

**UNITED STATES DEPARTMENT OF AGRICULTURE**

**Soil Survey**  
of  
**Dillon County, South Carolina**

By  
**W. J. GEIB, in Charge**  
**W. J. LATIMER, F. R. LESH, and A. E. SHEARIN**



**Bureau of Chemistry and Soils**  
In cooperation with the  
**South Carolina Agricultural Experiment Station**

# BUREAU OF CHEMISTRY AND SOILS

HENRY G. KNIGHT, *Chief*  
W. W. SKINNER, *Assistant Chief*

## SOIL SURVEY

CHARLES E. KELLOGG, *in Charge*  
W. E. HEARN, *Inspector, District 2*  
J. W. MCKERICHER, *in Charge Map Drafting*

## COOPERATION

SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

H. W. BARRE, *Director*

## CONTENTS

	Page
County surveyed.....	1
Climate.....	3
Agricultural history and statistics.....	4
Soils and crops.....	9
Light-colored well-drained soils.....	10
Marlboro fine sandy loam.....	11
Marlboro sandy loam.....	13
Norfolk sandy loam.....	14
Norfolk sandy loam, deep phase.....	15
Norfolk fine sandy loam.....	16
Norfolk fine sandy loam, deep phase.....	17
Norfolk sand.....	18
Orangeburg fine sandy loam.....	19
Ruston fine sandy loam.....	20
Ruston sandy loam.....	21
Ruston sand.....	22
Cuthbert fine sandy loam.....	22
Kalmia sandy loam.....	24
Kalmia sand.....	24
St. Lucie sand.....	25
Light-colored poorly drained soils.....	26
Dunbar fine sandy loam.....	27
Dunbar sandy loam.....	28
Dunbar clay loam.....	29
Coxville clay loam.....	30
Coxville fine sandy loam.....	32
Coxville sandy loam.....	33
Leaf clay loam.....	34
Leaf clay loam, well-drained phase.....	35
Cahaba clay loam.....	35
Dark-colored poorly drained soils.....	36
Portsmouth loam.....	36
Plummer fine sandy loam.....	37
Myatt sandy loam.....	38
Okenee loam.....	39
Miscellaneous soils and materials.....	40
Congaree silty clay loam.....	40
Muck.....	41
Meadow.....	42
Swamp.....	43
Recommendations for the improvement of agriculture.....	44
Soils and their interpretation.....	48
Summary.....	53
Map.....	

# SOIL SURVEY OF DILLON COUNTY, SOUTH CAROLINA

By W. J. GEIB, in Charge, W. J. LATIMER, F. R. LESH, and A. E. SHEARIN

## COUNTY SURVEYED

Dillon County is in the northeastern part of South Carolina, bordering the North Carolina line (fig. 1). It is roughly triangular in outline, with the most acute angle pointing almost due north. The southwestern boundary is formed, for a distance of about 8 miles, by Pee Dee River, and Lumber River forms the southeastern boundary for a distance of about 5 miles. The total area is 408 square miles, or 261,120 acres.

This county includes parts of three topographic belts: (1) General uplands; (2) terraces or second bottoms; and (3) first bottoms. The uplands comprise about 80 percent of the total area. The greater part of the uplands is characterized by a surface relief ranging from undulating to gently rolling, with some rolling areas. With the exception of the rolling areas, these are the well-drained soils on the uplands and lie favorably for farming operations.

There are large bodies of typical flatwoods, most of which lie at some distance from the streams. As these areas have not been invaded by streams, no natural drainage has been established. In the flatwoods part of the county the bays and depressions are conspicuous, particularly in the vicinity of Mallory and Bingham, east and west of Oliver Crossroads, and west of Dillon.

Rather extensive terraces occur along the rivers and larger streams, and small terraces lie along some of the less important streams. The largest terrace, or second bottom, lies along Pee Dee River, and small terraces are developed along Little Pee Dee and Lumber Rivers. The terrace along Pee Dee River covers an area approximately 4 miles wide and 8 miles long, running parallel with the river.

The first-bottom areas, or flood plains, commonly referred to as swamp, occur along the rivers and Catfish Creek, Reedy Creek, Little Reedy Creek, Buck Swamp, Bear Swamp, and Ashpole Swamp. All this land is low and wet most of the time, as it is subject to heavy overflows during part of the year.

The general slope of the land is from northwest to southeast, and there is considerable difference in elevation between the northwestern corner and the eastern part of the county. The elevation at Dillon is 118 feet above sea level; at Latta 112 feet, and at Sellers 87 feet.<sup>1</sup>

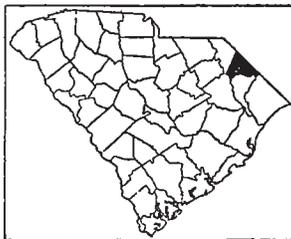


FIGURE 1.—Sketch map showing location of Dillon County, S. C.

<sup>1</sup> GANNETT, H. A DICTIONARY OF ALTITUDES IN THE UNITED STATES. U. S. Geol. Survey Bull. 274, ed. 4, 1,072 pp. 1908.

These elevations are on the railroad tracks opposite the depot at the respective locations.

Drainage is effected through Pee Dee, Little Pee Dee, and Lumber Rivers, together with Buck Swamp, Ashpole Swamp, Catfish Creek, and tributary swamps, creeks, and branches, which ramify all parts of the county, except the more extensive level flat areas, bays, and depressions. A large part of the land is naturally well drained. In general, the best drained soils border, or lie in close proximity to, the swampy areas along the streams. These lands have been invaded by small streams which connect practically every large farm with a natural drainageway.

The streams and swamps are bordered by rather wide bottoms, which lie from about 10 to 30 or more feet below the surrounding country. The most poorly drained upland areas are the flat inter-stream areas, bays, and depressions. Much of this land could be drained and reclaimed through canals supplemented by open ditches. The first-bottom areas occupy such a low position in relation to the water table of the streams that drainage would be difficult and very expensive.

The early history of Dillon County coincides with that of Marion County, from which it was cut off in 1910. In 1735 the Evans family settled on Catfish Creek, probably within the area now included in Dillon County. Other settlements were made about the same time, probably near Pee Dee River, as that river was the main line of travel into the upcountry in the early days. Several settlements were made between Catfish Creek and Little Pee Dee River, but the exact dates cannot be determined. Most of the early settlements probably were made shortly before or just after the Revolutionary War. The first settlers were English, Scotch, Welsh, Irish, some French, and a number of people from nearby colonies. The area included in the present Dillon County was referred to in the early days as "Upper Marion", as it was the northern end of Marion County.

The Atlantic Coast Line Railroad was completed through this county in 1888, and at that time the towns of Latta and Dillon were laid out. Dillon, the county seat and largest town, had a population of 2,731 in 1930. Other towns are Sellers, most of which is in Marion County, Hamer, Little Rock, Lake View, Floyd Dale, Fork, Kemper, and Oak Grove. Little Rock is one of the oldest communities. The total population of the county in 1930 was 25,733, 12,067 of which were colored.

The county is well supplied with railroads, chief of which is the Atlantic Coast Line, connecting Washington and eastern cities with points in Florida. This railroad crosses the county from northeast to southwest. The Clio branch of the same railroad runs northwest from Latta; the Bennettsville & Cheraw Railroad connects with the Atlantic Coast Line at Sellers and traverses the county in a northwesterly direction, through Oak Grove; the Seaboard Air Line crosses from northwest to southeast, passing through Little Rock, Dillon, and Floyd Dale; and the Raleigh & Charleston Railroad crosses the southeastern part, passing through Fork, Kemper, and Lake View. These railroad lines afford excellent shipping facilities. Many autotruck lines operate in and through the county.

There are about 45 miles of concrete highway and many miles of good graded roads. More concrete roads are under construction. Practically every square mile of territory can be reached by roads of some kind, as many secondary roads and plantation roads traverse the county.

Good water is plentiful and easy to obtain in all parts of the county. Livestock can get water from many of the streams, and good water for both family use and for livestock is obtained from wells ranging from 35 to 40 feet in depth. There are a number of artesian wells. The city of Dillon is supplied by water from deep wells.

The local towns afford a limited market for home-grown food products, and they also furnish good shipping facilities to points north and south. Dillon is a good tobacco market. Cotton also is bought and shipped from this point and from other places. Latta ships both tobacco and cotton. Mullins, just outside the county in Marion County, is a large tobacco market and is reported to handle as much as 30,000,000 pounds in a single year. Much cotton is now shipped by truck to Norfolk, Va., and Charleston, S. C., and some of it is exported from these ports.

Children are transported by bus to a number of consolidated schools. Rural delivery of mail reaches all sections, and the telephone extends into many of the farm communities.

#### CLIMATE

The climate of Dillon County is representative of a rather large area in the central coastal-plain section. The winters are short and mild, and the summers are long and warm. The climate is influenced to a considerable extent by the Atlantic Ocean and Gulf Stream. Dillon is only 71 miles from Myrtle Beach, which is on the coast, and the Gulf Stream is but about 50 miles offshore. This modifying influence extends inland for a distance ranging from 75 to 150 miles.

The climate is sufficiently mild that livestock can pasture throughout the year. Oats and rye can be sown at any time between September and March, and they make a slow growth during the winter. Potatoes are sometimes planted in February for the early market. Cotton is usually planted between the latter part of March and the first part of April. The early plantings stand the best chance against the bollweevil. Corn is planted from the first of March until June. Tobacco beds are planted and prepared about January 15, and the plants are transplanted between April 1 and April 25. Tomatoes are set out in early May, and cabbage can be grown at almost any time during the year. Sweetpotatoes are transplanted from April 15 to June 1.

There is no Weather Bureau station in Dillon County. The records given in table 1 are from the station at Florence, Florence County. From these records it will be seen that the mean annual temperature is 63.6° F., with an extreme maximum of 107° and a minimum of -1°, and that the mean annual rainfall is 46.46 inches. Snow sometimes falls, but many winters pass, in which there is only a trace or none. The heaviest rainfall occurs in the summer during the middle of the growing season.

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

[Elevation, 130 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1933)	Total amount for the wettest year (1922)
December.....	°F. 45.8	°F. 82	°F. 7	Inches 3.00	Inches 0.17	Inches 3.35
January.....	45.6	89	9	2.97	2.63	1.37
February.....	47.2	88	-1	4.12	4.32	6.36
Winter.....	46.2	89	-1	10.09	7.12	11.08
March.....	55.7	98	16	3.34	1.16	3.68
April.....	62.9	96	26	3.00	1.19	6.47
May.....	72.0	101	33	3.98	4.77	7.00
Spring.....	63.5	101	16	10.32	7.12	17.15
June.....	77.6	104	48	5.46	6.30	6.85
July.....	81.3	107	55	5.84	5.98	11.24
August.....	80.2	104	54	5.19	3.80	5.41
Summer.....	79.7	107	48	16.49	16.08	23.50
September.....	75.2	103	38	4.31	2.22	21.33
October.....	64.2	100	29	3.04	1.05	2.73
November.....	54.1	88	17	2.21	.73	.74
Fall.....	64.5	103	17	9.56	4.00	24.80
Year.....	63.6	107	-1	46.46	34.32	70.53

The average date of the last killing frost is March 19 and of the first is November 12. This gives an average frost-free season of 238 days. However, frost has been recorded as late as April 21 and as early as October 14. Many vegetables, such as collards, cabbage, spinach, and carrots, can withstand considerable frost and can be grown at practically any time during the year.

The climate is favorable for the growing of cotton, tobacco, peanuts, corn, hay crops, oats, wheat, sweetpotatoes, and a wide variety of garden vegetables.

#### AGRICULTURAL HISTORY AND STATISTICS

The first settlements in the area embracing the present Dillon County were made by people wishing to make their living from agricultural pursuits. The first few scattered settlements were made about 1735. Just before and immediately following the Revolutionary War there were several settlements where farming ventures were well under way. Most of these were along Pee Dee River, between Catfish Creek and Little Pee Dee River, and in some other parts of "Upper Marion" County, which later became Dillon County.

Prior to 1793, livestock raising was the chief agricultural pursuit, and a large number of cattle and hogs were raised. These were marketed in the cities of Charleston, Richmond, and even as far away as Philadelphia. Some rice and corn were grown, chiefly for

home use. Some fields on the flats along Little Pee Dee River, where rice was grown under the flooding system, can still be seen. Some old dams and ditches are still in evidence, although most of the rice land is now lying idle and in many places has grown up to pine. Rice was seldom grown on a commercial scale, most of it being used on the plantation where grown to feed the slaves.

Following the invention of the cotton gin in 1793, cotton growing rapidly became a major venture, and the raising of livestock gradually declined. Cotton growing became all important, and corn and some small grain were grown for food and for feed for the livestock. Tobacco did not become an important crop until comparatively recent years, about 1890, when tobacco growing developed rapidly. At present, cotton and tobacco are the most important crops, with corn and small grains, such as oats and rye, occupying smaller acreages; in fact there is now not sufficient corn and small grain grown for feed for the livestock.

The credit system of cropping has long been practiced here, as elsewhere in the South, and practically every farmer and tenant receives advances of cash or provisions from the banker or landowner, settlement being made when the crop is sold. During years of low prices or low yields this system results in many hardships, as the receipts from the sale of the crops are frequently not sufficient to meet the expenses of production. This puts the farmer or tenant in debt to the merchant, banker, or landowner, and he has to start another year with this burden hanging over him.

The bollweevil invaded this section about 1920, and the first severe damage was to the crop of 1922. Prior to that, it was not uncommon for planters to produce a bale or more of cotton to the acre, but since the ravages of the bollweevil began yields have been greatly reduced. The bollweevil has had a tendency to cause the farmers to diversify their crops, and tobacco growing has increased rapidly since the bollweevil arrived, but the production of food crops is not so prevalent as it should be.

Cotton is grown more extensively than any other crop. In 1929, 40,075 acres, or 25.8 percent of the farm land, were planted to cotton. To control the bollweevil, cotton is planted early, given frequent cultivation, heavily fertilized, and sometimes sprayed. The total yield in 1929 was only 21,027 bales, about one-half bale to the acre. Improved methods of handling the crop are being put into practice, and good results are being obtained. The weevil does not cause so much damage during dry weather as it does when the season is wet.

Corn is the second crop in importance, so far as acreage is concerned. In 1929, 22,955 acres were in corn (for grain), and the yield was 414,404 bushels, or about 18 bushels to the acre. Much of the corn is grown on light soils, where yields are very small. The plantings in rows are widely spaced, and in many fields the rows are 6 feet apart. Yields on good soil frequently run to 40 or more bushels an acre. Corn is grown on nearly every farm, but the total yield is usually not sufficient to meet the needs, and corn is frequently shipped into the county.

The acreage in tobacco ranks third among the crop acreages, and tobacco has a very high money value. In 1929, 12,315 acres were devoted to this crop, and the total yield was 8,949,838 pounds. Some

tobacco is grown on most of the farms, where each tenant family tends from 3 to 5 acres. The 1930 crop was said to be the best crop obtained in years. Where tobacco is the chief cash crop, the acreage runs from a few acres to 50 acres, on some farms as high as 150 acres. The tobacco is practically all bright tobacco, is all fire cured, and is used largely for the manufacture of cigarettes. A good return from an acre of tobacco is \$250. When the return from 1 acre drops as low as \$100 the crop is considered unprofitable.

Hay is an important crop, which is grown most extensively on the heavier soils and lowlands, although it is grown to some extent on all soils, except the most sandy land. It is used as feed for work animals and cattle. Tame hay consists mainly of crabgrass, pea vines, and soybeans. Some lespedeza and crimson clover are grown. For emergency hay crops, millet and some Sudan grass are grown, but their production is not extensive. Some wild grass is cut for hay. Legumes for hay were cut from 8,995 acres in 1929. The quantity of good hay is not always sufficient to meet the farmers' needs.

