commercial fertilizers as are not readily assimilated by the growing crops.

The occurrence of gravel or fragments of quartz, granite, slate, and dark-green or black diorite rock, ranging in diameter from one-half inch to several inches, is not uncommon on the surface of the soils of this group. On many of the ridges and knolls, sufficient angular quartz fragments occur to warrant indication by symbol on the soil map. As the gravelly areas are not extensive, many are not indicated. In no place is the quantity of gravel or stones sufficient to hinder cultivation to an appreciable degree.

The soils of this group cover nearly 12 percent of the total area of the county, but a much smaller proportion of them is devoted to cultivated crops than of the sandy soils of the Piedmont Plateau section, or of most of the sandy soils of the Coastal Plain section. Since the advent of the cotton boll weevil, the acreage devoted to cotton on the soils with clay loam or silty clay loam surface soils has been greatly reduced. A larger crop of cotton can be produced on the red land than on the white sandy land, but the boll weevil destroys a larger proportion of the crop, because of later fruiting. During fairly dry seasons or when spring is early, however, yields of cotton are almost equal to those on the sandy loam soils of the Piedmont Plateau.

Corn, oats, wheat, rye, and hay have replaced cotton to a great extent on these red-land soils. In that part of the county north of Edgefield, where much of the soil consists of Georgeville silty clay

loam, a relatively larger acreage is planted to corn and small grains than in any other tillable section. Clover, vetch, lespedeza, and Johnson grass also do well.

The Cecil and Georgeville subsoils are high in potash, and the Davidson subsoil, although lower in potash, contains much lime and considerable manganese dioxide. The deficiencies of lime and other plant nutrients in the Cecil and Georgeville soils must be supplied by amendments.

Cecil clay loam.—The surface soil of Cecil clay loam, locally known as "red land", to a depth ranging from 4 to 8 inches, is light-red or red clay loam which in most places contains sufficient sand to render it friable and mellow. In forested areas the surface layer is brown sandy loam to a depth of 1 or 2 inches, but in some places the light-textured surface material has been washed away, leaving the red heavy clay exposed. In fact much of the present Cecil clay loam in Edgefield County represents an abnormal profile, wherein the original sandy loam surface layer has been washed away, leaving clay loam or sandy clay loam exposed as the present surface soil. The subsoil is light-red or deep-red heavy, stiff but brittle clay extending to a depth ranging from 28 to 50 or more inches. It is underlain by lighter red or reddish-yellow stiff but moderately friable clay containing a small quantity of coarse sand and mica scales. Below a depth ranging from 32 to 68 inches is a soft mass of light-red, very light gray, and white partly decomposed rock.

In the southwestern part of the county, where the land is more rolling and hilly, and particularly where areas of Cecil clay loam are closely associated with areas of Cecil coarse sandy loam, the surface layer is sandy clay loam or coarse sandy clay loam. To a limited extent this same condition occurs in the extreme northwestern part of the county where the soils have formed from the weathered products of granite rocks.

A very few small and widely scattered areas of Cecil clay loam in the southwestern part of the county, along Savannah River, Stevens Creek, and the major streams emptying into Stevens Creek, have a dark-red color somewhat similar to that of Davidson clay loam. The materials from which the soils in these areas have been developed have accumulated from the weathering of rock materials differing slightly from the ordinary granite or gneiss, possibly including very small intrusive dikes of impure diorite or similar rocks containing a rather large quantity of dark-colored minerals, and the weathering of these rocks has imparted the dark-red color.

Throughout the areas of Cecil clay loam are small bodies which have a sandy loam surface layer 2 or 3 inches thick. The presence of this layer may be explained in two ways, as follows: (1) The material has not been entirely eroded or washed away or (2) it occurs on the lower parts, or at the bases, of slopes as the result of water or wind action, probably the former.

Approximately 40 percent of Cecil clay loam is used for agriculture. From 35 to 45 percent of the cultivated land is devoted to cotton, 20 to 25 percent to corn, 18 to 22 percent to oats, 5 to 8 percent to wheat, 2 to 6 percent to hay other than that made from oats cut green or cowpeas and oats. Cotton yields 150 to 275 pounds an acre, oats 8 to 20 bushels, corn 12 to 15 bushels, and wheat 7 to 15 bushels.

Cowpeas and oats commonly are grown together for hay, and they yield from 1 to 1¼ tons an acre. Soybeans, lespedeza, and alfalfa give fair returns on this soil, but these crops are grown to a very small extent.

Cotton receives from 250 to 350 pounds of 3–8–3 fertilizer an acre. It is generally drilled in the row a week or 10 days before the seed is planted; and a side dressing of about 100 pounds of nitrate of soda is made at chopping time. It is not customary to fertilize oats at the time of planting, but they receive a top dressing of about 100 pounds of nitrate of soda about the last of February or the first of March. Wheat is fertilized in much the same manner and with similar quantities of fertilizer as are oats. Corn also is not fertilized at time of planting but receives 100 pounds of nitrate of soda. The best results are obtained if the application is halved and applied as side dressings at intervals of about 2 weeks, the last application being made when the corn is from 15 to 18 inches high. In recent years the side applications or top dressings may consist partly of sulphate of ammonia.[9]

Davidson clay loam.—Davidson clay loam, in some parts of the Piedmont Plateau, is locally known as "push land", "gummy land", or "red heavy clay land." It differs from Cecil clay loam in having a firm but friable brownish-red or reddish-brown rather heavy clay loam surface soil 6 or 8 inches thick. The subsoil extends to a depth ranging from 38 to 48 inches and consists of dark-red or maroon firm smooth brittle clay which is almost free from grit or sand particles. The clay breaks readily into small fragments which are easily crushed to a soft granular mass when moderately moist. Underlying the subsoil is a reddish-yellow or light-yellow soft mass of partly disintegrated and decomposed basic rock material. In a few places there are small boulders or stones on the surface, but they do not occur in sufficient quantities to interfere seriously with cultivation or to be indicated on the soil map.

The total area of this soil is small. The largest bodies are in the vicinity of Highview, a siding on the Georgia & Florida Railway. Small areas are northeast of Colliers and in the southwestern part of the county.

The relief of this soil is very similar to that of Cecil clay loam. The relative proportions of the land under cultivation and devoted to the several major crops are very similar to those of Cecil clay loam. Crop yields and fertilizer treatments also are about the same, but the yields of cotton may be slightly lower. The soil is well suited to the production of small grains, clover, and alfalfa.

Davidson clay loam is inherently one of the stronger soils in the county. Elsewhere in the State, where this soil is developed in large areas, it is used for the production of alfalfa. It is one of the best, if not the best, soil in the State for the production of grain and clover. It can be built up to a high state of productivity.

Georgeville silty clay loam.—The surface soil of Georgeville silty clay loam, known as the red soil in the slate belt, is reddish-brown, pale-red, or yellowish-red smooth and moderately friable silty clay loam to a depth of 4 or 6 inches. The subsoil is bright-red or almost

[9] Statement of the county agricultural agent, 1935.

maroon silty clay which is slightly heavier and darker than the subsoil of Georgeville silt loam. This material extends to a depth ranging from 30 to 70 inches and grades into soft partly decomposed and distintegrated slate rock which is variegated yellow, red, purplish red, reddish brown, and gray. In many places the subsoil is comparatively shallow, and in a few places the surface soil is reddish-yellow silt to a depth of about 5 inches.

This is the second most extensive soil in the county and lies almost entirely in the northern half. A few small isolated areas are along the Edgefield-Aiken County line near Savannah River. This soil is not so extensively cultivated as is Cecil clay loam, probably on account of its tendency to clod and its slower rate of drying and warming in the spring. Perhaps not more than 35 percent of the land is used for crops, and the remainder is largely in timber or is rapidly returning to a forest growth of old-field pine and hardwoods. Many fields have been abandoned. The greatest part of this abandonment took place shortly after the advent of the cotton boll weevil. The soil produces crops similar to those grown on Cecil clay loam, except that more hay, in the form of cowpeas and oats, are produced on the Georgeville soil. Lespedeza does well. Yields of cotton and corn are generally lower, but those of oats, wheat, and hay are usually higher than those obtained on Cecil clay loam. The fertilizer treatments on the two soils are very similar.

SOILS WITH GRAY OR BROWN SILT LOAM SURFACE SOILS AND YELLOW OR RED SILTY CLAY LOAM SUBSOILS

The soils of this group are widely distributed, mainly throughout the northern half of the county. All these soils have been formed from the weathered products of the decomposed Carolina slate formation. The slate rocks are fine grained, and the soils derived from them are silty or floury. The surface soils of the Georgeville, Alamance, and Orange soils are dominantly light gray or very light gray, and that of the Goldston soil is brown or gray. Georgeville silt loam is the best developed soil of the group. It has a red silty clay subsoil. Alamance silt loam differs from the Georgeville soil in having a yellow more friable subsoil. Orange silt loam has a light-gray heavy clay or silty clay subsoil and is the heaviest member of the group. In some places the subsoil resembles that of the Iredell soils. Goldston silt loam is extremely variable, both in color and in thickness of the subsoil. The subsoil is intermediate in color and structure between that of Georgeville silt loam and those of the Alamance and Orange soils.

These soils range from slightly to highly acid. Owing to their high content of silt and their lack of organic matter, they have a tendency to puddle or run together when wet by a normal or excessive rainfall; and if plowed or worked when too wet, on drying they form clods or a crust to a certain extent. They do not dry so rapidly in the spring and are termed late soils as compared with the sandy surface soils of the Cecil or Durham series. Angular white quartz fragments and slate fragments occur on the surface of all the soils of this group to more or less extent and in extremely variable quantities.

There is a wide variation in the agricultural value, usage, and proportion of tilled land among the several members of this group.

Large proportions of these soils are forested, and considerable areas have been abandoned in recent years for the same reason as have the Georgeville and Cecil soils. Cotton is grown, even though the yields are low, to more or less extent, because of the necessity of a cash crop, but the soils are used mainly for the production of corn, oats, wheat, rye, and pea-and-oat hay. On similar soils in North Carolina lespedeza is an excellent crop, particularly for Alamance silt loam.

The total extent of the soils of this group is 22.7 percent of the total area of the county. The relief is variable, ranging from nearly level, undulating, and rolling to hilly, and in some places the land is eroded or broken. Surface drainage is good, except on the Orange soil, and in some places on the flatter areas of the Alamance soil or basinlike areas of the Goldston. Orange silt loam, and in a few places Goldston silt loam, are poorly drained, partly because of their nearly level or depressionlike relief but largely because of the highly plastic impervious character of their subsoils.

Probably about 35 percent of the land is used for cultivated crops. Abandoned areas are reforesting to the trees common to the county. Briers, brambles, and vines form an abundant undergrowth in the forested areas.

Georgeville silt loam.—Georgeville silt loam may be considered the representative, or best developed, soil of this group. The surface soil, to a depth of 6 or 8 inches, is grayish-brown or light grayish-yellow smooth mellow silt loam. Owing to the variability in thickness of this silt loam layer, the color of plowed fields is spotted, that is, in places where the silt loam layer is thin, varying quantities of the subsurface layer are turned to the surface, presenting a light-yellow or reddish-yellow cast; and in places where the silt loam layer is thicker than the depth of plowing, no reddish-yellow material is exposed. Fields of this soil present the same spotted appearance as do those of Cecil sandy loam, eroded phase. The subsoil is red or light-red moderately stiff, firm, brittle, yet somewhat friable, smooth silty clay to a depth ranging from 30 to 60 inches. Below this is soft partly decomposed slate rock tinged with yellow, red, purplish red, and gray.

The surface soil contains various quantities of white angular quartz fragments and slate fragments. These fragments are more numerous on the knolls than on the more nearly level areas. In some areas, too small to be indicated on the soil map, the silt loam surface soil has been removed by erosion, thereby exposing the light-red heavy silt loam or silty clay loam.

The largest areas of this soil lie northeast of Edgefield and along Little Mountain Creek. Smaller areas are scattered over the northern half of the county.

About 50 percent of this land is cultivated. The principal crops are cotton, corn, oats, and hay, which are grown on approximately equal acreages. Yields of cotton range from 150 to 250 pounds an acre, corn 10 to 20 bushels, and oats 12 to 20 bushels. Yields of wheat average 10 bushels an acre; and cowpea-and-oat hay, 1½ tons.

Cotton receives an acre application averaging 300 pounds of a 3-8-3 commercial fertilizer, with about 100 pounds of nitrate of soda as a side dressing. Corn, oats, and wheat generally do not receive commercial fertilizers at planting time, but corn is side-dressed with 100

pounds of nitrate of soda, and oats and wheat receive the same quantity of nitrate of soda as top dressing in the spring. Oats, pea-vine hay, and cowpea-and-oat hay are important crops and are being recognized by some farmers as soil improvers.

Alamance silt loam.—The 6- to 8-inch surface soil of Alamance silt loam is light-gray or yellowish-gray smooth floury silt loam containing in places a few quartz and small thin smooth slate fragments. When dry it is almost white. The subsoil begins as light-yellow heavy silt loam and quickly grades into smooth silty clay loam which extends to a depth ranging from 25 to 35 inches. Underlying the subsoil is light-gray, white, and yellow mottled silty clay or soft partly decomposed slate rock.

The most extensive occurrence of this soil is in the vicinities of Southern Gold Mine and Bowles Mountain, and around the headwaters of Rocky Creek. Smaller areas occur throughout the soils derived from the slate formation.

The total area of this soil is less than that of Georgeville silt loam, and a small proportion of the land—from 10 to 20 percent—is cultivated. Perhaps one-half of the remainder is forested with the same varieties of trees that grow on the Georgeville soil, and the rest is included in pasture or is abandoned. The crops grown, the proportionate acreages devoted to each crop, the yields, and fertilization are very similar to those of Georgeville silt loam. Lespedeza does exceptionally well on this soil. The turning under of leguminous crops, the addition of barnyard manure, and liming would be very beneficial.

Goldston silt loam.—Goldston silt loam, locally known as "slaty land", has no uniform color, either in the surface soil or subsoil; the widest variations occur in the thickness and color of the subsoil. In this county, this soil represents a condition rather than a definite soil type.

In the more uniform areas, the surface soil, to a depth of about 6 inches, is light brownish-gray silt loam which in many places has a noticeable content of brown small smooth platy slate fragments on the surface and mixed with the soil. White quartz fragments, ranging in diameter from one-half inch to 4 inches, commonly occur in sufficiently large quantities to warrant indication by symbols on the soil map. In cultivated fields where the land has not been disturbed for some time, the slate fragments appear more prominently and give the surface soil a brown cast. In most places a thin layer of pale-yellow or grayish-yellow silt loam lies between the surface soil and the subsoil. Where this layer is turned up by the plow, a spotted appearance results, which is very similar to that of freshly plowed fields of Georgevile silt loam. In wooded areas the topmost 1 to 3 inches is grayish brown, due to the presence of a small quantity of organic matter. The subsoil, which extends to a depth ranging from 15 to 20 inches, is yellowish-brown or reddish-brown silty clay that is slightly plastic when wet and hard when dry. This material grades into yellow, mottled with reddish brown, silty clay loam or silty clay, ranging in thickness from a few to as much as 10 inches. Underlying this is soft disintegrated slate material mottled or streaked with purplish red, yellow, and white.

Included with Goldston silt loam in mapping are many areas of Georgeville silt loam and Georgeville silty clay loam, which are too

small to separate on a map of the scale used. Such areas have red silty clay subsoils, and in many places the subsoils are not so thick as those of the Georgeville soils. In a few places a shallow phase of Alamance silt loam is included. Here and there narrow dikes of diorite or dark-colored basic rocks are present and give rise to small areas of Iredell loam or Iredell silt loam. Throughout the Goldston silt loam areas are numerous spots where the surface soil rests directly on the broken and partly disintegrated slate rock.

The greater part of Goldston silt loam has a gently rolling or rolling relief, characterized in many places by a series of low ridges having gentle to steep slopes. Bordering the larger streams the slopes are, in most places, decidedly steep. Lying between these steep slopes and the crests of the ridges, the land is gently sloping. Both surface and internal drainage are fairly good, except in a few of the lower swales contiguous to the heads of streams. In most places the soil may be worked sooner after rains than can Georgeville silty clay loam.

The slaty lands will be put to their best possible use when they are included in the national forest now being established, which is to include much of the land in Edgefield County. Any of the staple crops commonly grown, when planted on the shallower areas of this soil, during either too wet or too dry a growing season, will be more or less of a failure.

The largest and most continuous body of this soil occurs along Turkey and Beaverdam Creeks, extending from their respective headwaters to Stevens Creek or the McCormick-Edgefield County line. This is the largest single soil type in the county and constitutes an area of 45,120 acres, or 14.5 percent of the total area of the county. Probably about 30 percent of the land is cultivated. Of the land not tilled, approximately two-thirds is forested, and one-third is in pasture or is abandoned and grown up to broomsedge and briers. The forest growth is mainly shortleaf pine, but all the different species and genera of trees which grow elsewhere in the county grow also on this soil. The carpet of vegetation beneath the tree growth consists of vines, briers, wild onions, tame and wild grasses, and broomsedge, and in most places the growth is rather rank.

This is a poor agricultural soil because of one or more of the following reasons: In many places the subsoil layer is thin, and bedrock lies close to the surface. Along the larger streams, the land is rough and broken. Other areas are poorly drained in some places because they occupy swales or depressions, and seepage waters keep them saturated for long periods each year; whereas in other places the subsoil is very heavy and impervious, and poor internal drainage keeps the land soggy for long periods after each rain. All these factors tend to make this soil more desirable for forest trees than for cultivated crops, and extensive areas of this, as well as of other members of this soil group, are now being considered by the United States Forest Service for a national-forest project.

The proportionate acreages of the several major crops grown on this land are similar to those for Georgeville silt loam. In favorable seasons, yields are sometimes slightly larger, particularly those of grain crops, but generally they are lower. Cotton receives about 200 pounds an acre of 3–8–3 or sometimes 4–10–4 fertilizer, either

applied to the land a week before planting or at planting time, and a treatment of 75 or 100 pounds of nitrate of soda, applied at two different times, the last application when the plants are from 6 to 8 inches high. Corn receives from 100 to 150 pounds of nitrate of soda an acre, applications being made twice—first, when the plant is from 15 to 18 inches high, and second, when it is from 3 to 4 feet high. Oats and wheat receive only from 50 to 75 pounds of nitrate of soda, about the first of March. Hay, consisting of oats cut green or cowpeas and oats, generally receives no amendments.

There is a wide range in yields of all crops grown on this soil, depending on the frequency of the variations in the soil and whether they tend toward Georgeville silt loam and Alamance silt loam or toward Orange silt loam and shallow soils with impervious subsoils.

Orange silt loam.—Orange silt loam resembles Alamance silt loam in the silty texture, color, and thickness of the surface soil, that is, to a depth ranging from 6 to 10 inches. The subsoil, to a depth ranging from 20 to 32 inches, is very light gray heavy plastic clay or silty clay, which is faintly mottled with rusty brown or brown and yellow in the upper part and very highly mottled in the lower part. Underlying the subsoil is bluish-gray and brown partly decomposed slate or parent rock. In some places fragments of this rock are on the surface, and outcrops occur here and there. In some places, the depth to bedrock is very slight.

Orange silt loam is poorly drained, partly because it is nearly level, but largely because of its highly plastic impervious subsoil. It is one of the less extensive soils. The largest body is northwest of Liberty Springs School, and a body is southwest of Bowles Mountain. Small widely scattered areas occur throughout the soils underlain by the slate rock formation. Only about 10 percent of this soil is cultivated, some of it is used for pasture, and the rest is abandoned and is reverting to a vegetable cover similar to that on Goldston silt loam. The white or very light gray surface soil contains only a very small quantity of plant nutrients, and this feature, in addition to the prevailing poor drainage makes the agricultural value of the land low. The best use for the greater part of it is forestry. Some of it will produce early pasture grasses, but these dry in late summer or early fall.

SOILS WITH GRAY OR BROWN SANDY LOAM SURFACE SOILS AND RED OR YELLOW FRIABLE SANDY CLAY SUBSOILS

This group includes all the soils developed in the Coastal Plain section of the county except the sands and those included in the group of miscellaneous soils and land types. The soils of this group differ from those in the Piedmont Plateau section mainly in the materials from which they are derived. All these soils have friable sandy clay or sand subsoils which continue to a depth ranging from 3 to 5 feet and grade into mottled or streaked sandy clay materials.

The soils of this group may be divided into two subgroups, based on their agricultural value, and the color, texture, and thickness of both the surface soil and the subsoil.

The first subgroup includes Marlboro sandy loam, Magnolia sandy loam, and Greenville sandy loam. These soils constitute the best agricultural lands, not only in this county but throughout the South

Atlantic Coastal Plain region. Marlboro sandy loam in this county is similar in all respects to that mapped in Marlboro County, S. C. The high productivity of these soils is in a large measure due to the inherent characteristics of both the surface soil and the subsoil, that is, the comparatively shallow sandy surface layer, which contains a noticeable quantity of silt and clay, and the heavy sandy clay subsoil, which is naturally retentive of either inherent or applied plant nutrients. The subsoil is underlain by heavy mottled sandy clay. Both the texture and structure of the surface soil and subsoil are favorable for the retention of moisture and at the same time are naturally well drained. The relief of these soils is smoother than that of any other soils in the county and ranges from almost level to undulating. It is very favorable for both intensive and extensive farming operations. There is practically no waste land in these soils, and all their area can be cultivated without danger of erosion.

Marlboro sandy loam differs mainly from Magnolia sandy loam in the color of the subsoil. Greenville sandy loam was separated from the Marlboro and Magnolia soils because of the reddish-brown color of the surface soil and dark-red color of the subsoil.

The second subgroup comprises Norfolk sandy loam; Norfolk sandy loam, deep phase; Ruston sandy loam; Ruston sandy loam, deep phase; and Orangeburg sandy loam. Although these are good agricultural soils, they do not rank so high in agricultural value for all crops as the soils of the first subgroup which have brownish-gray or red surface soils. These soils differ from the soils of the first subgroup, in that they have a lighter colored, lighter textured, and thicker sandy surface soil; a lighter textured sandy clay subsoil; and more sandy underlying material. The relief ranges from nearly level or undulating to gently sloping or rolling. Drainage is excellent or, in places, excessive. The organic-matter content of these soils is naturally extremely low, but the soils respond readily to applications of manures and commercial fertilizers. They are very easy to cultivate, warm quickly in the spring, and may be cultivated soon after rains. The problem of erosion is not a serious one, but terracing is necessary on the more sloping or rolling fields.

Marlboro sandy loam.—The forested areas of Marlboro sandy loam have a 3- or 4-inch surface layer of dark grayish-brown or light-brown sandy loam containing a high proportion of fine sand. This grades into a subsurface layer of dull brownish-yellow or yellow mellow sandy loam in the upper part and light sandy clay in the lower part, also containing considerable fine sand. The subsoil, beginning at a depth ranging from 6 to 12 inches, is deep-yellow heavy firm, yet friable and crumbly, slightly sticky sandy clay which extends to a depth of about 34 or 38 inches. Underlying this is yellow, mottled with red, rusty brown, and light yellow, sandy clay which is firm and compact yet moderately friable and has a somewhat angular breakage. Beginning at a depth ranging from 65 to 72 inches, a variegated yellow, pale-yellow, red, purplish-red, and gray sandy clay material is present, which is compact but more friable and sandy than the material in the overlying layer.

In plowed fields the surface soil has a brownish-yellow or brownish-gray cast, and it has a tendency to clod and to stick to the plow when wet. The surface and subsurface layers are much thinner than the

corresponding layers in the Norfolk, Ruston, or Orangeburg soils. This soil is noticeably uniform over comparatively large areas. Here and there very small areas occur, in which the sandy loam surface covering is either thinner or thicker than is typical for this soil, also areas in which the surface layers are thinner and range from fine sandy loam to very fine sandy loam. In some places, where areas of Marlboro sandy loam border areas of Magnolia sandy loam or Orangeburg sandy loam, the subsoil is reddish-brown sandy clay. In a few places, small rounded brown or black iron concretions are scattered on the surface and throughout the soil.

Marlboro sandy loam occurs almost entirely in the eastern part of the Coastal Plain section, where it is rather widely distributed. The largest body lies along the Southern Railway and the State highway, approximately midway between Johnston and Trenton. This is one of the strongest soils, and, although the total extent is small, it is very important agriculturally. About 95 percent of the land is cultivated to asparagus, cotton, corn, oats, wheat, rye, and hay (cowpea-and-oat or soybean-and-oat). Cotton receives from 400 to 500 pounds of 4–10–4 fertilizer and a side dressing of 100 pounds of nitrate of soda an acre, and yields from 375 to 625 pounds of lint. Corn treated with from 200 to 300 pounds of 4–10–4 fertilizer at planting time and about 200 pounds of nitrate of soda when the plants are from 15 to 18 inches high yields from 25 to 45 bushels. Oats receiving from 100 to 200 pounds of nitrate of soda about the first of March yield from 18 to 35 bushels an acre, and wheat treated in the same manner yields from 20 to 25 bushels. Cowpea-and-oat or soybean-and-oat hay receiving no fertilizer or nitrate of soda yields 1½ or 2 tons. Asparagus is one of the major special crops on this soil, and yields from 80 to 100 crates an acre are obtained when from 1,800 to 2,000 pounds of a 7–4–7 fertilizer are used. Peaches and pecans are grown extensively on this land, and excellent yields are obtained. Mature peach trees are fertilized with about 500 pounds an acre of a home mixture equivalent to 4–6–3½, in addition to 100 pounds of lime. This is excellent land for general farming and livestock raising, as well as for the production of fruits, nuts, and asparagus.