Oats are often cut green for hay, and oats and peas mixed make good hay. Much of the oat crop is allowed to mature and is fed in the straw. In 1929 oats from 8,273 acres were fed in this way. Oats are grown more extensively than any other small grain. Some are threshed, but on farms where the acreage in oats is small it would not be justifiable to have a threshing machine come to the farm, and the oats are usually fed in the straw. The total acreage in oats in 1929 was 10,123 acres. Oats are grown largely on Coxville fine sandy loam which occupies small low places on many farms. They are also grown to some extent on the Dunbar and Marlboro fine sandy loams and on the heavier soils, but all the fields are small.

Wheat is grown only to a very limited extent and may be considered a crop of little importance, as are also barley and rye. Rye makes good winter pasture when sown in the fall.

Sweetpotatoes are grown on nearly every farm and form one of the chief subsistence crops. Some are grown for sale. Many of the soils are well suited to this crop, and the sweetpotatoes yield well, but the acreage has never been very large. In 1929, 802 acres yielded 106,921 bushels. Yields ranging from 250 to 300 bushels an acre are not uncommon, although the average is considerably below this figure.

Potatoes were grown on 242 acres in 1929, and the total yield was 18,363 bushels. Potatoes are grown on a commercial scale by only a few farmers and in only a small way. Potatoes do well on the group of fine sandy loam and sandy loam soils, but no great effort has ever been made to develop this industry so as to cater to the northern markets.

Dry peas and peanuts are grown to a small extent, chiefly for local use. Peanuts are frequently grown for hog feed, the hogs being allowed to run in the fields and harvest the crop, thereby saving much labor.

Efforts have been made at different times to establish a trucking industry, and acreage contracts have been made by farmers in an effort to attract buyers to come here and pay cash for delivery at the railway station, but thus far the movement has not met with much success. In 1930, about 250 acres around Dillon were pledged, but

producers were disappointed with the marketing facilities provided. String beans were the principal truck crop grown, with some peas and cucumbers. There are many acres of potentially good truck land in this county, and there is no reason, from the point of view of the physical factors of production, why these crops could not be extensively developed.

Fruit growing has not been extensively developed. In 1929 there were 4,193 bearing peach trees, 1,503 apple trees, 438 pear trees, 109 plum trees, and 780 grapevines. Most of the fruit is consumed at home and in local markets. Little care or attention is given the fruit trees. Several small pecan orchards have been planted.

Livestock raising is not so important as in the early days, and on many farms there are no cattle and few hogs. More work horses and mules are kept than cattle. In 1929 there were 342 horses and 4,019 mules, and only 2,187 cattle on the farms. Several small dairies near Dillon and Latta supply these towns with whole milk. The dairies seem to be doing well, but there are no creameries or cheese factories in the county. Most of the dairy cattle are Jerseys and Guernseys. Some cattle are raised for beef, and a few feeders are shipped in and prepared for market. The terraces and bottom lands along Pee Dee River and the smaller streams provide good grazing for cattle which can be raised at small expense. An ice-cream plant is operating in Dillon. During the winter when the demand for ice cream is small, the local dairies can supply the needs of this plant, but during the summer, not enough milk is produced locally, and milk is imported from Virginia and elsewhere to make up the deficiency.

Hogs are raised more extensively than cattle but not so extensively as they should be, as the supply is not sufficient for the local demand. In 1929 there were 8,154 head reported. Cholera frequently attacks the herds and results in heavy losses. Many well-bred grade hogs are raised and some purebreds. Very few sheep and goats are raised. Poultry and eggs provide a source of income on many farms. On April 1, 1930, there were 53,615 chickens more than 3 months old in the county.

There are 3,066 farms, and 51.5 percent of the area of the county is in farms. The average size is 50.6 acres, and the average amount of improved land on each farm is about 31 acres. The rest of the farm may be stream bottoms or terraces, which consist of unimproved or low, depressed areas where drainage is poor. With drainage, practically every acre of upland could be made tillable, but under present economic conditions it would not be justifiable to attempt to drain the lowlands.

The average value of farms and farm property a farm in 1930 was \$3,444. Of this amount 62.9 percent was represented by land, 27.5 percent by buildings, 6.2 percent by domestic animals, and 3.4 percent by implements and machinery. In the same year the average acre-value of land and buildings was \$61.40. Under war-time conditions selected pieces of land sold for as much as \$300 an acre, but since that time the decline in prices has been rapid. Many farmers borrowed money on a high valuation, and with reduced values many failures followed, because the owners were unable to keep up payments and interest, together with the high taxes. The banks and other loan agencies have taken over numerous farms, many of which have been

sold for the face of the mortgage or less. It is reported that most of the land is under mortgage.

Owners operated 18.3 percent of the farms in 1930; managers, 0.3 percent; and tenants, 81.4 percent. Most of the tenant farms are so-called "2- or 3-horse farms", including about 20 acres each. The most common form of rental is share rental. Where the landowner furnishes everything—livestock, tools, land, fertilizer, and other necessary equipment—the tenant receives one-third of the crop; and if the landowner furnishes the land and fertilizer and the tenant furnishes everything else, the tenant receives one-half of the crop. It is common practice for the landowner to advance about \$15 a month, on a 1-horse farm of about 20 acres, for the farmer's family to live on while the crop is being made.

Little farm help is hired, as on most farms the tenant and his family can do all the work. However, where help is necessary, the average wage is now about 75 cents a day without board.

One of the major items of expense is the fertilizer bill. The most common fertilizer used is a complete fertilizer analyzing 3-8-3<sup>2</sup> or 4-8-4. A few farmers use a 3-10-3 mixture which is applied to cotton and tobacco at a rate ranging from 600 to 1,000 pounds an acre. In addition, from 75 to 150 pounds of nitrate of soda are usually applied as a side dressing to cotton. The heavy application, however, is distributed in the row at time of planting.

A few of the more progressive farmers report larger returns on the dollar invested from the use of smaller applications, more frequently applied. Some appreciate the needs of different soils for different fertilizers, but as a rule applications are uniform on the different soils. The heavier applications are made on the Norfolk, Marlboro, and Ruston sandy loams and fine sandy loams. Low ground and the heavy soils receive less. Oats are fertilized chiefly with nitrate of soda, and corn usually receives a complete fertilizer, sometimes with a side dressing of nitrate of soda. Some farmers buy the separate ingredients and mix their own fertilizer, thereby saving the cost of mixing and some freight.

Although the average size of farms is about 50 acres, there is a rather wide variation in acreage. In 1930 there were 464 farms between 10 and 19 acres in size, 1,570 between 20 and 49 acres, 621 between 50 and 99 acres, 179 between 100 and 174 acres, and only 3 including more than 1,000 acres.

Table 2 shows the acreage devoted to the various crops in 1909, 1919, and 1929.

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

Crop	1909	1919	1929	Crop	1909	1919	1929
Corn.....	<i>Acres</i> 20,388	<i>Acres</i> 25,247	<i>Acres</i> 22,955	Grapes.....	<i>Vines</i> 215	<i>Vines</i> 1,081	<i>Vines</i> 780
Oats.....	6,163	6,343	1,128	Apples.....	<i>Trees</i> 2,603	<i>Trees</i> 2,751	<i>Trees</i> 1,503
Potatoes.....	10	41	242	Peaches.....	4,241	4,577	4,103
Sweet potatoes.....	843	774	802	Sugarcane.....	<i>Acres</i> 258	<i>Acres</i>	<i>Acres</i> 88
Peanuts.....	1	3	840	Sorgo.....	9	78	24
Cowpeas.....	533	37	9,693				
Velvetbeans.....			783				
Soybeans.....			253				
Cotton.....	50,280	54,251	40,075				
Hay.....	2,352	4,515	10,020				
Tobacco.....	3,393	8,674	12,315				

<sup>2</sup> Percentages, respectively, of nitrogen, phosphoric acid, and potash.

## SOILS AND CROPS

Many different soils occur in Dillon County. They range in texture from sandy loams through fine sandy loams to clay loams, and in color from light gray or grayish brown to black. The light-colored well-drained soils are naturally low in organic matter, except where this has been supplied by man. The black poorly drained soils are high in organic matter, owing to the fact that they have remained in a wet, swampy condition and vegetation has flourished and decayed.

All the upland soils have developed, through the influence of the climate and native vegetation, from the materials produced by the weathering of unconsolidated coastal-plain materials. These materials were brought down from the piedmont and mountainous sections and deposited on the floor of the sea when this part of South Carolina was covered by the ocean.

About 60 percent of the land is naturally well drained, as it has an undulating, gently sloping, or gently rolling surface relief. Practically all the well-drained areas are or have been under cultivation in recent years. Extensive areas have flat, almost level surface relief, where natural drainage has not developed, and consequently the soils are poorly drained. Only a small aggregate acreage of these poorly drained soils has been reclaimed for agricultural purposes. These soils constitute some of the potentially good land of the county, but under present economic conditions the cost of their reclamation is not justified.

All the soils are more or less acid. The less acid soils are Marlboro fine sandy loam and Norfolk fine sandy loam, and the most acid are Okenee loam, St. Lucie sand, and the Coxville soils. For complete pH values of the soils, refer to table 4 (p. 51) in the section on Soils and Their Interpretation.

The soils are classed, according to color, drainage, and agricultural use, in three groups, in addition to miscellaneous materials, as follows: (1) Light-colored well-drained soils, (2) light-colored poorly drained soils, (3) dark-colored poorly drained soils, and (4) miscellaneous soils and materials. Under these groups the individual soils are described and their uses discussed; their distribution is shown on the accompanying soil map; and table 3 gives their acreage and proportionate extent.

TABLE 3.—Acreage and proportionate extent of the soils mapped in Dillon County, S. C.

Type of soil	Acres	Per- cent	Type of soil	Acres	Per- cent
Marlboro fine sandy loam.....	24,832	9.5	Dunbar clay loam.....	7,744	3.0
Marlboro sandy loam.....	6,144	2.4	Coxville clay loam.....	28,304	10.1
Norfolk sandy loam.....	9,664	3.7	Coxville fine sandy loam.....	9,408	3.6
Norfolk sandy loam, deep phase.....	14,528	5.6	Coxville sandy loam.....	4,288	1.7
Norfolk fine sandy loam.....	4,800	1.8	Leaf clay loam.....	8,448	3.2
Norfolk fine sandy loam, deep phase.....	5,248	2.0	Leaf clay loam, well-drained phase.....	3,520	1.4
Norfolk sand.....	17,856	6.9	Cahaba clay loam.....	192	.1
Orangeburg fine sandy loam.....	512	.2	Portsmouth loam.....	12,544	4.8
Ruston fine sandy loam.....	7,360	2.8	Plummer fine sandy loam.....	4,736	1.8
Ruston sandy loam.....	2,944	1.1	Myatt sandy loam.....	2,432	.9
Ruston sand.....	4,736	1.8	Okenee loam.....	11,200	4.3
Cuthbert fine sandy loam.....	6,528	2.5	Congaree silty clay loam.....	1,088	.4
Kalmia sandy loam.....	1,856	.7	Muck.....	2,496	1.0
Kalmia sand.....	2,496	1.0	Meadow.....	5,440	2.1
St. Lucie sand.....	512	.2	Swamp.....	28,928	11.1
Dunbar fine sandy loam.....	18,112	6.9			
Dunbar sandy loam.....	4,224	1.4			
			Total.....	261,120	-----

## LIGHT-COLORED WELL-DRAINED SOILS

The group of light-colored well-drained soils includes all the soils of the Marlboro, Norfolk, Orangeburg, Ruston, Cuthbert, Kalmia, and St. Lucie series. These soils occupy 42.2 percent of the total area of the county. They are well distributed throughout all parts of the upland section.

The soils of this group range in surface relief from nearly level or undulating to gently rolling, and in places to rolling. Many areas occupy slight ridges which rise from 2 to 15 or more feet above the surrounding poorly drained soils. They are developed on the highest elevations and lie favorably for farming. They are naturally well drained.

In texture these soils range from sands to fine sandy loams. The surface soils are light in color, being dominantly gray or grayish brown. They are naturally low in organic matter. The sandy texture, together with the loose open structure, renders these soils mellow and friable.

The subsoils of the Marlboro, Norfolk, Orangeburg, and Ruston soils are dominantly fine sandy clays or sandy clays, except in the sand types, where they are sands. Cuthbert fine sandy loam has a heavy stiff clay subsoil. The subsoils of all these soils, with the exception of the Cuthbert, are friable and crumbly and therefore absorb a large part of the rainfall and have good moisture-holding capacity for plant roots.

The Marlboro soils differ from the Norfolk soils in that they have more brown or darker gray surface soils and a heavier subsoil which is slightly sticky, more deeply colored yellow or faint reddish yellow, and in places, at a depth ranging from 28 to 32 inches, contains red mottlings. There is more fine material throughout the profile of the Marlboro soils, and the surface soils are shallower to the sandy clays. In cultivated fields yellow or brown spots are seen where the subsoil is exposed. The Norfolk soils have a light-gray cast and lighter yellow subsoils.

The soils of this group, because of their texture and loose open consistence, are mellow and friable. They are very easy to cultivate, and a good seed bed can be obtained with a minimum of labor. Because of their texture, consistence, and good natural drainage, they warm up early in the spring, and most of them can be cultivated soon after rains. Only shallow plowing and cultivation are necessary after the seed bed has been prepared.

A common variation in soils of this sandy loam group is the presence of gravel over the surface of small areas which were too small and too few to make a phase or type difference. The gravel are mostly rounded quartz gravel about one-half inch or less in diameter, or they may be rust-colored pebbles resembling iron concretions. These gravel may appear in any of the sandy loam soils, but they are probably most common in the Ruston soils. The Marlboro soils contain some gravel in a few places, and the Norfolk soils may also have a sprinkling, but in these soils the content of gravel is insufficient to interfere with cultivation or crop production.

The dominant native timber growth on these soils was longleaf pine, with some shortleaf pine in a number of places. On some of the most sandy ridges some oaks grew, but most of the trees were

small and of but little value. Very nearly all of the merchantable timber has been cut, and the land has been placed under cultivation. Where there are slashings or where fields are allowed to remain idle for several years, both longleaf and shortleaf pines spring up and make a rapid growth. Some scrub oak comes in on the sand ridges.

These are the best agricultural soils in the county, and fully 90 percent of their total area is under the plow and highly developed. They include the best cotton, corn, and tobacco land (pl. 1, A). They are adapted to a wide range of crops, and all the general farm crops common to the section, as well as many special crops, do very well.

Cotton is the most important crop, occupying fully 50 percent of the cultivated land in this group. Cotton under bollweevil conditions yields about one-half bale to the acre, but before the bollweevil made its appearance yields of 1 bale an acre were common. In 1930, which was a dry year and favorable to growing cotton under bollweevil conditions, a number of farmers reported acre yields of 1 bale.

Corn occupies about one-half as much land as cotton, and it is the second crop in importance. The average yield of corn is about 20 bushels an acre, but acre yields of 40 and even more bushels are obtained under improved methods of cultivation and fertilization.

Tobacco is the third crop in acreage on these soils, occupying from 7 to 10 percent of the cultivated land, or about one-sixth of the acreage devoted to cotton. It is an important cash crop, and some is grown on nearly every farm. Yields under normal conditions range from 800 to 1,500 pounds of cured leaf to the acre, with 1,000 pounds being considered a good average. Some peanuts are grown successfully.