Magnolia sandy loam.—The 5- to 8-inch surface layer of Magnolia sandy loam is gray, grayish-brown, or light-brown loamy sand or light sandy loam, containing a moderate quantity of organic matter. The subsurface layer is brownish-yellow loamy sand that grades into a 3- to 7-inch layer of yellowish-red light sandy clay or sandy clay. Beginning at a depth ranging from 17 to 22 inches, the subsoil is bright-red or brick-red heavy sandy clay which is moderately compact, yet friable and crumbly, but slightly sticky. The color, texture, and consistence of the subsoil are very uniform to a depth ranging from 50 to 65 inches, where this layer is underlain by red sandy clay slightly tinged with yellow and containing a very few streaks or splotches of yellow or yellowish gray. Below a depth ranging from about 70 to 90 inches is mottled red, purplish-red, yellow, brown, and gray light sandy clay or sandy clay.

The relief and drainage of Magnolia sandy loam are very similar to those features of Marlboro sandy loam, with which the Magnolia soil is closely associated in many places. Magnolia sandy loam occurs in the same parts of the Coastal Plain section, and the largest

areas are similarly located. Large bodies, however, are in the vicinity and south of Johnston. The general appearance of a plowed field is identical with that of fields of Marlboro sandy loam. This is equally as valuable an agricultural soil and is more extensive. It includes similar small areas having thinner or thicker surface soils, and in places the texture tends toward fine sandy loam or very fine sandy loam. The major and special crops grown, the yields obtained, fertilizer treatments, and cultural methods are practically the same on both soils.

Greenville sandy loam.—Greenville sandy loam has a 6- to 8-inch dark-brown sandy loam surface layer containing a moderate quantity of organic matter. This layer passes into brownish-red or reddish-brown mellow friable heavy sandy loam or light sandy clay loam, which continues to a depth ranging from 8 to 12 inches. The subsoil, to a depth ranging from 40 to 50 inches, is red or dark-red heavy sandy clay which is slightly compact and sticky when moist but readily crushes to a soft friable granular mass. This layer is underlain by light-red sandy clay which is more friable and crumbly than the overlying layer and is sparsely mottled with ocherous yellow, extending to a depth ranging from 48 to 64 inches, where mottled red, light-red, purple, yellow, and white slightly compact but brittle heavy sandy clay material is reached. In a few places brown and black small rounded iron concretions are on the surface and mixed with the soil.

Greenville sandy loam differs from Magnolia sandy loam mainly in the reddish-brown or red color of the surface soil and the dark-red color of the subsoil. Inherently it is probably the stronger of the two soils.

This is one of the least extensive soils in the county. The largest area, which consists of heavy sandy loam or light sandy loam, is southwest of Trenton. Since 1931 the South Carolina Agricultural Experiment Station has conducted experiments with cotton fertilizers on this area, in cooperation with the owner of the land.[10] A few smaller bodies are in the vicinity of Johnston.

In nearly every respect, whether relief, external or internal drainage, or inherent fertility, this soil is almost identical with Marlboro sandy loam or Magnolia sandy loam. The crops grown, yields obtained, fertilizer treatments, and cultural practices followed are similar for each soil. Some asparagus is grown, and the yields are satisfactory.

Norfolk sandy loam.—Norfolk sandy loam is perhaps the most representative soil of this subgroup. The surface layer in forested areas is dark-gray or gray loamy sand or light sandy loam. It is underlain, at a depth ranging from 3 to 5 inches, by a subsurface layer of light-yellow mellow loamy sand or light sandy loam. The subsoil, beginning at a depth ranging from 14 to 22 inches, is yellow crumbly friable firm, but not compact, sandy clay. It is underlain at a depth ranging from 30 to 38 inches by light-yellow sandy clay which is moderately mottled with light red and reddish brown. At a depth between 37 and 48 inches a light-yellow sandy clay appears, which is slightly hard but brittle and more friable than the material

[10] RUIE, T. S., and WARNER, J. D. COTTON FERTILIZER EXPERIMENTS. S. C. Agr. Expt. Sta. Bull. 245, 32 pp., illus. 1928.

in the overlying layer. It is mottled with grayish-yellow, reddish-yellow, and red sandy clay. The red spots in this layer are more gritty or sandy than the rest of the material.

In cultivated fields, the surface soil is light gray or yellowish gray to the depth of plowing, and in some fields there is a noticeable quantity of coarse sand and, here and there, a few small rounded quartz gravel. In the western and in the extreme eastern areas, the depth to the subsoil is greater (ranging from 20 to 30 inches) than in the typical soil. In a few places, particularly around the headwaters of the larger streams, are small strips or areas of Norfolk sandy loam which have a rolling or sloping relief.

Several small areas of Norfolk coarse sandy loam in the vicinity of Salters Pond are included on the soil map. The agricultural value, the crops grown, and the yields obtained on these included areas are very similar to those on the typical soil. Other inclusions are small areas of Norfolk fine sandy loam which occur for the most part around the headwaters of Shaver and Dry Creeks. These bodies differ from the typical soil only in the fine texture of the surface soil and subsoil.

The largest developments of Norfolk sandy loam are between the Saluda County line and Trenton, generally and widely distributed throughout this part of the Coastal Plain section. Because of its large extent, this is probably the most important agricultural soil in this part of the county. About 85 percent of the land is planted to the crops common to this section. This is an ideal soil for the production of garden vegetables, sweetpotatoes, peanuts, velvetbeans, vetch, and cowpeas.

Cotton yields from about 250 to 475 pounds an acre when fertilized with from 300 to 400 pounds of a 4–8–4 mixture and given a side application of about 150 to 200 pounds of nitrate of soda. Corn yields 15 to 25 bushels when fertilized at planting time with from 200 to 350 pounds of a 4–8–4 mixture and about 100 pounds of nitrate of soda applied as a side dressing. Oats yield from 15 to 25 bushels and receive from 100 to 200 pounds of nitrate of soda as a top dressing, and wheat fertilized in a similar manner yields from 10 to 15 bushels. Hay, consisting of cowpeas or velvetbeans and oats, which is not fertilized, yields 1 or 1¼ tons, and sweetpotatoes yield from 150 to 250 bushels. Asparagus, when well taken care of and fertilized with from 1,500 to 2,000 pounds of a 7–4–7 fertilizer, yields from 85 to 100 crates. Peaches are planted on this soil rather extensively, and they give excellent returns when fertilized in a similar manner as they are on Magnolia sandy loam. This soil can be built up to a fair state of productivity by turning under leguminous crops or by the addition of barnyard manure.

Norfolk sandy loam, deep phase.—The deep phase of Norfolk sandy loam is essentially the same as the typical soil, except the surface layer and subsurface layer are light loamy sand and the yellow sandy clay subsoil lies from 20 to 32 inches below the surface. The deeper soil is closely associated with the typical soil, but it is much less extensive. In general, it occupies slightly higher parts of the Coastal Plain, where the subsoil is thicker.

The deeper soil is fertilized and handled in a similar manner to Norfolk sandy loam. It is not so productive a soil, however, under

similar treatment; it is more subject to leaching and is less retentive of moisture in dry seasons, especially if the winter and spring rains have been light. Rye on this soil yields from 10 to 15 bushels an acre when treated with about 75 pounds of nitrate of soda. This is an ideal soil for sweetpotatoes, and, when treated with about 1,000 pounds of a 7–4–7 fertilizer, yields from 90 to 110 bushels. Asparagus does well but not so well as on the typical soil. In some places in North Carolina and Georgia, Norfolk sandy loam, deep phase, is used for the production of peanuts and bright-leaf tobacco.

Ruston sandy loam.—The 5- to 8-inch surface layer of Ruston sandy loam is light-brown or gray loamy sand or light sandy loam, containing only a small quantity of organic matter. Underlying the surface layer, and continuing to a depth ranging from 10 to 14 inches, is brownish-yellow or yellow mellow sandy loam, in which there are a few small brown rounded iron concretions. The subsoil, which extends to a depth ranging from 20 to 30 inches, is brownish-yellow or reddish-yellow friable crumbly firm, but not compact, sandy clay. This material grades into brownish-yellow sandy clay or light sandy clay slightly mottled with red, which extends to a depth ranging from 45 to 55 inches. Below this is mottled light-red, yellow, and gray brittle and friable sandy clay.

The surface and subsurface layers are variable in thickness, and in some places attain a combined depth of 20 or more inches. In other places, particularly in close association with the Marlboro, Orangeburg, and Magnolia soils, the surface soil is shallow and heavier and the subsoil also is heavier. Other variations from the typical soil include small spots of Marlboro sandy loam or Orangeburg sandy loam, which are too small to warrant separation on the soil map. The yields on these small included areas are generally higher than on typical Ruston sandy loam.

This soil is extensively developed over most of the Coastal Plain section. In the cultivation of corn and cotton, the fertilizer practice, cultural treatment, and yields obtained are similar to those on Norfolk sandy loam. Ruston sandy loam is not adapted, however, to the production of bright-leaf tobacco and asparagus.

Ruston sandy loam, deep phase.—The deep phase of Ruston sandy loam is essentially the same as the typical soil, except the brownish-yellow or reddish-yellow friable crumbly sandy clay subsoil lies from 20 to 30 inches below the surface. The total area of the deeper soil is much smaller than that of the typical soil. For the most part it occupies one of two positions—either flat or nearly level crests of low ridges, generally surrounded by Norfolk sand; or sloping to steep areas at the heads of or along small drains. The steeper areas, where not forested, are subject to erosion.

Areas of this deep soil contiguous to areas of Magnolia sandy loam, Orangeburg sandy loam, or Ruston sandy loam are cultivated and fertilized in the same manner as those soils, but yields are lower. The deeper soil is not so desirable or so easy to maintain in a productive state as is Ruston sandy loam.

Orangeburg sandy loam.—Orangeburg sandy loam varies in color and depth. In cultivated fields, the surface soil is grayish-brown or gray loamy sand grading, at a depth of 5 or 7 inches, into brownish-yellow loamy sand which continues to a depth ranging from 12 to 16

inches. A 2- to 4-inch transitional layer of yellowish-red mellow sandy loam or light sandy clay loam lies between the surface soil and subsoil. The subsoil is bright-red firm, yet crumbly and friable, sandy clay which is only slightly sticky when wet. This layer extends to a depth ranging from 58 to 70 inches, where red, purplish-red, yellow, brown, and gray mottled sandy clay material is reached. Throughout the lower part of the subsoil, the bright-red sandy clay is mottled or streaked with bands of yellow, grayish yellow, or red, and in most places it is more sandy in texture than the red sandy clay underlying the surrounding soils.

In some areas, just east of the Georgia & Florida Railway at Wise, the yellowish-brown loamy sand surface layer rests directly on the bright-red sandy clay subsoil. In a few bodies, particularly south of Trenton, the surface soil is very shallow, and the depth to the sandy clay subsoil ranges from 6 to 10 inches. In places these areas also have many small rounded iron concretions on the surface and mixed in the soil. In places where this soil is near permanent drainageways and extends to the stream banks, the depth to the sandy clay subsoil ranges from 22 to 30 inches.

The largest development of Orangeburg sandy loam is south of Trenton. Smaller areas are widely scattered throughout the Coastal Plain section.

This soil closely resembles Norfolk sandy loam or Ruston sandy loam in relief, surface and internal drainage, occurrence with respect to other soils of the group, proportion cultivated, crops grown, and yields. Similar fertilizer treatments and cultural practices are used on it, with corresponding results.

SOILS WITH GRAY SAND SURFACE SOILS AND YELLOW OR BROWN SAND SUBSOILS

In this group are included Norfolk sand and Ruston sand. These soils are the deep sand soils of the county, and they have favorable relief for cultivation. They are inherently low in soluble mineral plant nutrients and organic matter. Except in a very few nearly level or flat areas, both surface and internal drainage are excessive. All crop yields are low unless the land is heavily fertilized and manured. The larger part of these sands is in forest or is abandoned. The present forest growth is scrubby and consists of post oak, scrub oak, blackjack oak, and shortleaf pine.

Norfolk sand.—Where forested, the 2- to 4-inch surface layer of Norfolk sand consists of dark-gray or yellowish-brown medium sand which contains a small quantity of organic matter in the topmost inch. This material grades into a grayish-yellow sand subsurface layer which extends to a depth ranging from 4 to 10 inches and is only slightly stained with organic matter. The subsoil is yellow or pale-yellow loose mellow sand to a depth ranging from 3 to 8 feet. In places, between depths of 24 and 32 inches, the subsoil is pale-yellow or spotted-with-yellow loam, below which the material grades into very pale yellow or white sand. The color of the sandy clay substratum, which lies at a depth ranging from 3 to 8 feet below the surface, ranges from the yellow in the Norfolk soils to the reddish brown in the Ruston, Hoffman, or Orangeburg soils.