Hay crops, consisting of cultivated grasses, legumes, and grains cut green, occupy about the same acreage as tobacco, and hay is an important crop, since it is the principal rough feed for work animals.

Oats are grown to a small extent, but most of this crop is grown on lower lying, somewhat heavier soils.

In addition to the crops mentioned, potatoes are grown for home use, and a few are sold. Peanuts are grown to a small extent for feeding hogs and for home use. Garden vegetables of many varieties are produced, and both the soil and climate are favorable for truck crops. Scuppernong grapes and figs can be grown successfully.

Very few milk cows and beef cattle are raised. Hogs are raised on most farms but not in sufficient quantities to supply the home needs for meat.

**Marlboro fine sandy loam.**—The surface soil of virgin areas of Marlboro fine sandy loam consists of a 4-inch layer of grayish-brown fine sandy loam which is covered by a ½- to 1-inch layer of dark-gray, in some places nearly black, leaf litter, roots, and other organic material. In many places, this material is covered with pine needles or, in open places, with grass. Under cultivation the dark layer becomes mixed with the plow layer and is soon disseminated. It makes the surface soil darker, and this accounts in part for the brown hue of the surface soil in cultivated fields. From about 4 to 8 inches the soil material is light-yellow or pale-yellow loamy fine sand or light fine sandy loam. The subsoil extending from 8 to 20 inches is slightly sticky sandy clay having a deep-yellow color with a pe-

cular tinge that somewhat resembles the color of cottonseed meal. This clay loam has the characteristic feature of rolling or roughing up on the soil auger, and the soil auger does not fill nor does the material scour well from the auger. When plowing deep or where the soil layer is thin this material is turned up, but the plow does not scour smoothly as in other sandy soils. This is because of the peculiar structure and the relation of the silt and clay content. In road cuts and along clean-cut ditch banks, this material crumbles and accumulates at the bottom of the bank. Between depths of 20 and 36 inches, the subsoil is light brownish-yellow heavy fine sandy clay or clay loam, in some places slightly mottled with red and yellowish brown. Between depths of 36 and 60 inches the lower part of the subsoil is in many places more strongly mottled, but in most places it is not quite so heavy and is more brittle and crumbly.

In general, this soil is uniform, but there are several variations worthy of note. The thickness of the surface soil over the clay constitutes the most important variation. It ranges from 3 or 4 inches to as much as 15 inches, and the soil material consists of fine sandy loam or in a few places, very fine sandy loam. In a few places, the surface soil has been eroded, and the subsoil is exposed, which gives some of the more sloping fields a spotted appearance. The lower part of the surface soil is everywhere lighter in color and generally lighter in texture than the immediate surface soil. The subsoil also varies slightly in its content of clay and fine sand, but it is practically everywhere heavy fine sandy clay or clay loam. The subsoil material is locally called "clay." The mottling in the deep subsoil is variable, and in some places, especially on the higher elevations, it is almost lacking to a depth ranging from 3 to 4 feet, but at the lower depths it is everywhere mottled. In some localities, especially bordering the Ruston soils, the subsoil has a red cast and in a few places might be described as reddish yellow.

This is one of the best soils in the county and from the point of view of agriculture is doubtless the most important. It is widely distributed throughout the upland section in bodies ranging in size from a few acres to several square miles. In typical developments, this soil occupies the higher parts of the uplands, the Coxville soils occur in many of the depressions, and in many places, areas of Dunbar fine sandy loam intervene on the level or very gently sloping land. The continuity of the bodies of the Marlboro soil is broken by areas of Dunbar soils on the lower slopes, by Coxville soils, chiefly the clay loam, in the depressions and flats, and in some places by Norfolk soils. Some of the largest areas of Marlboro fine sandy loam are in the vicinity of Dillon, Dothan, Little Rock, Floyd Dale, Hamer, and Gaddys Crossroads, and in numerous other parts of the county. Many of the bodies are small.

The surface relief of this soil is typically undulating or very gently rolling, differences in elevation above the surrounding soils ranging from 2 to 12 feet. Some level areas border the Dunbar soils, and a few ridges are slightly higher than the relief indicated. Owing to the relief and the comparatively high position, this soil has good natural drainage, and ditching is not needed, except on the more level stretches.

This soil resembles Norfolk fine sandy loam to some extent, but it differs from that soil in that it is somewhat darker. As viewed across

a cultivated field, the color appears brownish gray instead of gray which is typical of the Norfolk soil. The difference is not always distinct, but it generally can be observed without difficulty in places where the two soils are well developed. The surface soil is heavier than that of the Norfolk soil, and the subsoil also is heavier, being clay loam instead of sandy clay loam. The Marlboro soil is a somewhat stronger and more productive soil than the Norfolk. Compared with Dunbar fine sandy loam, Marlboro fine sandy loam is not quite so heavy either in the surface soil or subsoil, is higher lying, and is better drained.

Fully 90 percent of this soil is under cultivation and highly improved, very little of it being left in wild land or slashings. It is considered the best cotton and tobacco land in the county. Cotton, corn, and tobacco are the chief crops grown, and they occupy a large proportion of the cultivated land. This is one of the best, if not the best, soil in this part of the coastal-plain section, being adapted to a wide range of crop production. It is well suited to general farm crops and garden truck.

Cotton yields, prior to the advent of the bollweevil, ranged from 1 bale to 1½ bales an acre, depending on the quantity and grade of fertilizer applied. Corn yields from 20 to 35 bushels an acre, wheat from 10 to 30 bushels, and oats from 20 to 50 bushels. Cantaloups and garden crops do well.

**Marlboro sandy loam.**—The 6- to 8-inch surface layer of Marlboro sandy loam, in virgin areas, consists of gray or brownish-gray light sandy loam. A small amount of leaf litter and dark organic matter occurs on the surface, and the first 2 or 3 inches of soil are dark gray. Beneath this is a thin layer of brownish-yellow or pale-yellow medium loamy sand or, in places, light sticky sandy loam. The subsoil, between depths of 10 and 20 inches, is deep-yellow or, in some places, slightly reddish yellow heavy slightly sticky sandy loam or clay loam. This material rolls and crumbles on the soil auger, and, as with Marlboro fine sandy loam, the auger does not scour well. Between depths of 20 and 30 inches the material is yellow heavy sandy loam or clay loam, containing some red mottlings. From a depth of 30 to a depth of 60 inches the material is yellow and reddish-yellow mottled clay loam which is somewhat lighter in texture and more brittle than the upper part of the subsoil. The subsoil material does not check and crack as in some heavy soils, but it crumbles and breaks into small granules which accumulate at the bottoms of road banks.

This soil is uniform in texture and color, but it varies somewhat, especially in the thickness of the surface soil, which ranges from 3 to 15 inches. In some places the heavy subsoil is exposed or is close enough to the surface to be brought up by the plow. Such spots, which range from a few square rods to one-fourth acre in size, occur on gentle slopes where the surface soil has been eroded, and they give the field a spotted appearance. Where such spots occur, the plow does not scour well, because of the peculiar structure of the soil material and the arrangement of the clay, silt, and sand particles.

This soil, although important, is not so extensive as Marlboro fine sandy loam. It is associated with the fine sandy loam and bears the same relation as that soil to the Dunbar soils. In many places this soil grades into Marlboro fine sandy loam so gradually that a definite line between the two soils is difficult to establish.

Marlboro sandy loam is fairly well distributed. Like the fine sandy loam, it occupies the higher positions, low ridges, and gently rolling country. Much of it occurs as low ridges or slopes next to the stream courses between areas of Marlboro fine sandy loam and the stream course.

Some of the largest areas are 2 miles west of Leland Grove School, in the northern part of the county, near Minturn, and north of Lake View. Many small bodies are associated with Marlboro fine sandy loam areas, but most of them are less important and smaller.

Marlboro sandy loam bears the same relation to Norfolk sandy loam as Marlboro fine sandy loam does to Norfolk fine sandy loam. Marlboro sandy loam is browner than the Norfolk soil, is heavier, has a heavier subsoil, and is considered a better soil for general farming and for most agricultural uses. It is a good soil for truck crops.

The surface relief ranges from gently undulating to very gently rolling, the difference in elevation in few places being more than 15 feet within a distance of half a mile. Because of the favorable surface features and the loose mellow character of the surface soil, natural drainage is good, and the land does not require ditching, except over a few level areas bordering the Dunbar soils.

This is a good, strong soil, but probably not quite so desirable as Marlboro fine sandy loam, as it is somewhat lighter in texture and more open in structure. It is largely improved, fully 90 percent being under the plow. It is a good cotton and tobacco soil, and considerable corn is grown on it. Truck crops and cantaloups would do well on the deeper soil areas.

**Norfolk sandy loam.**—In cultivated fields the 6-inch surface layer of Norfolk sandy loam consists of gray loamy sand or light sandy loam. In virgin areas a thin covering of dark-gray leaf litter and other organic matter is present, and the first 2 or 3 inches of soil are dark gray. Under cultivation this dark material becomes mixed with the plowed layer and is soon disseminated. The topsoil is loose and open and is therefore very easy to cultivate. Between depths of 6 and 14 inches the soil material is pale-yellow sand or loamy sand, also loose and open. The subsoil, between depths of 14 and 30 inches, is yellow or pale-yellow friable and crumbly sandy clay which, in most places, becomes somewhat heavier with depth. Between 30 and 48 inches the material is light-yellow or pale-yellow light sandy clay which in many places is slightly mottled with shades of gray and yellowish red.

Some variations, as regards color, texture, and thickness of the surface soil, are included. The thickness of the sandy covering over the sandy clay ranges from 6 to 20 inches. In color the surface soil may range from gray to dark gray, and in a few places it is grayish white. The darker colors prevail in the lower lying areas or slight depressions and where drainage is slightly deficient. The subsoil everywhere contains some clay and ranges from sandy clay to sticky sandy loam. In the poorly drained areas it has gray mottlings between depths of 24 and 30 inches.

The soil covers a fairly extensive area and is one of the important soils. The typical soil is not so extensive as the deep phase. Like the Marlboro soils it occupies the highest parts of the upland and is fairly well distributed throughout the county. Some of the most

extensive areas are 2 miles west of Latta, along the lower end of Buck Swamp, in the highland bordering the swamp, southeast of Hamer, and in the country between Gaddys Crossroads and the State line.

The surface relief ranges from level, or nearly so, to very gently rolling. The difference in elevation between the high and low areas in most places ranges from 5 to 15 feet. Many areas of this soil are associated with Norfolk sandy loam, deep phase, and with Norfolk sand. On account of the loose, open character of the surface soil and the gently sloping surface relief, natural drainage is good, and only in the lower lying land is ditching necessary. The land does not suffer from drought in normal seasons, as the subsoil is retentive of moisture. In places the surface soil material is coarse and in a few places approaches coarse sand in texture, and such areas are more apt to be more droughty than the typical soil.

This soil somewhat resembles Marlboro sandy loam, but the surface soil is lighter in color, the subsoil is lighter in texture, and the sandy covering over the clay in most places is thicker. Norfolk sandy loam may be considered a good soil for general farm crops. It is considered slightly inferior to Marlboro sandy loam and Marlboro fine sandy loam for cotton and corn, but it produces a fine grade of bright tobacco. It is a good truck soil, but the trucking industry is not extensively developed.

Fully 85 percent of the land is cleared, farmed, and highly improved. Plate 1, *B* shows a field planted to tobacco and peas.

**Norfolk sandy loam, deep phase.**—The deep phase of Norfolk sandy loam differs essentially from the typical soil in that the layer of sandy material over the sandy clay subsoil is much thicker, in most places extending to a depth of 24 inches and in some places to a depth of 30 inches before the yellow sandy clay subsoil is reached. The top-most few inches of the surface soil is gray or dark gray, depending on the amount of organic matter it contains. Below this is a pale-yellow or yellow loamy sand extending to the yellow sandy clay or heavy sandy loam subsoil. In most places, below a depth ranging from 36 to 48 inches, the material is pale-yellow light sandy loam or loamy sand.

Included with this deep phase in mapping, are small spots of Norfolk sand and of Norfolk sandy loam. In some of the lower situations, the surface soil is darker than it is in the more representative areas. An important included variation is one in which the topsoil is light-gray or creamy-white sand and the subsoil material is pale-yellow or grayish-yellow, slightly mottled with gray, sandy loam or sandy clay. Such a body occurs along United States Highway No. 301 near Latta, and a few similar small spots occur here and there.

Norfolk sandy loam, deep phase, occupies a larger acreage than typical Norfolk sandy loam and is one of the more extensive soils in Dillon County. It occurs in close association with Norfolk sand and Norfolk fine sandy loam. Some of the larger and more important areas lie to the south and west of Latta and between Latta and Oak Grove. Several bodies are northwest of Latta along the Clio branch of the Atlantic Coast Line Railroad, and a number occur along the west side of Little Pee Dee River for a considerable distance above and below Dillon.

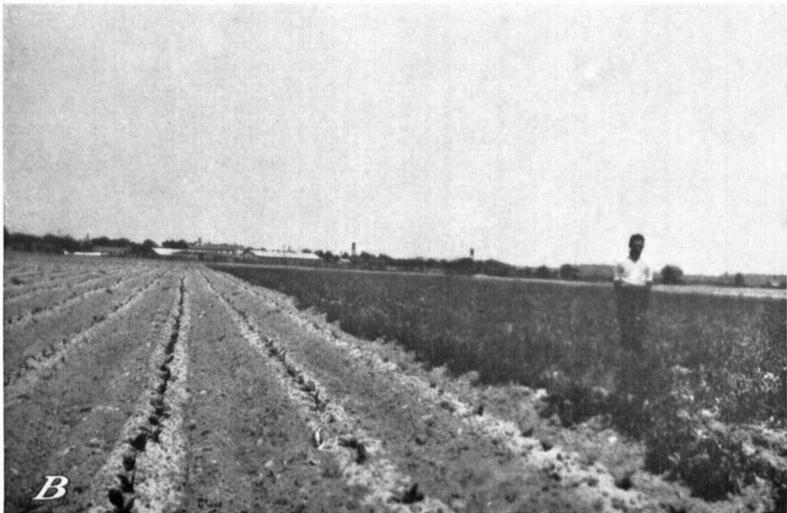
The surface relief of this deep soil ranges from nearly level to very gently rolling. Norfolk sand occurs on top of some of the low ridges, the slopes of which are occupied by the deep phase of Norfolk sandy loam. Natural drainage is good, in places excessive, particularly in areas where the sand covering is thickest. As a rule, this deep soil does not suffer seriously from drought during normal seasons or even during seasons of light rainfall.

Probably 80 percent of this phase of Norfolk sandy loam is under cultivation, and some of it is in a rather high state of improvement. This soil produces a good quality of bright tobacco, but the yields are lower than on the Marlboro and Norfolk sandy loams. It is also a good soil for the production of truck crops. It is used to considerable extent for growing cotton and corn, but yields of all the crops grown are less than on the good sandy loam soils of the county. Peanuts would do well. The soil is deficient in organic matter and under cultivation requires heavier applications of commercial fertilizer than are applied to the Marlboro and Norfolk sandy loams, to produce the same crops.

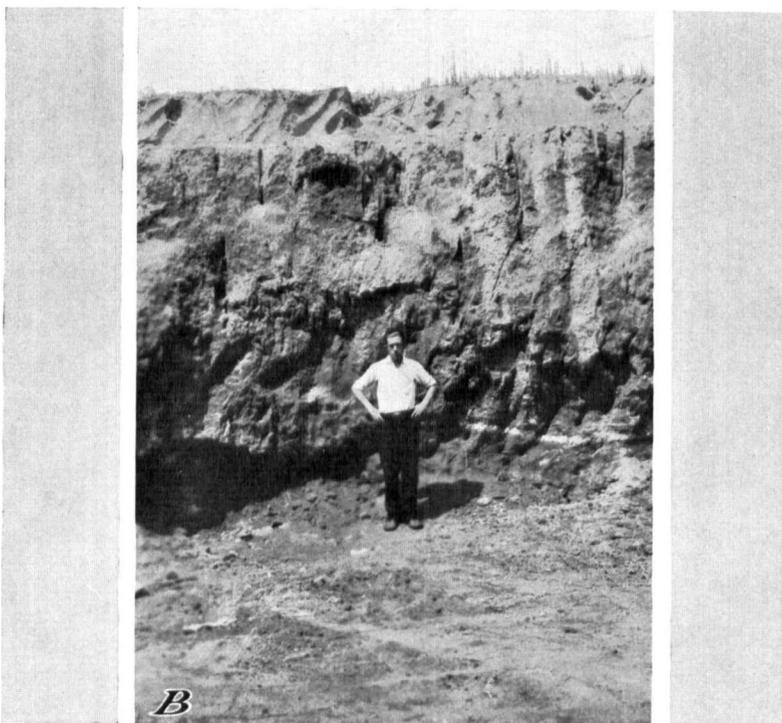
**Norfolk fine sandy loam.**—The 6- to 8-inch surface layer of Norfolk fine sandy loam consists of gray fine sand or light fine sandy loam. In virgin areas there is a thin covering of dark-gray or, in some places, nearly black leaf litter and other organic matter. Under cultivation the dark covering becomes mixed with the soil and is soon disseminated, but where thickest it adds somewhat to the color of the soil, tending to make it darker than it otherwise would be. This layer is underlain, to a depth of 12 or 14 inches, by yellowish-gray or pale-yellow fine sand or light fine sandy loam. Beneath this and extending to a depth of 30 inches, the subsoil material is yellow fine sandy clay loam or fine sandy clay, in which the sand particles are very fine. Between depths of 30 and 60 inches the material is pale-yellow or yellow fine sandy clay, mottled with light red and gray, and in many places it is somewhat lighter in texture and brittle.

Several variations are included within mapped areas of this soil, the most important of which is the thickness of the sandy covering over the heavy subsoil. The surface soil ranges in thickness from 4 to 20 inches, but it averages about 12 inches. In a few small spots on knolls and slopes the surface soil has been eroded, and the yellow subsoil is exposed. The texture of the surface soil is, in general, fine sand, but it may grade into medium sandy loam or into very fine sand. There are a few darker spots occupying low inextensive areas. Here the subsoil, which in most places is fine sandy clay, is clay loam, in a few places resembling the subsoil of Marlboro fine sandy loam but having a good Norfolk soil covering. Some small areas of Norfolk fine sandy loam, deep phase, are included with the typical soil in mapping, but where the areas are of sufficient extent they are shown as a deep phase of this soil.

Norfolk fine sandy loam is not so widely distributed as Marlboro fine sandy loam but may be considered among the more important soils. The largest areas are in the southeastern part of the county, southeast of an imaginary line drawn from Lake View to Fork. In this section Norfolk fine sandy loam, together with its deep phase, is the most important agricultural soil.



*A*, Excellent crop of tobacco growing on light-colored well-drained soil. *B*, Young tobacco plants and peas on Norfolk sandy loam near Dillon.



*A*, Young pines on Norfolk sand. *B*, Deep cut in Ruston sandy loam, along Little Pee Dee River, near Dillon.

Norfolk fine sandy loam somewhat resembles Marlboro fine sandy loam, but the surface soil is lighter gray and, in most places, thicker, and the subsoil is lighter in texture and scours from the auger and plow better than the Marlboro soil. In many places Norfolk fine sandy loam grades into Norfolk sandy loam, which it resembles in all characteristics except texture.

The surface relief ranges from nearly level to undulating and very gently rolling. This soil occupies the higher positions, in many places the low broad ridges. Because of the loose open character of the surface soil, the gently sloping surface relief, and the fine sandy clay subsoil, natural drainage is good. The subsoil retains moisture well, and the soil seldom suffers from drought. In fact it has been reported that if the subsoil is well supplied with moisture at time of planting, this soil will generally carry a crop to maturity without further rainfall. In only a few low places is ditching necessary.

This is a very good soil and one which can readily be built up by using proper methods of fertilization and cultivation to a very productive soil. It is not considered quite so desirable as Marlboro fine sandy loam, but it compares well with that soil. It is well suited to general farming to such crops as cotton, corn, and tobacco, and it is also a good soil for truck crops. It is a more desirable soil than Norfolk sandy loam, and probably 90 percent of the land is under cultivation and highly improved. This is one of the best soils in the coastal-plain section of the Carolinas for the production of bright tobacco, peanuts, and cotton. It is also an excellent soil for the growing of early truck crops.

**Norfolk fine sandy loam, deep phase.**—The 6- or 8-inch surface layer of the deep phase of Norfolk fine sandy loam consists of gray fine sand or loamy fine sand. In virgin areas, the soil material, to a depth ranging from 2 to 4 inches, is darkened by organic matter. The material in the surface layer is loose and open in structure, and it works very readily into a loose mellow seed bed. Under cultivation the dark layer is soon mixed with the plow layer. Between depths of 8 and 20 inches the material is pale-yellow fine sand or loamy fine sand, which is also loose and open in structure. The subsoil, which occurs between depths of 20 and 48 inches, is yellow or pale-yellow fine sandy clay, in which the sand particles are very fine. In many places, the subsoil material becomes lighter in texture in the lower part.

The chief variation in areas of this deep soil is in the thickness of the fine sandy covering over the heavier material. This covering may range from 18 inches to 3 feet in thickness. In a few small bodies the fine sand extends beyond a depth of 3 feet, and if these areas had been extensive, this deep sandy material would have been mapped as Norfolk fine sand. Most of the deepest areas occur on low ridges. In a few places the heavy subsoil is sticky fine sand which grades into heavier material at a greater depth. Some small low-lying spots are included with this deep soil in mapping, and in such areas the surface soil is darker than typical and the subsoil has a leached appearance. In a few places the soil approaches very fine sand in texture.

This deep soil is very similar to the typical soil and differs from it only in the greater depth to the underlying heavy material. It occurs chiefly in the southeastern part of the county in association with the

typical soil. A few areas are 2 miles southeast of Oak Grove and at a few other points.

This deep soil, like typical Norfolk fine sandy loam, occupies the higher parts of the country in which it occurs, and the surface relief ranges from nearly level to very gently rolling. In many places the deep phase occupies a position slightly higher than the typical soil, occurring on rather broad nearly flat-topped ridges from 3 to 4 feet higher than the adjoining land. Because of the surface features and the loose open character of the soil material, natural drainage is good, and it is somewhat excessive where the surface soil is thickest. This soil will hold a remarkable quantity of moisture, and most of the rain falling on it is taken into the soil and retained by the heavy subsoil. Very little ditching is necessary, but in many places deep ditches are cut across low ridges to drain included depressions occupied by other soils that are poorly drained.

Fully 85 percent of this land is cleared and in highly improved farms. It is a good soil, productive, and responds very well to fertilization, so that it can readily be built up and made more productive. Most of it is used for general farm crops—cotton, corn, and tobacco—but it is without doubt one of the good soils for early truck crops, although it is not used to any extent for this purpose here. It is an early soil and can be worked under a very wide range of moisture conditions. It produces a good quality of tobacco, but yields are not so large as on the typical soil or on Marlboro fine sandy loam. Peanuts would do well.

**Norfolk sand.**—The surface soil of Norfolk sand, to a depth of 4 or 6 inches, consists of gray medium sand or slightly loamy sand. In wooded areas there is enough organic matter in the topsoil to give it a dark-gray or brownish-gray color. Under cultivation the organic layer is soon disseminated, and the whole soil shows a marked deficiency in humus. This soil is so loose and open in structure that cultivation is very easy, and a good seed bed can be obtained with little effort. Between depths of 4 or 6 inches and 10 inches, the soil material is light-gray or grayish-yellow medium sand which is also loose and open in structure. From 10 to 36 inches the material is light-yellow or pale-yellow medium sand which does not contain enough clay to impart a sticky feel. From 36 to 72 inches the material is pale-yellow medium sand which, below a depth of 48 inches, in places becomes nearly white.

This soil, as a whole, is uniform, but there are some variations worthy of mention. In a few places, generally along the lower slopes, the soil is coarser in texture, approaching a coarse sand. In other places, the soil changes gradually into Norfolk fine sandy loam, deep phase. In a few lower lying areas the surface soil is darker than typical on account of a greater accumulation of organic matter. In some places, chiefly where this soil borders Norfolk sandy loam, deep phase, there is sticky sand or light sandy loam at a depth ranging from 36 to 48 inches.

Norfolk sand is extensive, covering 17,856 acres. Much of it adjoins the stream courses, as low flat-topped ridges rising only a few feet above the surrounding country. Such areas occur along the east side of Little Pee Dee River as a low ridge, from one-fourth to 1 mile wide, extending nearly across the county. A large area extends from the vicinity of Oak Grove in a northwest direction for a distance of 4

or 5 miles. Smaller bodies are scattered throughout various parts of the county.

The surface relief ranges from level to very gently rolling, and this soil occupies the higher parts of the country in which it occurs. Because of the loose open character of the soil material, natural drainage is excessive, but some low areas are wet a part of the year. Many of these low areas have a leached or almost white appearance which is also characteristic of areas associated with St. Lucie sand. In such places the land, at a distance, looks almost like snow, but the soil material a few inches below the surface takes on a yellow color. No ditching of the typical soil is needed, but in some places, where some poorly drained soils are associated with Norfolk sand, deep ditches are cut across areas of this soil.

Norfolk sand is associated with Norfolk sandy loam and its deep phase, and to less extent with Norfolk fine sandy loam, deep phase. In places where the sand soil occupies the higher lands, many of the low poorly drained depressions and larger areas are occupied by Portsmouth loam or Plummer fine sandy loam.

Norfolk sand is a soil of low productivity. Fully 85 percent of the land is cleared, or has been cleared, and at one time farmed, but there are now large areas lying idle and growing up to young short-leaf and longleaf pines, where fires are kept out. Where cultivated, this soil is devoted mainly to cotton and corn, with a very small area in tobacco, but yields are very low and seldom pay for the cost of production, under the usual methods of culture. Such crops as sweetpotatoes, peanuts, rye, and watermelons do fairly well and can be made to pay, with proper methods of fertilization. This soil is better suited to trucking than to general farming, and if cultivated at all it should be devoted to this line of farming. Frequent light applications of fertilizer will feed the plants in the most economical way on this soil. However, all things considered, it probably would be better to allow this soil to grow up to pines, as these trees grow rapidly if fires are kept under control (pl. 2, A).

**Orangeburg fine sandy loam.**—The 4- to 6-inch surface layer of Orangeburg fine sandy loam consists of gray or brownish-gray fine sand or fine sandy loam. From a depth of 4 or 6 inches to a depth of 12 inches, the soil material in most places is yellowish-gray or pale-yellow loamy fine sand. Between depths of 12 and 30 inches the subsoil is deep-red friable and crumbly fine sandy clay, and between depths of 30 and 48 inches it is red or yellowish-red fine sandy clay, in places mottled with red and yellow or containing deep-red and yellow streaks. The soil is easy to cultivate, as it is mellow and friable, and a good seed bed can be obtained without difficulty.

The chief variation occurring within areas of this soil is in the thickness of the sandy covering over the sandy clay. This covering may range from 4 to 24 inches in thickness, but it averages about 14 inches. In numerous places on knolls, ridge tops, and gentle slopes the surface soil may be entirely lacking, owing to erosion, and the red subsoil exposed, giving the cultivated fields a spotted appearance. These "clay" spots range in size from a square rod to one-fourth acre, and the soil material in them is heavy and much harder to work than the surrounding sandy soil. The subsoil is more pronounced red than the Ruston subsoil.

Orangeburg fine sandy loam is an inextensive soil and therefore of minor agricultural importance, but it was separated from Ruston fine sandy loam, which it closely resembles, because of its pronounced red subsoil. It occurs chiefly north of Hamer along Hayes Swamp close to the State line. Some smaller areas are associated with the Ruston soils.

The surface relief is undulating or gently rolling, and the soil occupies a position on knolls, ridges, and gentle slopes comparable to those occupied by the Ruston and Cuthbert soils. Because of its surface features and sandy character, natural drainage is good, and the land seldom suffers from drought. The character of the subsoil is such that water moves through this layer readily, but the clay content is sufficient to make it retentive of considerable moisture.

This is a good farming soil, and between 85 and 90 percent of the land is cleared, farmed, and highly improved. It is devoted chiefly to cotton and corn, and it returns good yields of these crops. A very small percentage of the land is devoted to oats. In other counties of South Carolina, where this soil is extensive, it ranks well with Marlboro fine sandy loam and is probably slightly more productive than Norfolk fine sandy loam.

**Ruston fine sandy loam.**—The surface soil of Ruston fine sandy loam, to a depth of 4 or 6 inches, consists of gray or slightly brownish gray light fine sandy loam or loamy fine sand. In wooded areas the topmost 2 or 3 inches of this layer are dark grayish brown, owing to the presence of organic matter. Beneath this layer and extending to a depth of about 10 inches, there is a thin layer of yellowish-gray fine sand, and between depths of 10 and 16 inches the material is yellowish-red fine sandy clay loam. Between depths of 16 and 36 inches is the upper subsoil layer consisting of friable and crumbly fine sandy clay. The lower part of the subsoil, between depths of 36 and 48 inches, consists of light fine sandy clay loam and is somewhat lighter in color and texture than the upper part.

On account of its sandiness, this soil is easy to cultivate, and a good mellow seed bed can readily be obtained.

The layer of fine sandy surface material may range in depth from 4 inches to somewhat more than 2 feet, and the deeper material would have been mapped as a deep phase, if it had been of sufficient extent. In a few places the surface soil is very fine sandy loam, but this variation also was too limited in area to be mapped separately. In numerous small spots on knolls and slopes the surface soil has been entirely eroded, and the reddish-brown fine sandy clay exposed. The reddish-brown material, which is exposed, in many places is as heavy as a clay loam and approaches in texture the subsoil of the Cuthbert soils.

This soil somewhat resembles Cuthbert fine sandy loam in color, but the subsoil is not so heavy, and the coloring of the subsoil is more uniform. The soil also resembles Orangeburg fine sandy loam, but the color of the subsoil is not so deep a red as that of the Orangeburg soil.

Ruston fine sandy loam is a fairly extensive soil rather widely distributed over the county. It occurs most extensively about 2 miles north of Hamer, in the vicinity of Little Rock, and between Little Rock and Dillon. Small bodies are in various other parts. Most of

the bodies range from a few acres to one-fourth square mile in area.

In most places the surface relief is very gently rolling. Much of the soil occupies the tops of knolls, low ridges, or the gentle slopes leading down from the ridge to a nearby stream course. Some bodies occupy more elevated positions. Because of the surface features and sandy character of this soil, natural drainage is good. The subsoil is retentive of moisture, and the soil does not suffer from drought during normal seasons. None of the land requires ditching.

Probably 85 percent of Ruston fine sandy loam is cleared, cultivated, and in well-improved farms. It is a good soil and well suited to a wide range in crop adaptation. The chief crops are cotton and corn, and some tobacco is grown. Although this soil is used chiefly for general farm crops, it is well suited to truck crops, but the trucking industry is not developed on it as yet. As a whole this soil may be considered among the best of the county, and it compares favorably with Marlboro fine sandy loam, although it may not be quite so desirable.