Norfolk sand occurs in almost continuous areas along nearly the entire length of the Aiken County line, from a point a few miles northeast of Savannah River to the Saluda County line. The width of the belt varies from one-half to 4 miles. Numerous small isolated bodies occur throughout the Coastal Plain section.

Included with Norfolk sand on the soil map on account of their small total extent and close similarity in use, are several small areas of Norfolk coarse sand. Such areas occur in the vicinity of Salters Pond and widely scattered in other places. Several areas, most of which are about 5 miles southwest of Trenton and around the headwaters of Shaver, Tobler, and Horse Creeks, are fine sand in texture.

Along the Aiken County line the relief ranges from gently rolling to hilly, and here the soil is termed "sand ridges" or "sand hills." In fact this is the northern border of the large body of sand-hill soils in the northern part of Aiken County.

The total area of Norfolk sand is large. Probably less than one-half of the land, however, is cleared. From one-third to one-half of the cleared land is under cultivation, and the rest is abandoned. The uncleared areas support a growth of small blackjack oak, turkey oak (locally called forked leaf), and a few pines. The same general methods of cultivation and fertilization are followed as on Norfolk sandy loam, but crop yields are only from one-third to one-half as large. This is due to the low natural fertility of the land and the leaching of fertilizers in wet seasons. As this is a very low grade agricultural soil, the areas of deeper sand with rolling relief should be in forest. The soil is used for the growing of cotton, corn, cowpeas, and sweetpotatoes. In some parts of South Carolina and North Carolina, peach trees have been set out, and these do well for a few years when heavily fertilized. Grapes and dewberries have been successfully grown, and in some places bright-leaf tobacco and peanuts are produced, but the yields are low.

In order to obtain fair yields on this soil, it is necessary to add manure or to turn under large quantities of organic matter and use a large quantity of complete fertilizer. The best yields are obtained during a moderately dry season.

Ruston sand.—Ruston sand in forested areas has a 1- to 2-inch surface layer of gray sand or loamy sand mixed with a small quantity of organic matter, overlying grayish-brown sand or loamy sand, which continues to a depth ranging from 5 to 8 inches, where it grades into yellowish-brown mellow sand. Below a depth ranging from 15 to 20 inches, the sand becomes light reddish brown and continues so to a depth ranging from 3 to 8 feet or more before sandy clay material is reached.

There are several variations from the typical soil. In low places a greater proportion of organic matter imparts a dark-brown color to the surface soil, and as a rule the subsoil is reddish yellow or orange. In some places, generally where drainage is better, the surface soil is not unlike that of Norfolk sand, and the subsoil is bright reddish brown or red. For the most part the typical soil occupies flats or slight depressions within surrounding areas of Norfolk sand. In a few places materials from the more rolling Ruston sandy loam areas have been washed in from the slopes, and in areas on the

upland along streams the sandy surface layers are not greatly unlike Norfolk sand, but the subsoil is typical of the Ruston soil.

The total area of this soil is comparatively small. Most of the areas are along United States Highway No. 25 and between the highway and the Georgia & Florida Railway near the Aiken County line. Between 50 and 75 percent of this land is under cultivation, and the rest either supports a forest similar to that on Norfolk sand or is abandoned and covered with broomsedge.

This soil is handled in much the same manner as Norfolk sand, but yields are from 10 to 15 percent higher than on that soil. The natural fertility and the type of agriculture practiced are similar to those on Norfolk sand. Large quantities of organic matter and liberal quantities of fertilizer are essential in order to obtain fair yields.

MISCELLANEOUS SOILS AND LAND TYPES

This group includes Wilkes sandy loam, Worsham sandy loam, Cecil clay loam, broken phase, Georgeville silty clay cloam, broken phase, Norfolk sand, steep phase, Hoffman sandy loam, Grady sandy loam, Congaree silt loam, Iredell loam, and alluvial soils, undifferentiated. With the exception of Congaree silt loam and Iredell loam, all the land may be considered forest or grazing land. Congaree silt loam is naturally one of the most fertile soils of the county, but it is subject to overflow which makes the production of crops uncertain. Iredell loam is placed in this group because of its small extent.

Worsham sandy loam and Grady sandy loam are poorly drained upland soils, and under the present economic conditions they are best suited to summer grazing. Some areas of alluvial soils, undifferentiated, afford summer pasture and might be classed as grazing land, but a large proportion of them is rather densely wooded or is covered with a dense growth of underbrush, brambles, and briers. The rest of the soil types and phases included in the group are best suited to forestry. In many places, Cecil clay loam, broken phase, and Georgeville silty clay loam, broken phase, are good soils, but their steep relief and susceptibility to erosion prohibit farming operations.

Wilkes sandy loam, Hoffman sandy loam, and Norfolk sand, steep phase, are not only steep, broken, eroded, and gullied, but are inherently low in plant nutrients. Only a very few acres here and there are cultivated. These soils are best suited to forestry.

Wilkes sandy loam.—Wilkes sandy loam represents a condition of soil material and rock formations rather than a definite soil type. In this county practically all of this soil has a severely broken, strongly rolling, or hilly relief. Most of the areas are surrounded by soils underlain by granite, gneiss, and schist formations cut by dikes of dark-colored basic rock. Practically all of the soil is so variable in color, thickness of the surface soil, and character of the subsoil, and the disintegrated rock is so near the surface that no definite description will fit it. It includes very small areas of Durham, Appling, Cecil, and Iredell soils which are entirely too small to be separated on a map of the scale used. Very little if any of the smoother land may be considered for the production of any crops

commonly grown. Less than one-third of the total area is used, even for pasture, and the rest is mainly in forest. The best use of Wilkes sandy loam is for forestry.

Worsham sandy loam.—Worsham sandy loam is of very small extent, but it differs from any other soil in the county in drainage conditions and character of the soil material. The surface layer consists of gray or dark-gray sandy loam from 4 to 8 inches thick. It is underlain by an 8- to 12-inch layer of gray or light-drab sandy loam which contains very little silt or very fine sand particles. The subsoil is gray, very light gray, or almost white sandy clay or clay mottled with yellow, light brown, and blue. The white clay is used for whitewashing fireplaces in the homes.

This soil occurs in small scattered bodies, ranging from 1 to 5 acres in extent, within areas of Appling, Durham, and Cecil soils, at the heads of or along small indistinct drainageways or in narrow strips at the bases of slopes occupied by Cecil soils bordering the first bottoms. The relief is nearly flat or gently sloping, and most of this soil slopes gently toward the small streams. The land is poorly drained and seepy and contains wet-weather springs. It supports an excellent growth of tame grasses throughout the drier, summer months and is used almost exclusively for grazing, for which purpose it is best suited.

Cecil clay loam, broken phase.—The broken phase of Cecil clay loam represents a soil condition brought about by excessive washing and a gully type of erosion. The relief is rolling, steeply sloping, broken, and hilly. Constant washing away of the surface soil, which in most places is devoid of grass vegetation during the winter, has resulted in the cutting of deep V-shaped gullies between Λ-shaped ridges. In places where the surface soil and subsoil still remain, they are very similar in color, structure, and texture to the corresponding layers of typical Cecil clay loam. In the eroded areas, the soil which at one time constituted the surface layers of Cecil clay loam and Cecil sandy loam has been washed away almost entirely, and it is not uncommon to find the partly decomposed underlying rock formation exposed. Much of the surface and subsurface material thus removed has been deposited on the nearby bottom lands, but a large part has been carried out of the county.

This is a nonagricultural soil. A small proportion of the land is used for pasture, but it supports a very scant grass growth. The only practical treatment of such land is to allow it to reforest. Some shortleaf pine, post, white, and blackjack oaks, and a few red cedar are springing up. This deplorable destruction of a soil which covers 8.2 percent of the total area of the county might have been checked in the very beginning by proper care in terracing and by seeding the land to grass. Even at the advanced state of erosion, if young forest trees were planted thickly, the large channels dammed with earth and stone, and as soon as possible a stand of some hardy grass or legume encouraged, these broken lands might be recovered and at the same time afford pasture and a crop of timber. The best use of Cecil clay loam, broken phase, is for forestry.

Georgeville silty clay loam, broken phase.—The broken phase of Georgeville silty clay loam covers a small acreage, compared with the corresponding phase of Cecil clay loam, but otherwise it is similar

except that the color of the scant remaining surface layer is darker red or brick red, and generally, washing has not been so severe nor cut such deep V-shaped gullies. The comparative shallowness of the gullies, however, may be due entirely to the fact that the underlying unweathered rock is much nearer the surface. In its present condition the land is unfit for farming, but it may be reclaimed in the same manner as that suggested for Cecil clay loam, broken phase. Forestry is the best use for this broken land under present economic conditions.

Norfolk sand, steep phase.—The steep phase of Norfolk sand corresponds closely to the typical soil in color, texture, and structure, but it differs considerably in relief and the thickness of the sandy layers overlying the sandy clay substratum. The surface soil, to a depth ranging from 6 to 14 inches, is rather light incoherent sand. It rests on a light-yellow or pale-yellow incoherent loose sand subsoil which extends, without much change in color, texture, or structure, to the clay or sandy clay substratum lying at a depth ranging from 3 to more than 20 feet. The depth of this heavy substratum varies widely within very short horizontal distances and may outcrop in places. The materials comprising the substratum are widely variable in color, texture, and structure, from light-yellow sandy clay, mottled with grayish yellow, reddish yellow, red, and gray, commonly present under Norfolk sandy loam, to mottled red, pink, yellow, and very light gray friable sandy clay or loose sand, underlying the Hoffman soils.

Primarily the steep phase of Norfolk sand has been established in this county to take care of widely varying soil conditions within comparatively short distances. Although Norfolk sand predominates, areas of Hoffman, Ruston, Chesterfield, Bradley, and Orangeburg soils, which are entirely too small to indicate on the soil map, are included. This steep soil also includes, not only fine, medium, and coarse sands but also fine, medium, and coarse sandy loams, sandy clay loams, and sandy clays. A separation of these several textures is not attempted, as such a separation would be largely arbitrary and would indicate practically no difference in the agricultural value of this land. The total extent of this soil is small.

This land is very hilly to steep. The few cultivated slopes are farmed with difficulty and require intensive terracing. Practically all of this land has been cut-over, and the present tree growth consists mainly of pines and scrub oaks. All the land should remain in forest or be reforested. It represents the steepest and most broken parts of the sand-hill section.

Hoffman sandy loam.—The 3- to 5-inch surface soil of Hoffman sandy loam in forested areas is gray or dark-gray loamy sand or sandy loam, underlain by grayish-yellow or gray loamy sand to a depth ranging from 8 to 14 inches. In many places a 2- to 5-inch transitional layer of light-yellow sandy loam or sandy clay loam overlies the subsoil proper. The subsoil is very variable; in most places it is mottled red, pink, purplish red, and yellow friable sandy clay and is underlain by red, pink, and very light gray smooth slick clay which carries very little gritty material. This, in turn, rests on light-red, gray, pink, and purple unconsolidated sand or coarse sand, which in many places is cross-bedded and interbedded

and contains large well-rounded gravel. In many places the loose sand rests directly on the variegated sandy clay or Coastal Plain deposits.

The largest developments of Hoffman sandy loam are on the slopes along Shaws Creek, but this soil occurs to considerable extent along many of the larger streams in the Coastal Plain section of the county, closely associated with Norfolk sand, steep phase. It occurs in narrow strips bordering the drainageways or shoulders along the streams, also in basins around the headwaters of streams and extending out along the main stream courses. Because of its position, the relief is dominantly steeply sloping, rolling, and broken, but in some places, where it continues for some distance back from the main drainageways, the land is gently sloping or undulating. Surface drainage is adequate, but in many places internal drainage is hindered by the more or less hard, brittle substrata. Numerous small intermittent drainageways cross areas of this soil, and in places erosion is fairly active.

This is not an extensive soil, nor is it agriculturally important. From 10 to 20 percent is used for crops. The trees common to this part of the county grow on the uncleared areas.

The crops commonly grown are produced on this soil. Sweetpotatoes, sorgo, and garden vegetables do fairly well, but yields of other crops are low. Cotton yields from 50 to 125 pounds an acre; corn and oats from 10 to 15 bushels. Under the present economic conditions it is not advisable to use any of the steep slopes for cultivated crops, but rather for forest and pasture; and only the more gently sloping areas, where the soil is somewhat uniform in thickness, should be farmed.

Grady sandy loam.—Grady sandy loam presents a unique appearance in this county, as it occurs in well-defined depressions and saucerlike sinks, from 300 feet to nearly one-half mile in diameter, which lie from 2 to 8 feet below the level of the surrounding land. Water stands on the surface during wet seasons.