**Ruston sandy loam.**—The 6- or 8-inch surface layer of Ruston sandy loam consists of light brownish-gray light sandy loam of medium texture. Between depths of 8 and 12 inches the soil material in most places is yellowish-gray or pale-yellow sand. The subsoil, between depths of 12 and 30 inches, is light reddish-yellow or yellowish-red sandy clay. Between 30 and 60 inches, the material is light sandy clay loam of lighter color and texture than the upper part of the subsoil. Because of the light texture of the surface layer, this soil is easy to cultivate, and a good mellow seed bed is readily obtained.

There are numerous variations within areas of this soil, but the most marked is the varying thickness of the sandy covering over the red subsoil. This sandy surface soil may range from 4 inches to 2 feet in thickness. In numerous places the surface soil has been eroded from small knolls, ridge tops, and slopes, and the red subsoil is exposed. This gives the cultivated fields a spotted appearance. These "clay" spots are small, ranging from a square rod to one-half acre in extent, and they make up only a small proportion of the total area of this soil.

Ruston sandy loam is much less extensive than Ruston fine sandy loam, and, because of its small area, it is of minor importance. It is widely distributed. The most important areas are 4 miles northwest of Little Rock and 2 miles southwest of Minturn. Several bodies are near Hamer, and some are scattered along and bordering Buck Swamp.

In most places the surface relief is very gently rolling, and much of the soil is on knolls, low ridges, and gentle slopes, occupying the highest positions of the landscape. Many bodies lie parallel to the streams (pl. 2, *B*). Owing to the favorable position, surface relief, and sandiness of this soil, natural drainage is good. The subsoil is sufficiently heavy that moisture is retained fairly well, and the soil in few places suffers from drought during normal seasons.

This is a good soil but is unimportant because of its small extent. It is used for cotton, corn, and tobacco, and it compares favorably with Marlboro sandy loam in productivity and crop adaptation. It is also suited to truck growing but is not used for this line of farming at present.

**Ruston sand.**—The 6-inch surface layer of Ruston sand consists of gray medium sand or loamy sand. In virgin areas there is a darker layer an inch or two thick in the topmost part of this layer, but under cultivation this becomes mixed with the soil and is soon disseminated. Between depths of 6 and 14 inches the soil is yellowish-brown or brownish-yellow medium sand, and between depths of 14 and 40 inches it is yellowish-brown or yellowish-red sand which, in many places, becomes slightly sticky below a depth of 28 inches. At a depth of 40 inches and continuing to a depth of 72 inches, the material in most places is reddish-yellow sand, but in some places it is light sandy clay. The soil is easy to cultivate, and a good seed bed is readily obtained.

In texture, this soil is uniform, but in color there is considerable variation. The surface of many cultivated fields has a reddish-brown tinge, and red sand may occur at a depth of 8 inches below the surface. In other places the red color does not appear above a depth ranging from 24 to 28 inches. In some included areas the lower part of the subsoil is yellowish red and slightly sticky. In many places the surface soil is identical with that of Norfolk sand, but the subsoil everywhere shows some red to a depth of 3 feet.

This soil is distinct, but it is of minor importance because of its small extent. It is not so widely distributed as Ruston fine sandy loam. The largest bodies lie along the east side of Little Pee Dee River, between the large areas of Norfolk sand and swamp. The other bodies are scattered, and most of them border areas of Norfolk sand and change gradually to that soil.

The surface relief ranges from nearly level to gently undulating or gently sloping, and in some places this soil occupies low ridges or slopes bordering the stream courses. Because of the loose open character of the soil and its position, natural drainage is excessive, and the soil suffers somewhat from drought.

This is a soil of low agricultural value, but it is slightly more productive than Norfolk sand. Fully 85 percent of the land is cleared and has been farmed at some time, but a large proportion of it has been allowed to remain idle for several years at a time. Under present economic conditions it would probably be best to devote this soil to forestry, as it would soon grow up to pines, if fire were kept under control. The areas under cultivation are devoted mainly to cotton and corn. Very little tobacco is grown, as yields are low, although the quality of the leaf is good. Heavy fertilization is necessary for all crops, but this is hardly profitable for general farm crops. If the land is to be cultivated, it should be devoted to such crops as watermelons, sweetpotatoes, peanuts, and other special crops. Rye will do better than other small-grain crops.

**Cuthbert fine sandy loam.**—The surface soil of Cuthbert fine sandy loam, to a depth of 6 or 8 inches, consists of brown fine sandy loam or grayish-brown fine sand. In wooded areas the topmost 2 or 3 inches are darkened by organic matter. Under cultivation this dark layer becomes mixed with the surface soil to plow depth and its identity is soon lost through mixing and oxidization. Beneath this layer and continuing to a depth of 12 inches, most of the material is grayish-brown or brownish-red clay loam, and from a depth of 12 inches to a depth of 24 inches the subsoil is red or yellowish-red stiff

tough heavy clay which scours off the auger and the plow with a bright shiny surface. Between depths of 24 and 48 inches the material is tough yellow, red, or mottled yellow and red, clay which shines and is smooth as it comes off the soil auger. When dry this heavy subsoil material breaks into angular fragments or crumbles into rather coarse fragments.

Variations from the typical soil are as follows: In a few small areas, the surface soil consists of medium-textured sandy loam. Probably the largest body of this kind is about 3 miles west of Little Rock, associated with the typical soil. The sandy surface soil ranges in thickness from 6 to 20 inches, but it everywhere rests on a heavy tough subsoil. In numerous places, on knolls or ridge tops or on slopes, the sandy surface material has been entirely removed by erosion and the heavy red or yellow clay exposed. Such spots range in size from a square rod to one-fourth acre, and they cause the fields to have a spotted appearance, which is characteristic of this variation. The subsoil, especially the lower part, is, in many places, mottled red and yellow, and in some places shows purple tints. In some places the subsoil is yellow instead of the more common red. The sandy surface soil is easy to cultivate, but the "clay" spots are tough and hard to plow. Another characteristic feature of this material is that small spots of it appear mixed with other soil types. Such spots range from a few square feet to several square rods in extent, and show up most pronouncedly in fresh road cuts, where a good sectional view can be obtained. Spots of this kind are most common in Marlboro fine sandy loam, and they occur to less extent in Norfolk fine sandy loam and some other soils. In places where the combined areas of the spots make up the major part of the total area, the material is mapped as Cuthbert fine sandy loam, but in places where the spots are only a minor part of the total area they are disregarded and are included with the predominating soil. These spots appear to be most extensive in the country between Floyd Dale and Fork.

Cuthbert fine sandy loam differs from the Ruston and Orangeburg soils in having a much heavier subsoil which is not so red as the Orangeburg subsoils.

This is not an extensive soil, but it is distinct, the most characteristic feature being the tough heavy subsoil. The largest areas lie between Floyd Dale and Fork, and bodies occur about 2 miles northwest and 3 miles west of Little Rock. Numerous scattered small areas occur in association with the Marlboro and Norfolk soils.

The surface relief is undulating or gently rolling, and many areas occupy elevated positions and slopes adjacent to stream courses. Much of this soil occupies the most elevated positions or slopes, and, because of its position and surface slope, natural surface drainage is good, although water moves through the subsoil very slowly. There is more run-off than from soils having open subsoils, and this accounts, in part, for the erosion of the surface soil that has taken place. This soil does not suffer from drought in normal seasons and will withstand rather long periods of dry weather.

This is a good, strong, productive soil. Fully 85 percent of the land is cleared, farmed, and highly improved, and is devoted to cotton, corn, tobacco, and some small grain, chiefly oats. Good yields are obtained. This soil compares favorably with the Ruston,

Orangeburg, and Marlboro fine sandy loams, but in this county it is not quite so desirable as those soils, because of the included clay spots and the spotted and variable condition of the soil as a whole.

**Kalmia sandy loam.**—The 3-inch surface layer of Kalmia sandy loam in virgin areas is gray light sandy loam or sandy loam of medium or fine texture. Underlying this and extending to a depth of 14 inches, the material is, in most places, very pale yellow sand or loamy sand, generally of medium texture, but it may be fine in some places. Between depths of 14 and 28 inches, the subsoil is yellow or pale-yellow friable crumbly sandy clay, and between depths of 28 and 40 inches it is pale-yellow and gray sand or sandy clay, containing different degrees of gray mottling.

The amount of organic matter in the surface layer is variable, as is also the depth to the sandy clay. The lower subsoil layer may grade into sand at a depth of 30 inches, or the sandy clay may extend to greater depth. In places, the surface layer may be fine sandy loam. In some areas the subsoil is somewhat red, as on the Pee Dee River terrace. This red-subsoil phase would have been mapped as Cahaba sandy loam, had it been sufficiently extensive.

This is a soil of limited extent and minor agricultural importance. It compares favorably with Norfolk sandy loam of the upland, but it is more variable and in many places has a darker surface soil. It occurs on the terraces along Little Pee Dee River, Pee Dee River, and Buck Swamp. A number of areas, too small to map separately, are included with areas of Myatt sandy loam, with which this soil is associated in many places.

The surface relief is level or gently undulating. This soil is a terrace formation and is of alluvial origin. Natural drainage ranges from fair to good under normal conditions, but during high-water stages much of the land is subject to flooding.

Probably 10 percent of the land is under cultivation. Most of the cultivated part is on the Pee Dee River terrace in the southwestern part of the county. All this soil could be cultivated in normal seasons, but danger of floods makes farming risky on some of it during high-water stages. Under existing conditions it would probably be best not to clear any more of this land but to allow it to remain in timber or to utilize it as pasture, to which it is fairly well suited. Where cultivated it is devoted chiefly to cotton and corn, and fair yields are obtained.

**Kalmia sand.**—In virgin areas of Kalmia sand, the 4- to 6-inch surface layer consists of dark-gray or, in some places, nearly black sand, loamy sand, or light sandy loam, overlying which, in wooded areas, is a covering of grass or pine needles. This layer in wooded areas generally contains a small amount of organic matter. Between depths of 6 and 18 inches the material is yellow or pale-yellow medium sand underlain by medium sand which becomes increasingly lighter in color to a depth of about 30 inches, where it is in most places nearly white and has a leached appearance. Where cultivated the dark-gray covering soon becomes mixed with the yellow subsurface material giving cultivated fields a lighter color than the virgin soil.

In some places this soil includes a soil which is almost white at the immediate surface, even in virgin areas, because the rainfall has washed down the organic matter from the  $\frac{1}{2}$ - or  $\frac{1}{4}$ -inch surface

covering leaving the pure quartz sand particles on the surface. The upper subsoil layer is locally gray or nearly white sand, whereas in many other places, between depths of 8 and 18 inches, there is a layer of coffee-brown material having a sandy loam texture, which, if cemented would make an organic hardpan. Such spots were not large enough to show as a separate soil, but they are rather common and are scattered throughout the soil areas, probably representing a level at which the water once stood. In a few places, sandy clay is present in the subsoil at a depth of 30 inches, but where such soil occurs in large enough areas, it is mapped as *Kalmia sandy loam*. This soil is not mapped in so much detail as the upland soils, because some of the islands were difficult or almost impossible to reach, on account of wet marshlands and streams.

This soil occurs only on terraces, and it is comparable with Norfolk sand of the uplands. It probably averages somewhat darker in color, because of its lower position and consequent higher content of organic matter, and it is also more variable in color and texture.

Most of it lies along Little Pee Dee River and between Ashpole Swamp and the swamp along Lumber River. Many islands in the marshes are composed of this soil, although in some places it joins the upland soils as flat bench lands. Many of the islands are difficult of access, as they are not cleared or in any way improved. This is an inextensive soil of minor agricultural importance.

The surface relief is level or very gently undulating. Many areas of this soil occupy low ridges within areas of *Myatt sandy loam* with which it is associated in many places. Much of the land ranges from only 1 to 3 feet higher than *Myatt sandy loam*, but this difference in elevation is sufficient to make a difference in soil conditions. In times of the highest floods, most of this land is submerged, but in normal times it is fairly well drained, although the water table lies within 3 feet of the surface in some places. Water moves freely through the soil as long as there is an outlet for it.

Probably not more than 5 percent of the land is cleared and farmed, and most of the cultivated areas adjoin the upland soils, extending out into the bottoms as low bench lands. Some of the islands have been farmed in times past, but most of them have been abandoned because of low fertility and difficulty of access. Most of the old fields have been allowed to grow up to second-growth pine. Most of the land is timbered, but the best timber has been cut, and the greater part of that remaining is second-growth trees. Where utilized for farming, the land is devoted chiefly to cotton and corn, but yields are low and farming is unprofitable. Under present economic conditions it would probably be best to let all this land revert to timber by protecting the young trees from fire, in order to insure a good stand.

**St. Lucie sand.**—The 1- or 2-inch surface layer of *St. Lucie sand* consists of gray medium sand containing a very small amount of organic matter which imparts the gray, or salt-and-pepper, color to the material. Below the surface layer, the entire soil, to a depth ranging from 40 to 48 inches, is loose incoherent white sand ranging from medium to coarse in texture. In many places, where the gray surface layer is intact, a  $\frac{1}{4}$ - to  $\frac{1}{2}$ -inch layer of light-gray or white sand, from which the organic matter has been washed out by rains,

is on the immediate surface. In many places, where the gray layer is lacking, the soil throughout is white, and the surface of the land looks like snow.

As a whole, this soil is rather uniform, practically the only variation from typical being a slight yellow or brown coloring in places in the subsoil.

This is a very inextensive soil occurring only in a few small areas, but it is so pronounced and so entirely different from the other soils that it was considered wise to recognize it as a distinct soil type. It occurs chiefly along stream courses or bordering swamps. Most of the areas are along Little Pee Dee River between Dillon and Huggins Bridge. A small area is along Ashpole Swamp, and one lies northeast of Little Rock along Little Pee Dee River.

The surface relief is undulating or gently rolling, and in many places the soil occurs as low sand dunes or ridges, ranging from 4 to about 12 feet in height. The sand is loose and open in structure, and natural drainage is excessive.

This is a nonagricultural soil, and none of it is used for farming. Most of the land is covered with a sparse growth of scrub oaks and a few scattered pines. It should be allowed to remain in such timber as now grows on it, since it has no value for agriculture.

#### LIGHT-COLORED POORLY DRAINED SOILS

The group of light-colored poorly drained soils includes Dunbar fine sandy loam, Dunbar sandy loam, Dunbar clay loam, Coxville clay loam, Coxville fine sandy loam, Coxville sandy loam, Leaf clay loam, Leaf clay loam, well-drained phase, and Cahaba clay loam. The soils of the Dunbar and Coxville series are residual upland soils derived from unconsolidated coastal-plain materials. The soils of the Leaf and Cahaba series occur on the second bottoms and terraces, and the materials have been washed mainly from the coastal-plain soils and transported and deposited by the streams. These soils now occupy a position sufficiently high to preclude ordinary overflow.

The surface soils of the soils of this group range from sandy loams, fine sandy loams, and very fine sandy loams to clay loams. They are all either light colored—being gray, drab, or grayish brown—or have only a thin covering of dark material which is soon disseminated under cultivation. They are somewhat deficient in organic matter but contain more organic matter than the soils of the light-colored well-drained group. They are in general medium or strongly acid in reaction. The subsoils are heavy, most of them clay loams and clays, and they are stiff and compact. They are very retentive of moisture and retain fertilizers well.

These soils occupy 31.4 percent of the total area of the county and are well distributed. They are level or only slightly sloping, and they occupy a drainage position midway between the light-colored well-drained soils and the dark-colored poorly drained soils. Drainage may be described as poor or fair. Many areas of the Coxville soils occupy flats or slight depressions, and in wet weather some water may stand on the surface or may be within a foot of the surface.

The Leaf and Cahaba soils are developed on terraces and are nearly flat and, as they are heavy, require drainage before they can be cultivated. Some areas of these soils may be flooded in times of unusually high water. All the soils in this group require some ditching before farming can be very successfully carried on. Some dredging of the streams has been started, and the plan is to do more dredging. When this is accomplished, it will somewhat improve drainage conditions in these soils.

Owing to their heavier character, these soils are more difficult to work than the Norfolk soils. In many places the heavy subsoil is so close to the surface that it is turned up by the plow. The clay loams are especially hard to work, and care must be exercised to plow them when moisture conditions are most favorable, otherwise clodding will result.

The native forest growth was mostly longleaf and shortleaf pine, with some gum, maple, oak, and hickory. The Dunbar soils are highly improved, but Coxville clay loam and Leaf clay loam have been but little improved and are for the most part in standing timber. In fact, many of the forests of the county are on these soils.

In agricultural value, these soils may be considered strong productive soils where properly drained. The light-textured members of the group are used to some extent for cotton and corn, but little tobacco is grown. Oats are grown rather extensively. The lighter textured better drained members of the group are well suited to general farm crops. The heavy soils, in their present condition, are best suited to grasses for grazing and wild hay. When drained, cleared, and well cultivated they will make good tame-grass hay and corn land.

Cotton on Dunbar fine sandy loam will yield one-half bale an acre, corn about 30 bushels, and oats from 30 to 40 bushels. Considerable oats are grown on Coxville fine sandy loam.

**Dunbar fine sandy loam.**—The 6- to 8-inch surface layer of Dunbar fine sandy loam consists of gray or grayish-brown fine sandy loam. Over the surface of virgin areas is a dark-brown organic layer, from one-half to 1 inch thick, composed of leaf litter and grass roots. When the land is cultivated this dark layer becomes mixed with the surface soil. A subsurface layer, ranging from 4 to 8 inches in thickness, consists of pale-yellow, yellow, or grayish-yellow fine sand or fine sandy loam. This second layer is everywhere lighter in color and in most places somewhat lighter in texture than the surface layer. The subsoil, to a depth of 28 inches, is light-yellow clay loam or heavy sandy clay, mottled with red and gray. In cuts, when this material is dry it generally breaks into angular fragments. Between depths of 28 and 48 inches the material is yellow clay or clay loam, containing many red and gray mottlings. The material in this layer is stiff, but it is plastic when moist. In many places the subsoil has a peculiar color, a slight pale greenish-yellow tinge, which seems to be characteristic of this soil. It is most noticeable between depths of 16 and 28 inches.

Dunbar fine sandy loam includes several variations, chief among which are areas having a very fine sandy loam surface soil. Here the soil approaches a silt loam and is smooth to the touch, owing to

the high content of very fine sand. Had such areas been more extensive, they would have been mapped as Dunbar very fine sandy loam. The most extensive bodies of this kind are near Sellers,  $1\frac{3}{4}$  miles south of Oak Grove, and  $2\frac{1}{2}$  miles northwest of Little Rock. Numerous areas occur in other sections, associated with the typical soil.

The depth of the fine sandy loam covering over the heavy subsoil is variable, ranging from 4 to 18 inches. The light subsurface layer is missing in areas having the more shallow surface soil, but in some areas where the surface soil is thickest, the subsurface layer is 12 inches thick. The subsurface layer may consist of fine sand, very fine sand, or light fine sandy loam. The extent of mottling in the deep subsoil differs from place to place, but it is nowhere so pronounced as in Coxville fine sandy loam.

This is the most extensive soil of the Dunbar series, and it is rather widely distributed in the section occupied by the Marlboro soils. It is associated with both the Marlboro and Norfolk soils but seems to be more extensive in those sections where the Marlboro soils occur. The largest areas are near Reedy Creek from 4 to 8 miles west of Dillon. Latta is located partly on this soil. Bodies are in the vicinity of Hamer and scattered over different parts of the county.

The surface relief is level, gently sloping, or very gently undulating. In many places the soil occupies long very gentle slopes where the gradient is no more than 2 feet in 100. Many areas occupy positions midway between Marlboro fine sandy loam of the uplands and the Coxville soils of the low more poorly drained places. Because of the almost level surface relief and the heavy subsoil, natural drainage is somewhat deficient. The land is not so well drained as Marlboro fine sandy loam but is somewhat better drained than Coxville fine sandy loam. Ditching is necessary or advisable in many places before best results in farming can be obtained, but in numerous areas crops are successfully grown without ditching.

Compared with Norfolk fine sandy loam, the surface soil is heavier in texture and more brown, and the subsoil is also heavier. The land lies at lower elevations than either the Marlboro or Norfolk soils. In a few places the subsoil is tough heavy yellow clay, and where this variation occurs the soil would have been mapped in the Craven series, had it been of sufficient extent.

Dunbar fine sandy loam is a good, strong soil which is productive in adequately drained areas. It is well suited to most of the general farm crops grown in this section. Cotton and corn are the crops most extensively grown, but the acreage in tobacco is small. Oats are grown by many farmers and do well. The land is fairly well suited to grasses, and it provides better pasture than most of the other fine sandy loam soils. Cotton yields range from one-third to two-thirds bale an acre, depending on the quantity of fertilizer applied; corn produces from 25 to 30 bushels; and oats yield from 30 to 40 bushels.

Probably 50 percent of this soil is cleared and in improved farms. It is not so easy to cultivate as the Norfolk soils, but little difficulty is experienced in getting a good seed bed. The soil in the included very fine sandy loam areas tends to "run together" if cultivated when too wet, and some clods may form, but these can be pulverized with little difficulty.

**Dunbar sandy loam.**—The surface soil of Dunbar sandy loam consists of a 6-inch layer of gray or grayish-brown medium-textured

sandy loam underlain by grayish-yellow or pale-yellow loamy sand or light sandy loam, which continues to a depth of 14 or 16 inches. In virgin areas there is a covering, less than an inch thick, of dark organic matter, over which there may be a thin layer of leaves, pine needles, and other debris. Under cultivation this dark layer becomes mixed with the surface soil and is soon disseminated. The subsoil is yellow or drab-yellow clay loam or clay, which, in many places, is slightly mottled, yellow being the predominating color. From a depth of about 20 inches to a depth of 48 inches, the lower part of the subsoil is light clay loam of a pale-yellow color, mottled with red and gray, the red being least pronounced. In many places the lower subsoil layer is lighter in texture than the layer above. This soil is easy to cultivate, and a mellow seed bed can be obtained without difficulty.

The thickness of the sandy covering ranges from 6 to about 24 inches but averages about 14 inches. Where this covering is thin, the light-colored subsurface layer may be lacking. In some places the subsoil is sandy clay loam, but the material in this layer is generally heavier than that in the Norfolk subsoils. In the lower lying areas of this soil, the surface soil, in many places, is very dark.

This soil is not so extensive as Dunbar fine sandy loam. As with the fine sandy loam, it is associated chiefly with the Marlboro soils and to some extent with the Norfolk soils. The largest areas are 7 miles east of Dillon, 3 miles west of Latta, and near Mallory Crossroads, and numerous smaller bodies are in other parts of the county.

This soil occurs in level or very gently sloping areas, and because of its low position natural drainage is somewhat deficient. It occupies a position between the Marlboro or Norfolk soils of the upland and the Coxville soils of the lower more poorly drained areas. Some ditching is necessary or advisable in most places before best results in farming can be obtained, but some areas are being farmed without ditching.

About 40 percent of the land is cleared, farmed, and fairly well improved, and it may be considered a fairly good soil when properly drained. It is devoted chiefly to cotton and corn, and a little tobacco is grown. Grass and small grains do fairly well, although little use is made of this soil for grazing.

**Dunbar clay loam.**—The topmost part of the surface soil of Dunbar clay loam consists of a 2-inch layer of grayish-brown heavy very fine sandy loam or fine sandy loam. It is underlain, to a depth of about 12 inches, by rather stiff and heavy yellow clay loam. In virgin areas there may be a covering of organic matter from one-half to 1 inch, overlying which there may be a thin covering of leaves and pine needles. Under cultivation this dark layer becomes mixed with the surface soil. Between depths of 12 and 30 inches the material is heavy, tight, and compact yellow clay which may contain small red splotches. In the lower part of the latter there may be some gray mottlings. From a depth of 30 to a depth of 48 inches the material is yellow clay somewhat mottled with red and gray splotches, but it is not so strongly mottled as is Coxville clay loam.

Because of the heavy character of the surface soil, this soil is hard to cultivate, and difficulty is experienced in getting a good seed bed. Heavy livestock and tools are necessary in properly handling this soil.

Several variations from typical are included with mapped areas of this soil. The surface covering of very fine sandy loam or fine sandy loam may range from 2 to 4 inches in thickness, but it is, in all places, sufficiently thin that the plow turns up the heavy clay loam. In many places the fine sandy covering is entirely lacking, and the clay loam appears at the immediate surface. There is also some variation in the amount of mottling. Most of the mottling occurs only in the subsoil below a depth of 2 feet, and is everywhere much less than in Coxville clay loam. The subsoil is invariably heavy, tight, and very retentive of moisture. The dark organic layer varies somewhat in thickness, but in few places is it more than 2 inches thick, and it may be entirely lacking. Immediately below the grayish-brown very fine sandy loam surface layer there may be a 1- or 2-inch layer of drab or leached-out yellow material which is lighter in color than the surface layer, but in many places this thin layer is lacking.

This is not a very extensive soil. Some of the largest areas are in the vicinity of Dillon, west and northwest of that place, west of Latta, and bordering Hilson Bay. Many smaller bodies are in various parts of the county.

This soil has about the same texture as Coxville clay loam, but it differs from that soil in that the soil throughout shows much more yellow coloring and less mottling. It is a somewhat better drained soil than the Coxville soil, as it occupies a position ranging from 1 to several feet higher than that soil.

The areas of Dunbar clay loam are practically level. This soil occupies low flat areas chiefly throughout that part of the county where the Marlboro soils occupy the higher positions. Much of it occurs as an intermediate soil between the Marlboro and the Coxville soils, or between Dunbar fine sandy loam and Coxville clay loam. In many places a narrow belt of Dunbar clay loam occurs around the margin of Coxville clay loam areas, where better drainage conditions obtain, but most of these bodies are too narrow to be separated on the map. Because of its low position, level surface relief, and heavy character, this soil has deficient natural drainage, and ditching is necessary before cultivated crops can be successfully grown. Numerous ditches have been dug wherever the land is farmed.

Probably less than 30 percent of the land is cleared and farmed, but this is a good, strong soil and when drained is suited to small grains, hay, and pasture. Without drainage about the only use that can be made of it is for pasture. It is used to some extent for cotton and corn, but very little tobacco is grown. Hay and pasture are the best crops for this soil. Good permanent pastures could readily be established and maintained, and they would have a much larger carrying capacity than pastures on the sandy soils.

**Coxville clay loam.**—The topmost layer of Coxville clay loam consists of a 2- to 4-inch layer of gray or dark-gray clay loam, much of which contains a rather high percentage of fine sand and very fine sand. In many virgin areas there is a ½- to 1-inch covering of black organic matter composed of leaf litter, grass roots, and other organic material, and in wooded areas this material is covered by a thin layer of pine needles. Under cultivation the dark layer becomes

mixed with the surface soil. Between depths of 4 and 8 inches the soil material is gray heavy clay loam which is slightly mottled. The upper part of the subsoil between depths of 8 and 24 inches, is gray and yellow clay splotted with some red, the amount of red, in most places, increasing with depth. This part of the subsoil is very heavy and tough, and water does not penetrate it readily. Between depths of 24 and 48 inches, the material is strongly mottled with gray, yellow, and red. It is stiff and heavy but in most places too wet to crack or crumble.

Because of the heavy character of the surface soil, this soil is hard to cultivate and a good seed bed is obtained only with considerable difficulty. When plowed too wet the soil runs together and puddles, and on drying large clods and lumps form when the land is worked.

Some variations occur in this soil, but as a whole it is uniform in most respects. The surface soil is in places very fine sandy loam or silt loam to a depth of a few inches, but this covering is generally so thin that the heavy material beneath is turned up by the plow. The silt covering is more common than the very fine sand, and it may extend in places to a depth of 8 or 10 inches. However, such areas are not sufficiently extensive to warrant separate mapping. The dark covering of the surface soil may range from 1 to 6 inches in thickness, but in many places it is entirely lacking, and the heavy subsurface material extends to the immediate surface. The extent of mottling is somewhat variable, and in a few places no mottling occurs within a depth of 2 feet. In such places the material is somewhat lighter in texture and almost white. A heavy-loam phase occupies a few depressions, especially where the higher lying Cuthbert soils adjoin. This soil is grayish brown to a depth ranging from 6 to 10 inches, and it is underlain by heavy yellow clay containing some mottling below a depth of 2 feet. Although this soil is distinctly different from the typical soil, it is of insufficient extent to be mapped as a separate soil. Areas of this heavy-loam phase lie one-fourth mile north of Dothan, 4 miles northwest of Little Rock, and near Hamer.

Coxville clay loam is one of the more extensive soils of the county, and it is quite widely distributed over practically all parts, except on the terraces. It occurs in areas ranging from a few acres to several square miles in extent. Large bodies are west of Dillon. This soil occupies all of Big Bay and Hilson Bay, and fairly large areas lie west of Sellers, west of Latta, and northwest of Hamer.

This soil occurs only in low flat areas or depressions, and some tracts are locally called "bays." The land lies from 2 to several feet lower than the adjoining better drained soils. The areas are everywhere flat or depressed, with but little fall. Because of this and the heavy character of both surface soil and subsoil, natural drainage is poor, and ditching is essential before cultivated crops can be grown. In most places, the water table is from 1 to 3 feet below the surface, and in many places water covers the surface for a long time after heavy rains.

This soil occupies depressions and flats throughout the county, but it is probably most typically developed where the Marlboro soils occupy the adjoining highlands. It also occurs in places where areas of Norfolk soils occupy the higher lands, but in such places the subsoil may be slightly lighter in texture. In many places Cox-

ville fine sandy loam or Coxville sandy loam occurs as a narrow belt or border to this soil, forming a gradation from the sandy lands of the higher country. The arrangement of the soils in many places is as follows: Marlboro fine sandy loam on the highest places, Dunbar soils occupying the lower very gentle slopes, and Coxville soils in the flats or depressions. A difference in elevation of the land ranging from 1 to 2 feet, in many places means the difference between the Dunbar soils and the Coxville soils. This is due in part to differences in prevailing drainage conditions and other features. In many places Coxville clay loam occupies flats or depressions, from which drainage is cut off by low ridges. When these ridges are cut by drainage ditches there is in general sufficient fall leading into still lower areas or into stream channels.

This soil is somewhat similar to Dunbar clay loam, but it differs from that soil in that it is predominately gray, whereas the Dunbar soil has a yellow subsoil. The Coxville soil is much more strongly mottled.

Probably less than 10 percent of this soil is cleared, drained, and farmed. The chief crops are cotton and corn, but the land is better suited to hay and pasture, for which it is used to a small extent. In fact, the only use that can be made of the undrained land is for pasture and hay. The drained areas are used to some extent for small grain, chiefly oats, but the acreage is small. When cleared, ditched, and properly cultivated this makes a good, strong, productive soil, but since it is so difficult to work and needs drainage, very little of it is improved. Some ditches have been constructed to drain the land, but most of the drainage ditches in the county drain into these low places where the ditches end, bringing onto this soil drainage waters from adjoining higher lands. The construction of ditches in this soil is difficult.