The surface soil of Grady sandy loam in an uncultivated state consists of a 5- to 8-inch layer of very dark gray or almost black sandy loam containing a comparatively large quantity of organic matter; and, in some places a thin veneer of muck, from one-half inch to 2 inches thick, overlies the dark sandy loam. The subsurface layer, which extends to a depth ranging from 9 to 14 inches, is light-gray heavy slightly sticky sandy loam. In many places the upper part of this layer is stained with organic matter. The subsoil is light-gray or very light gray sandy clay or heavy sandy clay, extending to a depth ranging from 26 to 40 inches, where light-gray or very light gray sandy clay or clay, mottled with rusty brown, yellow, purple, or pink, is reached. A few small areas of loam texture are included, and in places the texture is sandy along the margins of the areas and mucky near the center.

The land is level or slopes gently toward the centers of the depressions. Since there are no natural surface outlets and both surface and internal drainage are naturally poor, a large number of these areas have been ditched, and they afford excellent summer grazing.

The largest areas of this soil, locally known as "crawfish land", occur in the vicinity of Trenton and along the Southern Railway from Trenton to Johnston. Smaller areas occur throughout the Coastal Plain section. The total area is small.

A few areas have a scattered stand of forest consisting largely of sweetgum and a very few shortleaf pine; and in places there is a dense growth of brambles, briers, and vines.

Some corn and oats are grown along the margins of Grady sandy loam where the natural drainage is better, and both crops return good yields if moisture conditions are favorable. The best use of this soil is for pasture. It would be rather expensive to drain the deeper areas, as ditches would have to be cut deeply through the higher lying surrounding land.

Congaree silt loam.—The surface soil of Congaree silt loam is brown or dark reddish-brown mellow silt loam to a depth ranging from 8 to 15 inches. It grades into yellowish-brown or light-brown silty clay loam which extends to a depth of 3 feet or more. In the poorly drained situations, the subsoil is mottled gray, drab, and brown silty clay. Both the surface soil and subsoil are mellow and friable, although the subsoil is slightly more compact, and both contain a noticeable quantity of finely divided mica scales. Although the soil is fairly uniform, there are places in which the subsoil consists of interbedded layers of silt, sand, silt loam, and sandy loam.

Several small strips of Wickham very fine sandy loam or Wickham silt loam occur on the higher bottoms which are rarely inundated. These areas have light-brown mellow friable surface soils, ranging from 5 to 10 inches in thickness, underlain by somewhat stiff but brittle reddish-brown sandy clay or friable clay, which continues to a depth of 32 or more inches. Many such areas are included with mapped areas of Congaree silt loam; others are included with Cecil clay loam or Georgeville silty clay loam.

Congaree silt loam occurs in small areas along Stevens, Turkey, Beaverdam, Log, Little Stevens, and other creeks. It is subject to overflow, yet as much as 40 or 50 percent of it is devoted to corn and oats. Yields ranging from 30 to 50 bushels of corn an acre are obtained without the use of fertilizers or manures. This land is also valuable for summer grazing. Some of the unused areas could be reclaimed and made valuable agricultural land. Inherently this is one of the most fertile and productive soils in the county. It represents the finer materials which have been washed from the upland soils in the Piedmont Plateau section and deposited by the streams at times of overflow. When protected from overflow during the cropping season, it is the best soil for the production of corn and hay.

Iredell loam.—Iredell loam, locally known as "blackjack land", "pipe-clay land", or "buckshot land", has a 6- to 8-inch dark-gray or grayish-brown loam surface soil. The subsoil is brownish-yellow heavy soft impervious plastic clay with a green cast, which passes into green soft rotten rock at a depth ranging from 20 to 34 inches. The underlying rock is dark, hard, and basic, and in most places it lies only a short distance below the surface. In some places the

texture of the surface soil approaches sandy loam, and in other places it is very nearly clay loam. The surface layer generally, however, contains a fair quantity of sandy material and small rounded brown concretions.

On account of the small total area of this soil, it has been placed in this miscellaneous group. The largest body lies northwest of Edgefield. Smaller areas are northeast of Shaw and McKee Bridge.

Perhaps one-half of the land is in cultivation. Corn, oats, and hay are the chief crops grown. Cotton is very uncertain, as it has a tendency to rust, and only a small part of the tilled soil is devoted to this crop. Yields of cotton range from 125 to 200 pounds an acre, those of corn range from 15 to 20 bushels, and oats and hay return fairly good yields in favorable years. Some of this land is used for pasture. The rest is either idle or is in second-growth forest, mainly of blackjack oak and post oak. The South Carolina Agricultural Experiment Station has developed some good pastures on Iredell loam in other parts of the State, and this soil is well suited to pasture grasses and oats.

Alluvial soils, undifferentiated.—Alluvial soils, undifferentiated, occur in the first bottoms along the streams. The areas range in width from 100 feet to more than one-eighth of a mile. The soil materials are so variable in color, texture, and structure that they cannot be classified as definite soil types. Those along the several larger streams have not as yet developed into a definite soil because of recent deposition, poor drainage, and the constant deposition or removal of additional material. In many places this soil is saturated part of the year and is subject to frequent inundation.

Very little attempt is made to cultivate this land, on account of the hazard from flooding. When corn is planted on the better areas and is not destroyed by overflow, it yields from 30 to 50 bushels an acre without the aid of commercial fertilizers or manures. Between 10 and 20 percent of the land is used for summer pasture, and the rest is allowed to lie idle or is being reforested to pine, sweetgum, beech, birch, a few ash, elm, sycamore, and alder. Briers, broomsedge, and wild cane form the undergrowth. Where the soil is not too sandy, grasses once established afford good pasture, on account of the abundant moisture and inherent fertility of the soil.

The deepening and straightening of the present natural stream channels and the construction of ditches along the upland edges of the bottoms, to intercept run-off from the upland slopes, would in some places almost solve the problem of reclamation of this soil. At one time these first-bottom lands which total 20,992 acres, or 6.8 percent of the area of the county, comprised the most fertile and productive land. The present overflow, the washing in of sand, and consequent poor drainage have ruined these lands for general farming, but they have possibilities for the growing of corn and pasture grasses.

RATING OF SOILS ACCORDING TO PRODUCTIVITY

Table 5 gives a rating of the soil types and phases according to their productivity with the repeated use of amendments. Nitrogen,

phosphorus, potash, and occasionally a small quantity of lime for certain crops are generally used for each of the important crops.[11]

TABLE 5.—*Rating of soils in Edgefield County, S. C., according to their productivity with repeated use of amendments* [1]

Soil	Crop-productivity index [2] for—									
	Cotton	Corn	Wheat	Oats	Hay crops	Peaches and pecans	Asparagus	Sweet-potatoes	Vegetables (home gardens)	Pasture
Marlboro sandy loam, Magnolia sandy loam, Greenville sandy loam	100	80	90	100	100	100	80	90	80	80
Cecil sandy loam	80	60	60	60	50	50	-------	100	90	60
Cecil clay loam	40	50	80	70	60	40	-------	-------	40	70
Davidson clay loam	40	50	100	90	70	80	-------	-------	50	70
Congaree silt loam	10	100	-------	40	80	-------	-------	-------	70	100
Norfolk sandy loam	90	70	60	60	70	70	100	100	70	60
Ruston sandy loam	90	70	60	60	70	80	100	90	60	50
Orangeburg sandy loam	90	70	60	60	70	80	100	90	60	50
Appling sandy loam	60	70	40	60	60	50	-------	80	70	50
Cecil sandy loam, eroded phase	60	70	50	60	70	40	-------	60	60	70
Cecil coarse sandy loam	70	60	30	50	60	50	-------	80	50	40
Durham sandy loam	60	60	40	50	50	40	-------	80	80	40
Georgeville silt loam	60	50	40	40	60	30	-------	50	60	60
Georgeville silty clay loam	40	40	50	50	70	20	-------	10	30	70
Durham coarse sandy loam	50	70	60	60	60	80	-------	80	40	30
Appling coarse sandy loam	50	70	60	50	60	80	-------	80	40	30
Chesterfield sandy loam, Bradley sandy loam	60	60	70	70	40	90	20	70	60	40
Norfolk sandy loam, deep phase, Ruston sandy loam, deep phase	70	50	40	40	40	80	70	90	30	10
Alamance silt loam	50	40	30	60	50	40	-------	40	60	50
Goldston silt loam, Iredell loam	40	30	40	50	60	-------	-------	20	40	50
Orange silt loam	10	20	-------	40	40	-------	-------	-------	20	30
Worsham sandy loam	-------	-------	-------	-------	-------	-------	-------	-------	-------	90
Grady sandy loam, drained	-------	-------	-------	-------	-------	-------	-------	-------	-------	80
Grady sandy loam, undrained	-------	-------	-------	-------	-------	-------	-------	-------	-------	40
Alluvial soils, undifferentiated	-------	[3] 100	-------	[3] 40	[3] 80	-------	-------	-------	-------	40
Norfolk sand, Ruston sand	30	20	-------	10	-------	-------	-------	40	-------	-------
Hoffman sandy loam	10	10	-------	-------	-------	-------	-------	30	30	-------
Wilkes sandy loam, Norfolk sand, steep phase	10	10	-------	-------	-------	-------	-------	30	-------	-------
Cecil clay loam, broken phase, Georgeville silty clay loam, broken phase	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

[1] This table of productivity ratings is made on a county basis only. The comparative productivity of the soil types with the repeated use of amendments is indicated. No ratings are given for inherent productivity. The table represents the combined judgment of the farmers who have been interviewed and the county agent, all of whom have contributed kindly.

[2] The productivity of each of the various soil types for each specific crop is compared to a standard—100—which stands for the productivity of the most productive soil (or soils) of the county for that crop when soil amendments are used repeatedly.

[3] Index refers to comparative yields obtained when the soil is protected from overflow.

NOTE.—Leaders indicate that the crop is not commonly grown. The soils are arranged in approximately the general order of their productivity in the county.

These ratings are made on a county basis only and should not be compared or confused with productivity tables appearing in current soil-survey reports, which have been prepared on a regional or national basis. The soils which consistently give the best yields in the county for the specified crop with the repeated use of amend-

[11] The bottom lands shown as alluvial soils, undifferentiated, and Congaree silt loam are the only soils on which crops are attempted (corn and oats) without the use of amendments in some form.

ments have been given the standard rating of 100 for that crop. A soil estimated to be about half as productive for the specified crop as the type with the standard index receives an index of 50.

Without further study, no attempt has been made to give ratings for the inherent productivity of the soil types, as inherent productivity refers to the ability of the soil to maintain production, without the use of amendments, at or near the level which existed when the virgin condition of the soil became adjusted to tillage practices.

It must be stated clearly that this rating is not to be interpreted directly into specific land values. The table presented here is not based on enough of the factors which influence land use to warrant such an interpretation. In some instances the information on which to base the ratings is not so complete as desired; further study may suggest changes.

LAND USES AND AGRICULTURAL METHODS

The soils of Edgefield County, as their light color indicates, are low in organic matter. In fact, the small quantity of organic matter in the upper 2 or 3 inches of the virgin soil, disappears after a few years of clean cultivation. Cotton, the chief crop, receives clean cultivation, and very little care has been taken to incorporate organic matter in the soils. Some of the better farmers, who have added organic matter by growing and turning under leguminous crops, have greatly increased the productive capacity of the soil. This practice should be extended to practically all the soils of the county. Organic matter soon leaches out of the soil, particularly from the loose sandy soils; therefore leguminous crops should be grown and turned under.

No definite system of crop rotation is practiced by the majority of the farmers. Some of the better farmers recognize that rotation is an essential part of good farming, and that the plan of rotation depends on the kind of soils and the crops to be grown. Perhaps one of the best rotations for this general section is the following: First year, corn with cowpeas or velvetbeans; second year, oats and the land seeded to cowpeas or velvetbeans after the oats are harvested; and third year, cotton followed by winter peas, clover, vetch, or rye. On many farms it may be necessary to plant cotton 2 years in succession on the same field.

Planting and plowing under winter cover crops protects the soils from much leaching and erosion during the winter, and the organic matter thus added enables the soil to absorb and retain more moisture. Soils which have been plowed deeply are less subject to washing and erosion than soils which are plowed to only a slight depth or merely scratched on the surface. The deep sandy surface soils require only shallow plowing unless deeper plowing is necessary in turning under green-manure crops or manures. Cecil clay loam, Davidson clay loam, and Georgeville silty clay loam are benefited by deep plowing.

It is estimated that from 5 to 10 percent of the land in this county has been practically destroyed for general farming purposes by severe washing and gullying, as a result of improper management. Erosion is rapidly progressing and, unless checked, will lay waste

many more acres of valuable farming land. Some farmers have terraced their lands, even on the gentle slopes, and have thereby greatly improved the condition of the fields. Much of this eroded land can be reclaimed by building dams of rock and brush across the gullies at short intervals and by covering eroded surfaces with manure, and seeding, as soon as possible, to cowpeas or soybeans, to be turned under. By good management, many of these unsightly places on the farms could be converted into productive fields within a few years.