This will doubtless be one of the last soils to be improved and may well be left in forest until needed for agriculture. Much of the timber still standing is on this soil.

**Coxville fine sandy loam.**—The surface soil of Coxville fine sandy loam, to a depth of 6 or 8 inches, consists of brownish-gray or gray fine sandy loam which, in virgin areas, has a  $\frac{1}{2}$ - to 1-inch layer of dark organic matter covering the surface, and in wooded areas this material is covered with leaves and pine needles. Under cultivation the dark organic layer is soon mixed with the surface soil. Underlying this layer and extending to a depth of 12 inches, the soil material is gray fine sandy loam, fine sand, or light sandy clay loam; between depths of 12 and 20 inches it is gray, slightly mottled with yellow or brown, clay loam; and between depths of 20 and 40 inches it is gray, yellow, and red mottled clay identical with the lower subsoil layer of Coxville clay loam. This soil is comparatively easy to cultivate—much easier than Coxville clay loam.

The texture of the surface soil ranges from fine sandy loam to very fine sandy loam, in some places even approaching silt loam. The depth to the clay loam ranges from 6 to 24 inches, but the average depth is about 12 inches. The upper subsoil layer in some places is nearly white fine sandy clay loam, and the lower subsoil layer is in most places heavy. The dark organic covering may range from a mere film to 6 inches in thickness and from nearly black to gray in color.

This soil is not so extensive as Coxville clay loam, but it is widely distributed and occurs in nearly all parts of the county. It is most extensive in those sections where the Norfolk soils occupy the higher levels. Much of it occurs along drainageways, where there is no well-defined stream course, and around the heads of stream courses. Some of the larger areas are 2 miles west of Oak Grove, 1 mile north of Sellers, about Little Rock and Hamer, and in the southeastern part of the county.

This soil occupies flats, saucer-shaped depressions, or low land along intermittent streams. Most of the soil is a gradation from Dunbar fine sandy loam to Coxville clay loam, and many areas are too small to map. In many places the soil forms a narrow belt bordering areas of Coxville clay loam. Most of it lies a little higher than the clay loam, but there may not be more than a foot or two difference in the elevation of the two soils. Because of its low position and heavy subsoil, natural drainage is poor, and in most places ditching is necessary before cultivated crops can be successfully grown.

Probably about 20 percent of the land is cleared, ditched, and under cultivation. Cotton, corn, and oats are the chief crops. The soil seems well suited to oats, and many small fields are devoted to this crop. When drained this is a fairly good soil, but, because of its low position and poorly drained condition, little of the land has been improved. Neither tobacco nor truck crops are extensively grown, but the land is well suited to the production of strawberries, cabbage, turnips, cucumbers, and other truck crops.

**Coxville sandy loam.**—The 6- to 8-inch surface layer of Coxville sandy loam consists of dark-gray or gray medium sandy loam which in virgin areas may have a ½-inch covering of dark organic matter, over which, in wooded areas, there may be a thin layer of pine needles. On cultivation this dark layer becomes mixed with the surface soil. Underlying this layer and continuing to a depth of 12 inches, the material is gray sandy clay which gradually becomes heavier with depth, and between depths of 12 and 20 inches it is heavy sandy clay slightly mottled with yellow and gray. Between depths of 20 and 40 inches the material is heavy clay loam or clay strongly mottled with yellow, gray, and red. The land is easy to cultivate, and a good seed bed can be obtained without difficulty.

The thickness of the surface soil over the heavy clay loam ranges from 8 to 24 inches, and in some places the upper subsoil layer consists of gray or almost white sand which is only slightly mottled. This soil is very similar to Coxville fine sandy loam, but the surface soil is coarser.

The surface relief is that of level flat areas or saucerlike depressions, and the soil may occur as isolated spots or as narrow strips along drainageways and intermittent streams or about the heads of streams. Because of the position of this soil and because of its heavy subsoil, natural drainage is deficient, and ditching is essential before cultivated crops can be successfully grown.

Coxville sandy loam is not nearly so extensive as Coxville fine sandy loam or Coxville clay loam, but it is rather widely distributed. Areas occur 2 miles southwest of Latta, one-half mile northeast of

Dillon, at the east end of Catfish Bay, bordering Indigo Bay, and in numerous other places throughout the county.

Probably about 20 percent of the land is cleared, ditched, and farmed. Cotton, corn, and oats are the chief crops. Oats seem to do very well. The only use that can be made of the undrained areas is for pasture and hay. This is considered a fairly good soil when drained.

**Leaf clay loam.**—The 4-inch surface layer of Leaf clay loam consists of gray clay loam slightly mottled with yellow. In virgin areas it is covered by a ½-inch layer of leaf litter and other dark-colored organic matter, mixed to some extent with the clay loam, giving it a dark-gray—in some places nearly black—color. In many wooded areas, there is a thin layer of oak, gum, and other leaves and pine needles over the surface. Under cultivation the organic matter becomes mixed with the surface soil. Between depths of 4 and 16 inches the material is gray or yellowish-gray very stiff, heavy, and compact clay mottled with yellow. Between depths of 16 and 48 inches the material is yellow clay containing gray mottlings and a few red specks, the number of red specks increasing with depth. On drying, the subsoil material, in some places, breaks into medium-sized angular fragments, but this occurs in only a few places, as the soil is in general sufficiently moist to prevent cracking and crumbling. Because of its heavy character, this soil is very difficult to cultivate, and a good seed bed is hard to obtain.

This soil is fairly uniform in character. In one variation, which occurs in numerous places in wooded areas, the organic layer is lacking, and the heavy clay comes to the surface. There is also some variation in the amount of mottling throughout the soil, the most pronounced mottling occurring in the lowest lying areas where drainage is most deficient. A difference of 2 or 3 feet in elevation makes considerable difference in drainage conditions and the degree of mottling. The highest elevations might be called islands within areas of Leaf clay loam, and they have been separated and mapped as a well-drained phase of this soil.

Leaf clay loam is developed on terraces, and it closely resembles Coxville clay loam which occurs in the low places throughout the upland part of the county. Leaf clay loam occurs only on the large terrace along Pee Dee River in the southwestern part. It is included in an area about 4 miles wide extending parallel with the river for a distance of about 8 miles. In this section Leaf clay loam is the predominating soil, and it is here associated with its well-drained phase, Cahaba clay loam, Kalmia sandy loam, and Okenee loam.

The surface relief is level, and the land looks very much like flat-woods country. Because of the level or flat surface of this soil and its very heavy character, natural drainage is deficient, and ditching is necessary before cultivated crops can be grown with success. Water moves very slowly through the surface soil and subsoil.

Little of the land is cleared and cultivated. Where farmed, it is devoted to cotton and corn. It is a strong soil but is hard to work, and from an agricultural point of view is of but little present importance. It is largely timbered and, together with Coxville clay loam, includes the largest timbered areas in the county. Oak, hickory, gum, and pine grow on this land, and under present economic conditions it is probably best that it should remain in timber.

**Leaf clay loam, well-drained phase.**—The 4-inch surface layer of the well-drained phase of Leaf clay loam consists of gray or yellowish-gray clay loam or light clay loam, having a thin covering of organic matter on the immediate surface in wooded areas. Over the organic layer there may be a scattering of oak and gum leaves and some pine needles. Between depths of 4 and 10 inches the soil material is yellow clay, and between depths of 10 and 18 inches it is stiff, heavy, and compact light-yellow clay slightly mottled with gray. From a depth of 18 inches and continuing to a depth of 40 inches, the material is yellow, gray, and brown mottled clay containing some specks of red.

Soil of this phase is very similar to the typical soil, but it lies a little higher, occupying islands in the Leaf clay loam areas, is better drained, has more yellow color throughout, and is not so strongly mottled. Its somewhat better drainage renders it a little more desirable for farming than the typical soil. However, the greater part of the land remains in timber, and this is the best use for it, under present economic conditions. Where farmed it is hard to cultivate. It is devoted to the same crops as the typical soil.

This soil occurs only on the large terrace along Pee Dee River in the southwestern part of the county. Had it been of sufficient extent, it would have been mapped as Kalmia clay loam.

**Cahaba clay loam.**—Virgin areas of Cahaba clay loam consist of light-brown or yellowish-brown light clay loam to a depth of about 4 inches. Over the immediate surface there is a dark thin layer of organic matter, and this is covered with grass in open areas and with leaves and pine needles in wooded tracts. When the land is cultivated this dark layer is soon mixed with the surface soil. Between depths of 4 and 8 inches the material is brownish-red clay loam or heavy sandy clay, and between depths of 8 and 18 inches it is brownish-red or red clay slightly mottled with yellow. The lower part of the subsoil, extending from a depth of 18 to a depth of 40 inches, is reddish-yellow clay mottled with gray and red. As this soil is heavy, it is difficult to cultivate, and a good seed bed can be obtained only with difficulty.

The surface soil is eroded in places, leaving the brownish-red or red heavy subsoil exposed. The color of the surface soil ranges widely, from yellow, where areas border the well-drained phase of Leaf clay loam, to red on some of the knolls and well-drained areas. This soil somewhat resembles Cuthbert fine sandy loam of the uplands in that it has a rather heavy subsoil, but it differs from that soil in origin, as this is a terrace formation.

This is a very inextensive soil. It occurs only in several small areas on the terrace along Pee Dee River, mainly on the side of the terrace next to the river.

Areas of Cahaba clay loam are undulating or very gently rolling. This soil is characterized by greater relief than the other terrace soils, and because of this, natural drainage ranges from fair to good. In times of very high water some parts of the land are covered with water. Water moves through the soil rather slowly, and there is heavy run-off which accounts for erosion even on gentle slopes.

Probably 75 percent of the land is cleared and has been farmed, but some fields are now lying idle. Where cultivated it is devoted to cotton and corn, and fair yields are obtained. This is a soil that could be

made to support good grass, and it would make good grazing land if permanent pastures were once established. That part not cleared is in standing timber or stumps. The timbered areas should be allowed to remain in timber, and no more land should be cleared at present.

#### DARK-COLORED POORLY DRAINED SOILS

The group of dark-colored poorly drained soils includes Portsmouth loam and Okenee loam, which have black surface soils, and Myatt sandy loam and Plummer fine sandy loam, which have dark-gray surface soils. The dark color in many places continues to a depth ranging from 2 to 3 feet. The subsoils are sandy or sandy clays of gray, drab, or, in many places, almost white colors. These soils are high in organic matter and are strongly acid.

These soils are fairly well distributed throughout the county, in areas ranging in size from a few acres to more than 1 square mile. All the areas are low lying, level, or depressed; and natural drainage is poor. They occupy a position a few feet lower than the soils of the light-colored poorly drained group and are among the most poorly drained soils in the county. In many places water stands on the surface.

Only a very small percentage of the land is cultivated, most of it still being in native timber which consists of pine, gum, maple, ash, bay, and some cypress in the wettest places. In many places there is a dense, tangled undergrowth of gall berry, vines, and briars.

The land is so poorly drained that ditching is essential before cultivated crops can be grown. At present it could supply considerable grazing in open places, if there were sufficient livestock raised to take advantage of the pasture. The land is for the most part so situated that it could be drained with large ditches, and when agricultural need arises it can be made good land. When drained and cleared, it would be well suited to corn, hay, and such special crops as cabbage, onions, and celery.

**Portsmouth loam.**—The 10-inch surface soil of Portsmouth loam in virgin areas consists of black or nearly black loam very high in organic matter. This layer is covered with leaves, pine needles, moss, and debris. When cultivated this material becomes mixed with the surface soil, but the black color persists and everywhere extends below plow depth. The subsoil to a depth of 14 inches is black, brown, or rust-brown loam or sandy loam, containing splotches resembling iron stains. This layer, which in many places is coffee-colored, may be entirely lacking, and the material is black like the surface soil. Between depths of 14 and 28 inches the material in most places is almost white or gray sand or sandy clay, and between depths of 28 and 48 inches it is sticky sand or light sandy clay, which is gray or almost white and slightly mottled.

This soil varies considerably with respect to thickness of the black surface soil, which ranges from 6 to 18 inches, and in the texture of the subsoil, which ranges from sand to sandy clay. In most places, there is little mottling in the subsoil, and everywhere there is considerably less than in the Coxville soils. The texture of the surface soil ranges from fine sandy loam to sandy loam and loam, but the loam areas are most extensive, the others being of insufficient extent to map separately.

This soil resembles Plummer fine sandy loam to some extent, but it is somewhat darker, and the organic-matter layer is thicker. Compared with Okenee loam, Portsmouth loam is not so deep a soil, and it occurs in depressions and poorly drained areas in the upland, whereas Okenee loam is developed on terraces.

Portsmouth loam is extensive and widely distributed. Some of the largest areas are in Colson Bay and Sand Ridge Bay. A number of bodies lie between Dillon and Lake View. All these are composed of the typical soil. Some areas of a sandy phase border Sand Ridge Bay, and other sandy bodies are 4 miles east of Dillon and near Carolina School. In fact, nearly every area of Portsmouth loam is surrounded by a narrow margin of sandy loam which represents a gradation from the upland sandy soils to the heavier loam of the interior of the area or bay. In many places Portsmouth loam occupies low areas surrounded by bodies of the Norfolk soils.

Areas of this soil occupy level or slightly basinlike positions, and natural drainage is poor. Much of this soil occurs about the heads of streams, where there is some seepage, and in large and small saucer-shaped bodies, some of which are called bays. In many of the bays water stands on the surface much of the time.

Only a few small patches of this soil are under cultivation. Before any of the land can be farmed it is essential that drainage ditches be installed. Most of the land is in timber, brush, vines, and water-loving shrubs. In many places the dense growth forms a jungle. When this land is cleared and farmed it is well suited to the growing of such crops as cabbage, onions, celery, corn, and grasses. Probably not more than 1 percent is now farmed and devoted chiefly to corn, with some cotton, but cotton allows too rank a growth of weeds. Under present economic conditions it is probably best to leave this soil in its undrained condition and protect the trees growing on it. There is not much danger of fire here because the ground is moist.

**Plummer fine sandy loam.**—In virgin areas the 3- or 4-inch surface layer of Plummer fine sandy loam consists of dark-gray—in some places nearly black—light fine sandy loam, sandy loam, or loamy sand. The immediate surface is covered with leaves, pine needles, and moss. The dark soil is so shallow, as a rule, that, if the land were plowed, the underlying material would be turned up. Between depths of 4 and 24 inches the material is light-gray or nearly white loamy sand or loamy fine sand, and between depths of 24 and 40 inches it is loamy sand, light sandy clay, or sticky sand, which may be slightly mottled in a few places. In most places the texture is fine.

The chief variation from typical is in the thickness of the dark surface material, which may range from 2 to 8 inches. There may be an absence of sandy clay in the subsoil, and in such areas the sand or fine sand extends to a depth of at least 40 inches.

This soil somewhat resembles Portsmouth loam, but it is not quite so dark and the organic layer is not so thick as in that soil. Most of it is associated with the Norfolk soils, commonly with Norfolk sand, and it occupies the low depressions within areas of these soils.

This soil is not so extensive as Portsmouth loam. Areas occur in Indigo Bay, in Donohoe Bay, and bordering Catfish Bay. Numerous small bodies are in the northern part of the county.

Areas of this soil are level or lie slightly lower than the surrounding soils. In some places this soil occurs about the heads of streams, and, because of its position, natural drainage is poor. The land cannot be farmed until it has been ditched. Water stands on the surface much of the time, and the soil itself is always moist or wet. It is difficult to maintain ditches in this soil, because the sandy material caves in from the sides of the ditches.