Practically all the soils range from slightly acid to acid. Lime has never been used to a great extent on these soils, except on the Coastal Plain soils by farmers growing leguminous crops. A local fertilizer company at Trenton uses dolomitic limestone as a filler in their 5–4–5 mixture which is used by the growers of soybeans very successfully as a combined fertilizer and lime treatment. According to the Clemson Agricultural College (S. C.) Extension Service Circular 70, entitled "Winter Cover Crops", the data obtained and compiled would indicate that liming in this State for general farm crops as a whole is unprofitable unless a definite rotation is practiced. Where a rotation is practiced, about 1 ton of ground limestone an acre, applied at intervals ranging from 3 to 5 years, is advisable, and some evidence of improvement is shown in the soil. The Georgia Agricultural Experiment Station has proved that liming of soil is profitable where a 3-year rotation is practiced. The crops in this rotation consist of corn, cotton, oats, and hay. The farmers of Edgefield County, who have grown alfalfa or soybeans, have learned that the application of 1 or 2 tons of lime an acre or a 5–4–5 fertilizer mixture containing dolomitic limestone is highly beneficial.

Commercial fertilizers have been used in large quantities for many years on the soils in this county. Until a few years ago the fertilizer generally used on cotton was a 3–8–3 mixture, but of late years a 4–10–4 or 4–12–4 mixture is being used in applications ranging from 250 to 400 pounds an acre, and from 75 to 100 pounds of nitrate of soda is applied as a top dressing at chopping time.

Clemson Agricultural College (S. C.) Extension Service Bulletin 86, entitled "Cotton Fertilizers", contains information on fertilizers. H. P. Cooper, director of the South Carolina Agricultural Experiment Station, recommends the use of from 400 to 1,000 pounds an acre of 4–8–4 or 4–7–5 fertilizer for cotton on Marlboro sandy loam, Magnolia sandy loam, and Greenville sandy loam, and from 100 to 150 pounds of nitrate of soda as a top dressing at about the time of the second chopping. Corn, grown in rotation with cotton is not fertilized but should receive from 100 to 200 pounds of nitrate of soda as a top dressing when the corn is from 10 to 15 inches high.

On Norfolk sandy loam, Ruston sandy loam, and Orangeburg sandy loam the recommendation for cotton is from 300 to 600 pounds of 4–8–4 or 4–7–5, and a side dressing of 100 to 150 pounds of nitrate of soda. If corn does not follow in rotation with cotton, from 200 to 300 pounds of similar fertilizer is applied, and corn should always be given a side dressing of nitrate of soda, in order to obtain best results.

The difference between the quantity of fertilizer recommended for cotton on the Marlboro, Magnolia, and Greenville soils and the quantity recommended on the Norfolk, Ruston, and Orangeburg soils is marked. This is because the Marlboro, Magnolia, and Greenville soils have better moisture-holding capacity and higher organic content and will respond to heavier applications of fertilizer under varying climatic conditions, and still produce good yields.

The recommendations for the kind of fertilizer for cotton on Cecil sandy loam, Appling sandy loam, Durham sandy loam, Chesterfield sandy loam, and Bradley sandy loam are not materially different from those made for the Norfolk, Ruston, and Orangeburg soils. It is true that the Appling, Durham, and Chesterfield soils, particularly the subsoils, have a high content of potash, yet, in order to prevent rusting of cotton, potash is necessary in the fertilizer mixture. By proper crop rotation some of the potash may be eliminated.

It has proved advisable to apply nitrate of soda to corn at two different times, first when the plants are about 10 inches high and again when they are from 3 to 4 feet high. This practice makes a greater showing in the plant growth.

Clemson Agricultural College (S. C.) Extension Service Bulletin 85, entitled "Growing and Marketing South Carolina Asparagus", reports that a 2,000-pound application of a 5–7–5 fertilizer is not too heavy for asparagus, and in many instances even heavier annual applications are necessary for best results. The county agricultural agent reports that an application ranging from 1,000 to 1,500 pounds of a 4–10–4 fertilizer is commonly used by the growers of asparagus in this county.

Very few farmers have practiced dusting to combat the cotton boll weevil. Early planting and measures to promote early fruiting are the chief methods used to avoid large losses from this pest. The farmers as a rule do not attempt as they should to dispose of the cotton stalks as soon as possible after the last picking or to rid waste places, ditch banks, terraces, or adjacent cotton fields of briers and brush, which serve as winter quarters for the weevil.

The county agricultural agent reports the following varieties of the several crops grown in the county. The varieties of cotton are Farm Relief, Cleveland, Coker, Dixie Triumph, and Humco; of corn, Reid Yellow Dent and Douthit. The white corn grown is nondescript, but considerably more white corn is produced than yellow corn. Texas Red Rustproof and Coker's 33–50, smut-resistant varieties of oats, are grown. Redhart and different strains of Bluestem wheat are sown. The principal variety of asparagus is Martha Washington, and some Mary Washington is grown. Otootan is the main variety of soybeans, and Whippoorwill and Iron, the principal varieties of cowpeas.

At the time this soil survey was made, some of the farmers were buying hay, corn, oats, and mixed feeds. The best farmers consider it bad policy to buy such feed crops, especially when cotton is selling at low prices. A strong effort is being made by the county agricultural agent to encourage the production of sufficient feed crops to supply home requirements.

MORPHOLOGY AND GENESIS OF SOILS

Edgefield County is in the western part of South Carolina and is one of the fall-line counties, that is, a county in which the Atlantic Coastal Plain overlaps the Piedmont Plateau region. It lies in the Red and Yellow soils region of the United States. Prior to occupation by man, the upland soils of the Piedmont Plateau section supported mainly deciduous trees, including numerous varieties of oak and hickory and some shortleaf pine, whereas in the Coastal Plain section the dominant tree growth was longleaf pine. The soils, therefore, developed under a forest cover which is not conducive to the accumulation of a large quantity of organic matter. In most virgin areas a thin layer of leafmold covers the surface, but the material immediately below this is light yellow, gray, or red, and it contains little humus. The thin layer of organic matter and leafmold is rapidly disseminated through cultivation. The comparatively warm mean annual temperature of 63.7° F. and comparatively high mean annual precipitation of 47.85 inches have further depleted the organic matter by washing it out and by oxidation.

Another general characteristic of the soils is that they are light colored, that is, the surface layers range from light gray to red. Leaching of the soluble elements and alkaline earths is continuous throughout the greater part of the year, as the ground seldom freezes to more than a slight depth and for a short period. No accumulation of carbonate of lime occurs in the solum, although some of the rocks from which the soils are derived contain some calcium. The soils range from slightly acid to strongly acid in the A horizon, and the B horizon is still more acid. Appling sandy loam throughout its profile is the most acid soil.

Chemical analyses of colloids and pH determinations of samples of typical profiles of important soils similar to those in this county are given in table 6, and mechanical analyses are given in table 7.

TABLE 6.—*Chemical composition of colloids and pH determinations of samples of typical profiles of important soils similar to those in Edgefield County, S. C.*

Soil type	County from which sample was taken	Depth	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	MnO	CaO	MgO	K_2O	Na_2O	P_2O_5	Ignition loss	Organic matter	Mols $\frac{SiO_2}{Al_2O_3}$	Mols $\frac{SiO_2}{R_2O_3}$	pH
		Inches	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*			
Cecil sandy clay loam [1]	Iredell County, N. C.	0- 6	32.81	33.68	12.57	1.56	0.43	0.66	0.81	0.57	0.24	0.32	16.95	2.30	1.65	1.34	5.6
		6-32	33.35	36.44	12.20	1.49	.14	.47	.63	.47	.17	.26	14.25	.27	1.69	1.28	4.9
		32-60	35.75	32.22	16.17	1.40	.10	.47	.34	.35	.19	.31	12.94	.09	1.88	1.43	4.6
Davidson clay loam [2]	Guilford County, N. C.	0- 9	34.43	32.10	12.40	.99	.24	.58	.92	.50	.03	.25	17.08	[3]	1.82	1.46	6.3
		9-36	36.92	31.67	16.03	.92	.06	.56	.41	.37	None	.18	13.14	[3]	1.97	1.49	5.1
		36-60	35.37	29.44	20.61	.98	.08	.35	.36	.18	Trace	.17	12.30	[3]	2.04	1.42	4.4
		60+	35.24	29.69	20.10	.95	.30	.50	.06	.17	Trace	.36	12.53	[3]	2.01	1.40	4.1
Durham sandy loam [4]	De Kalb County, Ga.	0- 7	36.48	33.33	5.58	.40	.07	.52	.86	1.39	.44	.30	21.34	7.97	1.83	1.68	5.5
		51-73	38.06	39.14	4.11	.40	.03	.46	.64	1.06	.30	.19	16.37	2.36	1.64	1.55	4.7
Iredell loam [5]	Guilford County, N. C.	10-20	40.73	26.94	15.45	1.91	.014	.97	.93	.11	.00	.13	12.44	[3]	2.56	1.88	6.7
Appling sandy loam [6]	Elbert County, Ga.	0- 1	33 70	26 89	8.34	.62	.09	.46	.42	1.34	.17	.45	27.60	17.52	2.13	1.78	4.1
		1- 9	35.40	33.21	9.84	.65	.09	.23	.43	1.46	.07	.25	18.45	6.21	1.81	1.52	4.3
		9-14	35.72	35.03	11.84	.60	.05	.10	.38	1.29	.09	.18	14.98	1.81	1.73	1.42	4.3
		14-28	35.10	35.13	13.28	.73	.03	.02	.31	.79	.07	.26	14.49	.85	1.69	1.40	4.3
		28-60	37.38	34.68	12.74	.83	.04	.00	.25	.78	.35	.15	12.98	.34	1.83	1.48	4.2
Norfolk fine sandy loam [7]	Wayne County, N. C.	0-12	35.97	32.14	10.70	1.23	.01	.35	.58	.52	.18	.10	17.83	4.65	1.90	1.57	5.1
		12-34	37.54	34.41	12.41	1.10	.01	.50	.52	.53	.27	.10	14.03	1.06	1.86	1.51	4.6
		36-80	38.73	34.10	11.97	.90	.01	.28	.42	.30	.20	.07	14.29	.77	1.93	1.57	4.6
Orangeburg fine sandy loam [7]	do	0-10	29 94	34.81	11.52	1.03	.03	.50	.57	.74	.16	.47	19.67	4.43	1.46	1.21	5.1
		16-30	31.07	36.31	12.85	1.57	.02	.54	.30	.33	.20	.09	16.41	.94	1.46	1.19	4.8
		80-100	41.41	34.60	8.94	1.12	.01	.43	.25	.24	.18	.09	13.18	.70	2.03	1.77	4.6
Ruston fine sandy loam [7]	do	0-10	34.79	31.41	10.90	1.28	.02	.63	.54	.95	.84	.63	17.67	4.92	1.88	1.54	6.0
		16-30	35.15	36.88	9.88	1.03	.01	.39	.50	.55	.44	.23	15.15	1.06	1.62	1.39	5.0
		40-54	38.47	32.68	12.41	1.31	.01	.19	.45	.60	.30	.23	13.13	.62	2.00	1.61	4.8

[1] U. S. Dept. Agr. Tech. Bull. 316, pp. 27, 28.
[2] U. S. Dept. Agr. Tech. Bull. 228, p. 17.
[3] No analysis made.
[4] Jour. Agr. Research v. 40, p. 474.
[5] U. S. Dept. Agr. Tech. Bull. 178, p. 10.
[6] U. S. Dept. Agr. (unpublished data).
[7] U. S. Dept. Agr. Bull. 1311.

TABLE 7.—*Mechanical analyses of samples of typical profiles of important soils similar to those in Edgefield County, S. C.*

Soil type	County from which sample was taken	Depth	Fine gravel (2–1 mm)	Coarse sand (1–0.5 mm)	Medium sand (0.5–0.25 mm)	Fine sand (0.25–0.1 mm)	Very fine sand (0.1–0.05 mm)	Silt (0.05–0.005 mm)	Clay (< 0.005 mm)	Colloid (<0.002 mm)	Loss on treatment with H_2O_2
		In.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Cecil sandy clay loam.[1]	Iredell County, N. C.	0–6	2.1	6.8	9.2	20.3	13.4	20.2	25.5	17.3	0.3
		6–32	1.5	4.5	5.3	11.6	7.7	12.0	56.7	51.2	1.6
		32–60	2.6	4.2	3.9	9.0	6.4	17.1	56.8	48.6	.0
Davidson clay loam.[2]	Guilford County, N. C.	0–9	.7	2.3	2.6	9.6	16.7	29.4	34.3	25.9	4.4
		9–36	.1	.7	.9	5.4	8.9	22.3	60.4	54.0	1.3
		36–60	.3	1.0	.9	7.2	9.1	30.4	50.3	41.3	.3
		84–96	.4	1.3	1.9	14.3	17.5	34.5	29.6	23.7	.5
Iredell loam [3]	do	10–20	.6	.9	1.0	3.5	5.2	23.9	63.1	(4)	1.8
Appling sandy loam.[3]	Elbert County, Ga.	0–1	13.9	19.0	10.1	12.5	5.2	13.8	10.9	7.8	13.8
		1–9	13.5	19.6	11.5	14.6	8.0	17.0	14.2	9.5	1.3
		9–14	10.8	15.4	9.0	12.9	7.7	18.2	25.3	19.6	.5
		14–28	6.3	7.9	3.6	4.7	3.1	9.1	65.0	60.0	.1
		28–60	5.7	9.9	5.7	8.9	8.1	15.0	46.8	40.0	.0
Norfolk fine sandy loam.[5]	Wayne County, N. C.	0–12	1.7	6.6	9.9	25.9	17.8	28.4	8.9	4.9	.07
		12–34	1.0	5.1	7.7	20.4	14.0	22.7	28.8	23.5	.02
		36–80	1.2	4.8	7.9	19.7	13.7	21.3	31.3	30.1	.00
Orangeburg fine sandy loam.[5]	do	0–6	1.6	9.8	10.6	26.1	26.3	20.0	5.0	3.0	.4
		16–30	.6	4.0	4.1	9.7	17.4	17.0	47.1	46.5	.0
		80–100	3.6	12.4	14.3	27.1	6.6	8.3	27.7	27.7	.0
Ruston fine sandy loam.[5]	do	0–10	.5	2.7	4.4	21.1	31.1	31.5	7.9	6.7	.7
		16–30	.9	2.6	3.7	16.5	19.7	26.3	29.4	28.3	.1
		40–54	.6	3.6	9.7	22.9	14.9	17.2	30.8	29.6	.1

[1] U. S. Dept. Agr. Tech. Bull. 316, p. 10.
[2] U. S. Dept. Agr. Tech. Bull. 228, p. 5.
[3] U. S. Dept. Agr. (unpublished data).
[4] No analysis made.
[5] U. S. Dept. Agr. Bull. 1311.

Since the removal of the forest and cultivation of the soils accelerated erosion has been active, not only on the steeper slopes but even on gently rolling areas. All this part of the county, except a few flat upland areas and the first bottoms, has undulating or gently rolling to rolling and hilly relief, and the land is naturally well drained. On the hillsides, gullying and erosion have devastated many areas of once productive soils. Erosion not only has laid waste many areas of this land, but in some places it has destroyed the one-time normal soil profile of large areas. It has changed the texture of the surface soil in a large part of this section and is responsible for the translocation of materials from the higher to the lower areas. The finer materials of much of the sandy loam and clay loam soils have been carried away by surface water and by the lateral movement of rain water through the soils.

Climatic conditions, that is, temperature and rainfall, are uniform over the county, so that no soil differences caused by climatic differences exist. The differences, therefore, in the soils may be traced to the underlying rock formations and the action of weathering. The soils of the Piedmont Plateau section have been formed in place through the soil-forming processes acting on the underlying weathered rock formations, and the direct relationship they bear to the parent material is revealed in the solum.

Three distinct groups of rocks or geological formations occur in the Piedmont Plateau section, and the rocks differ in chemical and physical properties. In some places the same kinds of rocks give rise to soils which differ in their characteristics, due to differences in drainage, aeration, and oxidation.

The first group includes granite, gneiss, fine-grained schist, and a small quantity of somewhat basic gneiss which contains a large proportion of dark-colored minerals. These rocks underlie the southwestern part of the county and give rise to the Cecil, Durham, Appling, and Worsham soils. The rocks are high in potash, and the B horizons of the soils contain a high percentage of this element.

The second group of rocks comprises diorites, quartz diorite, and gabbros, known as the dark-colored basic rocks. The diorites are locally called "niggerheads." From the weathered material of these rocks, which underlie only a small part of the county, have been produced, through the soil-forming processes, the Davidson and Iredell soils. These soils differ widely in color, texture, and consistence, depending on the age or state of development of the profile. Of these soils, the Iredell is evidently the younger in soil profile development. Its subsoil is light colored, extremely plastic, and in few places more than 24 inches thick. Poor drainage may account for the youthfulness of the profile. The Davidson soil is probably the older or more mature. It shows complete oxidation of the iron and has a thick uniformly colored B horizon, in many places extending to a depth of 6 feet. This group of soils contains more lime, especially in the subsoil layers, than the soils of the first group, and in addition, the Davidson soil contains a rather large quantity of manganese.

A third important group of rocks is the Carolina slates which in an almost unbroken body underlie the entire northern half of the county, with the exception of the small area in the extreme northwestern part which is underlain by granites. The Carolina slates are gray or dark gray, fine textured, cut by quartz veins, and contain considerable talc. On weathering they give rise to the extremely silty or floury soils of the Georgeville and Alamance series and a large part of Goldston silt loam. Occurring in these slates are rather prominent intrusions of green-tinted rocks, apparently of volcanic origin, which may be classed as dacite and epidote. These rocks weather differently from the slates and give rise to Orange silt loam and a part of Goldston silt loam.

Small angular and larger quartz fragments are scattered throughout the Piedmont Plateau section. In the slate belt, and particularly on areas of the Goldston and Orange soils, many fine platy fragments of slate or concretionlike particles occur in places on the surface. In a few places slate boulders or extrusions of solid rock appear on the surface or lie just below. Slate rock outcrops to the greatest extent on the Goldston soils.

Only a small proportion of the land in the Piedmont Plateau section is sufficiently smooth to allow the development of a normal soil profile. The soils here may be placed in two groups: Those which have well-developed or partly developed soil profiles, and those which have not developed normal soil profiles. In the first group, some of the soils of the Cecil, Appling, Durham, Davidson, and Georgeville series have the most mature profiles of the soils in this part of the county.

The normally developed soils have an eluviated A horizon and an illuviated B horizon. The B horizon ranges in thickness from 2 to more than 6 feet, and the material is uniform in color, whether

it be red or yellow. The C horizon is exceedingly variable in color, structure, and other characteristics. In the subsurface and subsoil layers of the normally developed or comparatively mature soils, such as the Cecil, Davidson, and Georgeville, iron has been oxidized to the ferric state. In the Durham, Appling, Iredell, Worsham, Goldston, and Alamance soils, the iron is not so well oxidized, due to poor drainage and aeration, or, as in the Durham soils, if it were ever red in the B horizon, the red color has been lost through dehydration. The water table in the Durham and in parts of the Appling, Worsham, Orange, and Goldston soils is much nearer the surface than in the Cecil, Georgeville, and Davidson soils.

Cecil sandy loam may be considered the normally well developed or mature soil underlain by granite, gneiss, and schist rock. A description of a profile of this soil, 1 mile southeast of Piney Grove Church, in a partly wooded area, follows:

A_1. 0 to 2 inches, light-brown friable mellow light sandy loam containing a small quantity of organic matter.

A_2. 2 to 8 inches, brownish-yellow sandy loam containing a small quantity of coarse sand. The lower part of this layer is slightly heavier in texture, almost heavy sandy loam, and it becomes reddish yellow as the red clay subsoil is approached.

B_1. 8 to 28 inches, red stiff but brittle clay which breaks into irregular-shaped uniform-colored lumps or fragments, that is, the insides of the particles or soil aggregates are the same color as the outsides or along the cleavage planes. The lumps or fragments crush easily to a fine-granular mass. A cut or crushed surface of this clay is reddish yellow. The material contains some sharp angular quartz sand and small mica scales.

B_2. 28 to 60 inches, red stiff but brittle clay, streaked or banded with yellow and containing a small quantity of coarse sand grains and more mica scales than the overlying layer. Spots of soft yellow more sandy material occur in the mass. The yellow spots or blotches increase in number with depth.

C. Below 60 inches, light-red or very light gray disintegrated granite rock, mottled with yellow or brown, containing black specks which are constituent minerals of the granite.

Cecil sandy loam, eroded phase, Cecil coarse sandy loam, and Cecil clay loam differ essentially from Cecil sandy loam in the texture and consistence of the surface layers.

Davidson clay loam differs from Cecil clay loam, mainly in that it has developed through the processes of soil formation from the weathering of diorite. It has a dark-brown or dark reddish-brown A horizon and a dark-red or maroon B horizon of heavy smooth clay practically free from quartz sand, which is a distinguishing feature between the Davidson and Cecil subsoils.

Bradley sandy loam and Chesterfield sandy loam result from the overlapping of the Atlantic Coastal Plain materials comprising the A horizon on the slate or granite residual materials constituting the B horizon. The B horizon of the Bradley soil is red, whereas that of the Chesterfield soil is yellow. Small angular and rounded quartz fragments are scattered over the surface and mixed with the surface layers.

Durham sandy loam and Durham coarse sandy loam differ from Cecil sandy loam largely in color. They are yellow throughout the A_2 and B horizons and are derived from the weathered products of granites and gneisses. Appling sandy loam and Appling coarse sandy loam are intermediate in color, profile development, and con-

sistence between the Cecil soils, with their red B horizons, and the Durham soils, with their yellow B horizons.

Georgeville silt loam may be considered the normally developed or mature soil derived through the soil-forming processes from Carolina slate rock. A profile of this soil, under a cover of second-growth oak and hickory, 3 miles northwest of the Southern Railway depot at Johnston, shows the following layers:

A_1. 0 to 3 inches, grayish-brown or gray silt loam containing a small quantity of organic matter and a very few quartz and slate fragments.

A_2. 3 to 8 inches, light grayish-yellow mellow floury friable silt loam containing a very few fine slate and white quartz fragments. The lower part of this layer grades into yellowish-red or reddish-yellow heavy silt loam, and this is in reality a gradational zone between this layer and the B horizon.

B. 8 to 54 inches, light-red silty clay. The material in this layer is hard and smooth, but brittle and friable when moist, and it contains no coarse sand grains. Roots readily penetrate the material. It readily breaks into small irregular-shaped fragments that can easily be crushed to small particles. The cut surface is light red or reddish yellow, and the cleavage planes are brownish red.

C_1. 54 to 76 inches, very light red or yellow-red silt loam or heavy silt loam, which is almost completely decomposed parent-rock material. It is smooth and has a velvety talc feel.

C_2. Below 76 inches, yellow, red, purplish-red, gray, and reddish-brown variegated disintegrated parent-rock material. The original structure of the slate rock is visible in places.

Alamance silt loam differs from Georgeville silt loam mainly in color. The B horizon of the Alamance soil is light-yellow silty clay loam which is not quite so heavy as that of the Georgeville soil. It is developed on the flatter areas, and poor drainage and lack of aeration have retarded oxidation. Orange silt loam differs from Alamance silt loam in having a light-gray heavy plastic subsoil which is more variable throughout the profile. Iredell loam does not differ greatly from the Orange soil. The A horizon is dark-gray or grayish-brown loam, and the B horizon is brownish-yellow heavy soft plastic clay with a green cast, which somewhat resembles the subsoil of the Orange soil in consistence and depth to the parent material. The green-tinted soft rotten parent-rock material, however, is the result of disintegration and decomposition of diorite rock instead of the Carolina slate formation, from which the Orange soil is derived.

Goldston silt loam is so variable in color, depth, and consistence of the several layers overlying the parent slate rock, dacite, or epidote, which occur at extremely variable depths, that it may be considered a soil condition rather than a normal soil. It is not uncommon to find, within distances of a few feet, characteristics resembling the Georgeville, Alamance, or Orange soils.

Wilkes sandy loam is derived from the weathered products of aplitic granite or gneiss and is cut by dikes or intrusions of diorite or other basic rocks. The A and B horizons and the substratum are not uniform in color, thickness, or consistence, and the soil represents a soil condition rather than a definite soil type, in that it is badly gullied and eroded.

Worsham sandy loam has not developed a normal soil profile because of poor drainage and lack of aeration, particularly in the B horizon. It is derived from the disintegration and decomposition of granite or gneiss.

Alluvial soils, undifferentiated, occupy the first bottoms along the streams and are composed of recent alluvial sediments. The material is so recent in origin, so variable in texture and color, and so poorly drained that no uniform profile has developed. Congaree silt loam also occupies first bottoms along the streams and is composed of alluvial sediments. It is better drained and has a more definite profile, however, than the soils designated as alluvial soils, undifferentiated.

The remaining soils to be discussed lie wholly within the Coastal Plain section. They are locally known as the "sand hills", or the "sand country", and they occupy approximately the southeastern one-sixth of the county.

The parent soil-forming material consists of unconsolidated beds of sands and clays, in which no uniformity in color, texture, or structure exists. The normal substratum, or partly weathered parent material, is mottled yellow, gray, and red, with varying shades of these colors, and the depth to the parent soil-forming material is variable.

Topography, drainage, oxidation, and aeration are the principal factors operating on the parent material to influence the character and distribution of the soils. The more nearly level areas of these soils have not been invaded by natural drainageways to an excessive degree, yet they are thoroughly aerated and oxidized and consist of normally developed soils. The soils in these areas are members of the Marlboro, Magnolia, and Greenville series. They are derived from sandy clay materials, which are much heavier than the materials giving rise to the Norfolk, Ruston, and Orangeburg soils. Finer material is also present throughout the solum.

The Norfolk, Ruston, and Orangeburg soils are very similar in many respects. They occupy similar positions and are similarly developed. The Ruston and Orangeburg soils probably contained more iron originally than the Norfolk soils; at any rate the oxidation of their parent materials has produced reddish-brown or red subsoils. In the normally developed soils, such as those of any one of these six series, the A horizons are typically very light textured, consisting of sand or light sandy loam. A moderately wide difference exists in the texture of the A horizons and the comparatively heavier layer or typical B horizons. The B horizon is the heaviest layer in the profile. It retains the moisture supply of the soil and contains more plant nutrients than the surface soil.

No normally developed soil profile exists in Grady sandy loam, owing to its imperfect drainage. The soil occupies sinks or saucer-like depressions.

Of the group having brownish-gray or red surface soils, Magnolia sandy loam may be considered the representative, or the normally developed, soil. A description of a profile of Magnolia sandy loam, as observed 1 mile north of the center of the town of Trenton, shows the following layers:

A_1. 0 to 5 inches, gray or grayish-brown loamy sand or light sandy loam of uniform texture, containing a moderate quantity of organic matter and fine plant roots.

A_2. 5 to 15 inches, brownish-yellow loamy sand having a few grayish-brown spots of organic matter in the upper part.

B_1. 15 to 22 inches, yellowish-red light sandy clay. This is a transitional layer between the A and B horizons.

B_2. 22 to 64 inches, bright-red or brick-red slightly plastic moderately firm friable and crumbly heavy sandy clay. It breaks into irregular-shaped lumps which readily crush under normal moisture conditions into a soft crumbly mass. This layer is uniform in both color and texture.

B_3. 64 to 90 inches, red slightly compact but brittle sandy clay containing a very few streaks of yellow or yellowish gray in the lower part. This is the transitional layer between the B and C horizons.

C. Below 90 inches, mottled red, purplish-red, yellow, brown, and gray light sandy clay—the disintegrated and partly decomposed parent material.

Greenville sandy loam differs from Magnolia sandy loam in that it has a reddish-brown or brownish-red A horizon overlying a heavy dark-red or maroon sandy clay B horizon. The texture, structure, and consistence of the B horizon of the two soils are similar.

Marlboro sandy loam differs from Magnolia sandy loam mainly in color. The B horizon of the Marlboro soil is deep-yellow heavy sandy clay loam or clay loam, which grades into yellow heavy sandy clay of almost identical consistence, or stickiness, as the Magnolia subsoil.

Of the group having light-gray surface soils, Norfolk sandy loam may be considered representative. The soils of this group are the most widely distributed throughout the Coastal Plain section. The sandy loam or loamy sand A horizons of all members of the group, including the deep phases of the Norfolk and Ruston series, are considerably thicker than the surface layers of the preceding group of soils. They range in thickness from 12 to 17 inches in the typical soils and from 22 to 32 inches in the deep phases. The subsoils differ from those of the preceding group in having a lighter sandy clay texture, and in that the C horizon is sandy.

A profile of Norfolk sandy loam, as observed in a fresh road cut in an unforested area 1½ miles west of Central School, shows the following layers:

A_1. 0 to 5 inches, dark-gray or gray loamy sand or light sandy loam, containing only a small quantity of organic matter.

A_2. 5 to 17 inches, light-yellow or pale-yellow loamy sand.

B_1. 17 to 31 inches, yellow firm, but friable and crumbly, sandy clay which readily crushes to a friable mass.

B_2. 31 to 39 inches, light-yellow sandy clay moderately mottled with light red and reddish brown.

C. Below 39 inches, light-yellow sandy clay mottled with grayish-yellow, reddish-yellow, and red partly weathered parent material. The red spots are more sandy than the yellow or grayish-yellow sandy clay or clay. This layer is compact, yet it is more friable than the layer above.

Ruston sandy loam differs from Norfolk sandy loam largely in color. The gray or dark-gray loamy sand resting on the brownish-yellow or yellow subsurface layer grades into a brownish-yellow or reddish-yellow sandy clay B horizon. Orangeburg sandy loam is not greatly different from the Norfolk or Ruston soils, except that it has a bright-red sandy clay subsoil at a depth ranging from 14 to 18 inches.

Norfolk sand, Norfolk sand, steep phase, Ruston sand, and Hoffman sandy loam represent deep deposits of sand over the unconsolidated beds of variegated sandy clay.

SUMMARY

Edgefield County lies in the region of Red and Yellow soils and, for the most part, within the Piedmont Plateau, but a small part—about one-sixth—lies within the Atlantic Coastal Plain. The county is situated in a region of well-distributed and adequate rainfall. The mean anual temperature of 63.7° F. is typical of that for west-central South Carolina, which in general is characterized by short mild winters and long warm summers. The prevailing winds are from the west, and the climate is mild and healthful. Climatic conditions, together with suitable soils, have favored the development of a system of agriculture based very largely on the production of cotton. The economic status of the cotton grower, however, is fully as much an influencing factor in this one-crop system as climate.

The Piedmont Plateau part of the county is underlain by several distinct rock formations, as granites, gneisses, dark-colored basic rocks, or so-called "niggerheads", and fine-grained slate rocks. The soils here are formed through the soil-building processes from the weathered products of the residual accumulations from these crystalline rocks. This part of the county is locally known as the "clay section", "red-hill region", or "slaty region." The southern plain or Coastal Plain section, locally known as the "sand hills", or "sand country" is underlain by beds of unconsolidated sand, clay, sandy clay, and gravel, from which dominantly sandy soils are developed.

Before these soils were brought under cultivation, they were covered with forests of longleaf and shortleaf pines and hardwoods consisting of several varieties of oak, as white, post, red, black, blackjack, and water, in addition to hickory, chestnut, walnut, elm, cedar, and poplar.

The soils, based on their color, texture, structure, and drainage, may be broadly classed in six groups:

1. Soils with gray sandy surface soils and red or yellow clay subsoils, including members of the Cecil, Bradley, Appling, Durham, and Chesterfield series. The characteristics of these soils have determined the trend of agriculture in Edgefield County. These soils predominate in the southern half of the county, as well as in a small area in the extreme northwestern part. The Cecil, Durham, and Appling members of this group are the dominant soils for the production of cotton in the Piedmont Plateau. Good yields of sweetpotatoes and sorgo are obtained. The Durham soils are the best soils for the production of bright-leaf tobacco in the Piedmont Plateau of North Carolina.

2. Soils with red clay loam surface soils and red clay subsoils. These soils are distributed over the entire county, with the exception of the extreme southeastern part, and they include members of the Cecil, Davidson, and Georgeville series. A more general system of farming is practiced on these soils because they warm late in the spring, and, since the advent of the cotton boll weevil, they are not desirable land for cotton over a period of variable seasons. Corn, oats, wheat, rye, and hay are more generally grown, and livestock is raised. These soils rightly might be considered the grain lands of the county. They constitute one of the areas of most extensive farm abandonment.

3. Soils with gray or brown silt loam surface soils and yellow or red silty clay loam subsoils comprise members of the Georgeville, Alamance, Orange, and Goldston series. They rank intermediately between the soils of the first two groups in the production of cotton and grains, and they also include a large proportion of abandoned farm land. They are exceptionally well suited to the production of lespedeza.

4. Soils with gray or brown sandy loam surface soils and red or yellow friable sandy clay subsoils include the sandy loam members of the Greenville, Magnolia, Marlboro, Norfolk, Ruston, and Orangeburg series. The Marlboro, Magnolia, and Greenville soils are the most productive soils for cotton, asparagus, and grain, particularly asparagus. The largest cotton yields in the county are produced on them, and a diversified type of farming is practiced. The section in which these soils occur is the most thickly populated and prosperous farming section. The Norfolk, Ruston, and Orangeburg soils also are desirable for the production of cotton and many special crops. They warm early in the spring and respond readily to the application of commercial fertilizers.

5. The soils with gray sand surface soils and yellow or brown sand subsoils—Norfolk sand and Ruston sand—are low in fertility and should be used mainly for forestry.

6. Miscellaneous soils and land types include a number of soils. Worsham sandy loam, Grady sandy loam, and Iredell loam and the better lying and more thoroughly drained parts of the first-bottom lands, alluvial soils, undifferentiated, are not desirable for cultivated crops but are excellent for summer-grazing pastures. Congaree silt loam and part of the alluvial soils, undifferentiated, are inherently the most fertile soils in the county, but they are not dependable croplands because of the hazards of overflow and flooding. The rest of the soils of this group are best suited to forestry on account of their hilly and steep relief and eroded and gullied condition. They are Wilkes sandy loam, Cecil clay loam, broken phase, Georgeville silty clay loam, broken phase, Hoffman sandy loam, and Norfolk sand, steep phase.

The fact that cotton is grown on almost every farm in the county, regardless of the soil, is due to the economic status of the cotton grower, primarily the tenant farmer. He must have a crop, either to sell for ready cash or against which he may obtain a loan, in order to buy foodstuffs, seed, and fertilizer each year, and cotton is the only crop that is recognized as collateral by banks and loan associations. Cotton does not require particularly fertile land, and the sandy surface soils will respond readily to commercial fertilizers and produce good yields of this crop. Corn and small grains require more fertile soils. Furthermore, cotton is a crop that cannot be handled by machinery to a great extent, and cheap labor, to cultivate and harvest the crop, is plentiful.

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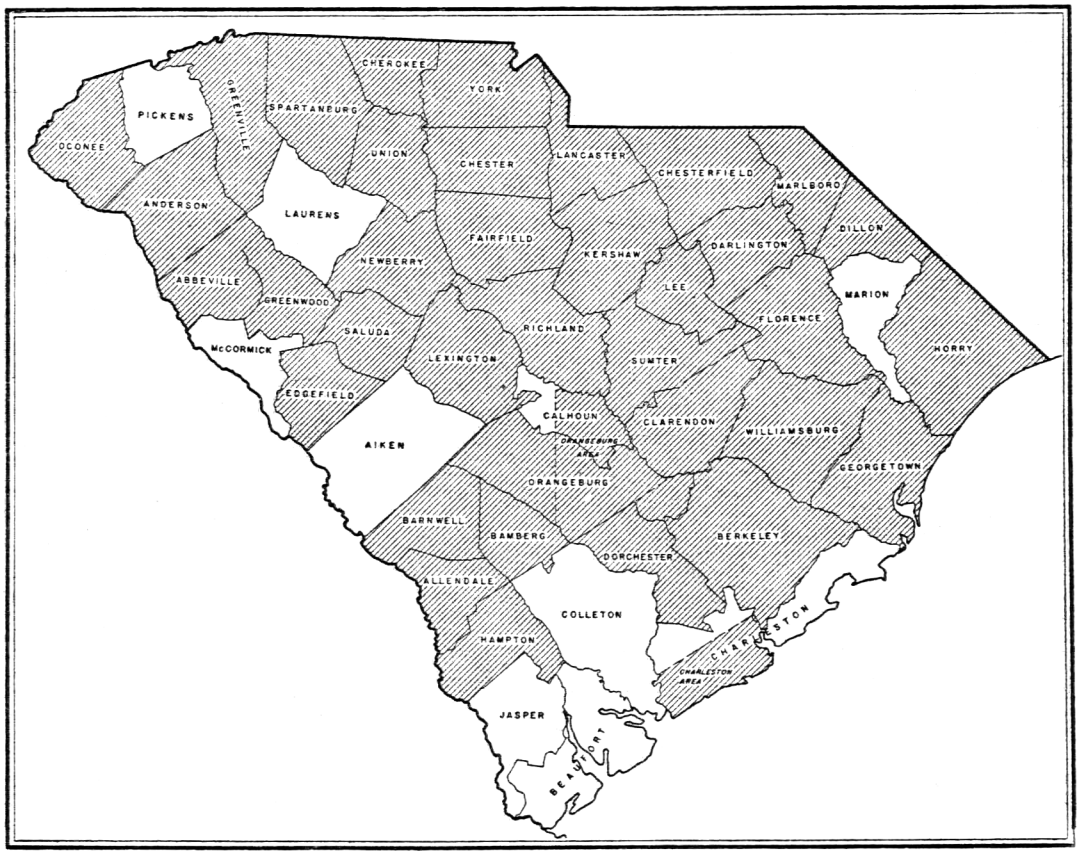

Area surveyed in South Carolina shown by shading. Detailed surveys shown by northeast-southwest hatching.

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