Practically none of the land is under cultivation but is mostly in timber, brush, and water-loving shrubs. Some fairly good pine and a little gum grow on it. Under present economic conditions it would not be advisable to clear the land, as it is not needed for agriculture, and if cleared and farmed it would have to be classed as a soil of low fertility. It should remain in timber. If cleared it could be used for pasture.

**Myatt sandy loam.**—The 10-inch surface soil in virgin areas of Myatt sandy loam consists of gray, dark-gray, or almost black sandy loam containing a high percentage of organic matter. Over the surface, in many places, is a covering of leaves, pine needles, and debris, which is mixed with the surface soil when cultivated. Between depths of 10 and 16 inches the material is gray or grayish-yellow sandy clay, and between depths of 16 and 24 inches it is yellowish-gray, in some places brown, mottled sandy clay or clay loam. Extending from a depth of 24 to a depth of 32 inches, the material is gray or yellow sticky sand, and between depths of 32 and 40 inches it is, in many places, pale-yellow or rust-yellow sand.

A number of variations from typical occur in mapped areas of this soil, some of which are worthy of note. The chief variation is in the thickness of the black surface soil, which may range from 6 to 20 inches. This dark layer may be underlain by a stratum of grayish-yellow sand before the sandy clay is reached. In a few places the sand extends to a depth of about 30 inches, although sandy clay occurs in some part of the soil profile. The degree of mottling is variable, but nowhere is it so pronounced as in the Coxville soils.

This soil occurs on the terraces. It is somewhat like the Plummer soil, but its surface soil is darker. It somewhat resembles Okenee loam, but it is lighter in color and slightly better drained.

This is not an extensive soil, but it is one of the important soils developed on terraces. It occurs chiefly on the terraces along Little Pee Dee River, Buck Swamp, and Lumber River, and smaller bodies lie along some of the minor streams. In many places the soil occurs as islands in the swamps, where bodies of Okenee loam intervene between it and the upland. In other places it occurs between the upland and the swamp as low bench land.

The surface relief is level or nearly so, and the soil, in many places, occupies a position between the swamp and low ridges of Kalmia soils. During normal seasons or seasons of low rainfall, drainage is fair, but a part of the land is subject to flooding, and, if the land were cultivated without protection, crops would be in danger of being flooded by the heavy summer storms. This soil lies a little higher than Okenee loam, but ground water is present in most areas within a depth of 3 feet from the surface.

None of this soil is farmed at present, although in times past some efforts have been made to cultivate small tracts which have been

abandoned and allowed to grow up to second-growth pine. Ditches are necessary before farming can be undertaken, and it would be necessary to dike against flooding, but under present economic conditions the land is not needed for farm crops, and the best use that can be made of it is to allow it to remain in forest. The trees are somewhat scattered, and a good stand of grass has established itself, which would provide fair grazing.

**Okenee loam.**—The surface soil of Okenee loam, in virgin areas, consists of black loam or heavy loam about 14 inches thick, over the surface of which is a covering of leaves, pine needles, moss, and other organic material. Underlying this and continuing to a depth of 24 inches the material is also dark-colored loam but is somewhat lighter in color than the surface soil, although it is very high in content of organic matter. Between depths of 24 and 40 inches the material is drab or bluish-gray plastic clay loam.

The chief variation in mapped areas of this soil is in places where the surface soil is sandy loam instead of loam. In such places, the subsoil is somewhat lighter in texture than typical. Another variation occurs, in which the dark surface soil extends to a depth ranging from 24 to more than 30 inches. In some places the clay loam subsoil gives way to sandy clay or sticky sand. These variations, however, are not of sufficient extent to warrant separate mapping.

This soil is somewhat similar to Myatt sandy loam, but the layer of dark material is thicker, and the land is more poorly drained.

Okenee loam is an extensive soil occurring on terraces and, to some extent at least, along most of the larger streams. Its main occurrence is between the higher terraces and the upland in shallow depressions, or, in some places, between the main body of the swamp and the upland. Many bodies lie between islands in the marsh and the upland, and some of these areas resemble old stream bottoms. In many places this soil could be considered a part of the swamp, but it lies a little higher, although it, in places, is probably part of the first bottom. One of the largest areas is 3 miles south of Oak Grove, and one is 2 miles west of that place. These two areas lie between the main terrace along the Pee Dee River and the upland. Smaller bodies occur along Little Pee Dee River, Buck Swamp, and Reedy Creek. Some of the sandy areas lie 3 miles west of Oak Grove, 2 miles east of Dillon, along Little Pee Dee River, and near Floyd Dale.

This soil occupies low, level, and naturally very poorly drained land, and most of it is in a semiswampy condition, with water a few inches deep standing on the surface much of the time, or having ground water only a few inches below the surface. The land is so low that in draining much of it, it would be necessary to deepen or at least straighten the main stream channel along which it occurs. Drainage is necessary before any part of the land can be farmed.

Only a few small patches have been cleared and cultivated, and these are devoted chiefly to corn. If the land were cleared and sufficiently drained, it would be a good, productive soil, well suited to corn, hay, and such special crops as cabbage, onions, and celery. Present economic conditions, however, are such that this land is not needed for farming, and prospective returns would hardly justify the expense necessary to clear and drain it. In many places there is a dense jungle of water-loving shrubs, vines, and briers, which

would make clearing difficult and expensive. Much of the land is still in timber, and it should be allowed to remain in its present condition or, if cleared, should be seeded for pasture.

#### MISCELLANEOUS SOILS AND MATERIALS

Most of the materials grouped under this classification are of alluvial origin and are therefore more or less mixed in texture. They are mainly fine sandy loams, loams, or heavier materials. They are dark brown or black, and in many places the dark color extends to a depth of several feet. The content of organic matter is high, and all the surface soils show acidity to some degree. The subsoils are in general lighter in color and heavier in texture than the surface soils. Land of these classifications is scattered throughout the county as first bottoms along the numerous streams. Along the small drainageways the strips are narrow, but along the larger streams they range in width from one-half to more than three-fourths mile.

The land is low, level, and naturally very poorly drained. It might well be classed as swamp land, as water stands on the surface much of the time, and the soil is in an almost continual state of saturation.

Practically all this land is timbered. Little of the native timber has been cut, on account of the difficulties in removing the logs and wood. The trees growing in these bottoms are a few pine, cypress, gum, ash, maple, bay, and poplar. In many places there is an undergrowth of reeds, with some gall berry, huckleberry, and other water-loving vegetation. In some places the growth forms a jungle, but in many places where cypress grows and the water is deepest there is no undergrowth.

These soils are naturally rich and fertile but, because of their wet swampy condition, have no present agricultural value. If the need ever arises, land of this kind can be drained by dredging the stream channels, and it can then be cleared and highly improved. In a few places, large drainage canals have already been dug, not so much to drain the swamp land as to assist in drying the low-lying adjoining lands which are a little higher, but in which drainage is still deficient. Dredging in this way helps to supply drainage for the Coxville and Portsmouth soils.

**Congaree silty clay loam.**—The 8- or 10-inch surface layer of Congaree silty clay loam consists of brown or grayish-brown silty clay loam which is in some places slightly mottled with rust brown or gray. It is underlain by light-brown or slightly yellowish brown silty clay loam or clay loam extending to a depth of 36 or more inches. Mottlings of gray, rust brown, and, in some places, reddish brown are common in this layer. The subsoil is somewhat micaceous, indicating its origin from piedmont material carried down by Pee Dee River. The surface of the soil in most places is covered with a thin layer of leaves and pine needles. In many places lenses of sand occur in the subsoil, and a sand bed may be present at a depth of 3 feet or more below the surface. The thickness of the surface soil is variable, and the brown soil in some places extends to a depth of 2 feet or deeper. There is considerable variation in the amount of mottling, both in the surface soil and subsoil.

Congaree silty clay loam occurs only on the first bottoms along Pee Dee River in the southwestern part of the county. These bottoms range from one-fourth to one-half mile in width and are bordered by the extensive terrace occupied by Leaf clay loam.

The land is either level or slopes very gently toward the stream. It is cut by numerous sloughs and old stream channels. Because of its low first-bottom position, this soil is naturally poorly drained. In many places, during floods, water covers the entire area to a depth ranging from 3 to 6 feet. During long dry spells, when the stream is confined to its channel, the bottom becomes sufficiently dry for a person to walk over much of it, except where sloughs prevent.

None of the land is cleared, farmed, or improved in any way. It is all timbered, chiefly with gum, oak, maple, bay, cypress, and some pine, and the stand is fairly good. The bottoms are in many places fairly open, and in many places there is no undergrowth, owing probably to frequent high-water periods. Under present economic conditions there is no call for this land to be improved. In fact, improving the soil would be very difficult, if not impossible, unless the main channel of the river were straightened. Clearing would be expensive, and the cost of improvement would be greater than would be justified. It is much better to allow the timber now growing on the land to remain for future use, cutting only such trees from time to time as are mature. If drained and reclaimed, Congaree silty clay loam would produce large yields of corn, oats, and hay. It is naturally the strongest and most fertile soil in the county.

**Muck.**—The surface soil of the material mapped as muck consists mostly of organic matter having different quantities of mineral matter mixed with it. The organic matter consists of fairly well decayed leaves, grass, roots, moss, and woody matter, in which the outline of the original material can sometimes still be seen. In most places the organic layer extends to a depth of 18 or more inches and is underlain by dark-drab, almost black, or bluish-black loam containing a high percentage of organic matter. This layer extends to a depth of about 24 inches and grades into gray and yellowish-gray light clay loam or sandy clay, which in places shows different degrees of mottling.

Muck is somewhat variable, the chief variation being the thickness of the organic layer, which may range from 12 to 30 inches. There is also some variation in the quantity of mineral matter in the surface material, but this material is everywhere so rich in organic matter that, when dry, it will burn readily. The deep subsoil is also variable in texture and may range from almost white sand to clay loam.

Only one area of muck is mapped. It extends from 1 to 4 miles north and northwest of Oak Grove. It is about 1 mile wide and nearly 4 miles long and forms in part the head of Catfish Creek. The area is locally known as Catfish Bay.

The muck land is low, level, or slightly depressed, or basinlike, and natural drainage is very poor. Under natural conditions water stands on the surface over most of the area, but this condition has been somewhat improved by the construction of two large drainage canals which join just southeast of the area and form Catfish Creek. Since these canals have been installed, water does not stand on the surface so long as formerly, but in the spring and after heavy rains

the surface material is very wet and, at a distance of 20 rods back from the ditch, water often stands on the surface.

Since this area of muck has been partly drained by canals, none of the land has been cleared for farming. To make farming possible, additional drainage would be required by cutting lateral ditches or by using tile drains. If adequate drainage were provided, the land would be well suited to such general farm crops as corn and hay and to such special crops as cabbage, onions, celery, and other truck crops. Clearing the land would be expensive, however, as there is a fairly heavy stand of gum, bay, maple, some oak, and scattered pine, and in many places vines, water-loving shrubs, and briars form a dense growth. Some of the best timber has been cut. Under present economic conditions this land is not needed for farming purposes, and it is probably best to allow it to remain in its present condition for the time being and to preserve the timber for future use. The canals are of service by providing outlets for drainage of the adjoining uplands. If this area of muck is ever cleared it should develop into a productive piece of valuable land. It is, however, somewhat deficient in mineral plant nutrients, especially potash and phosphorus, and also in lime.

**Meadow.**—Meadow is a mixture of alluvial and colluvial soils and might well be termed "mixed first-bottom land." It occurs along small streams and intermittent drainageways and is the result of alluvial deposits and wash from adjoining higher lands. Where streams traverse such soils as Norfolk sand, Norfolk sandy loam, deep phase, and other very sandy soils, the small bottoms are sandy, being brown light sandy loams with sandy subsoils. Where the streams traverse areas of heavy soils, such as Coxville clay loam or Dunbar clay loam, the bottoms are heavy—heavy loams or light clay loams—with rather heavy subsoils. The brown color in many places extends to a depth of 2 feet or deeper, and the material is of comparatively recent deposition. Between these two extremes, all textures may occur, depending on the character of the adjoining uplands. Meadow is extremely variable in color, texture, and structure, and no definite classification can be given it.

Meadow is not very extensive, but it is widely distributed throughout the county along the numerous small drainageways. Most of the areas range in width from a few rods to one-eighth mile, and they follow the course of the drainageway throughout its entire length until it joins larger streams which have broader, more uniform, wetter bottoms mapped as swamp.

In most places the land slopes gently toward the stream course along which it occurs, and in many places there is some seepage along the lower slopes. Natural drainage is poor, and in times of heavy rains a part or all of the bottom is flooded. In some places water stands on the surface for considerable time after rains.

All the meadow is timbered, chiefly with gum, oak, bay, and pine, and in many places there is a dense undergrowth of vines, water-loving shrubs, and briars, forming an almost impenetrable jungle.

None of the land is farmed, and there is no present need of clearing and improving this soil. Improvements would be expensive, as deepening and straightening the watercourse would be necessary, and in some places side ditches would be required. The results would scarcely justify such expense. If cleared and drained, how-

ever, this would be very productive land, but in its present condition it has no value for agriculture, except for summer pasture. It has some value for the timber it supports, and this should be allowed to remain, since it supplies firewood and also serves as windbreaks.

**Swamp.**—The term "swamp" as used in this county applies to the stream bottoms which range from about one-eighth to one-half mile in width and in which the soil varies but is somewhat more uniform than meadow. A representative area of this soil shows drab, brown, or grayish-brown loam or heavy loam, extending to a depth ranging from 10 to 20 inches. Below this and extending to a depth of 40 or more inches, in most places, is light-drab or brownish-gray loam, heavy loam, or clay loam, some of which contains lenses and layers of sand or fine sand. Many variations from typical occur, owing to differences in the character of the upland soils through which the streams pass. In places the surface soil is heavy sandy loam, whereas in other places it may be as heavy as clay loam. In some places the brown surface soil extends to a depth of nearly 3 feet. It is not uncommon to find the surface covered with a mucky layer to a depth of several inches or a foot. Differences in texture and content of organic matter could not be separated on the map, owing to variability and difficulty of access.

The most uniform areas resemble and might be classed as Johnston loam, but their wet condition and position make the term "swamp" seem more appropriate. This type of land occurs along all the fair-sized and large streams. It is most extensive along Lumber River, Ashpole Swamp, Little Pee Dee River, Buck Swamp, Bear Swamp, and Catfish Creek. Many bodies border other streams throughout the county. In some of the larger swamps are islands and bordering terraces occupied by Myatt sandy loam and the *Kalmia* soils, most of which have been outlined on the soil map, although it is probable that a number of small islands have been included with swamp because of the difficulty of access to them.

Swamp is low, level, and naturally very poorly drained land. It includes numerous old sloughs and lakes, which are always filled with water. The soil is permanently wet, and water stands on the surface much of the time, except during abnormally dry years. In times of heavy rains, the surface is covered with water from 1 foot to several feet deep, sometimes rising high enough to cover the roads that cross the swamps.

None of this land has been cleared and farmed, and in its present condition it has no value for agriculture. The timber growth consists chiefly of gum, bay, oak, maple, and scattered pine. Along a few streams large ditches or canals have been dug, not so much for the purpose of draining the swamps as to improve the drainage of the low-lying adjoining uplands and to furnish outlets for farm ditches. The canals have had the effect of improving upland drainage conditions adjacent to the swamp. They have also lowered the water table in the swamps, so that in places where the drains have been constructed a person can cross, except after heavy rains, without getting his feet wet. None of the drained swamp land has been cleared and farmed, as lateral drains would be necessary before the soil could be cultivated. The construction of these drains, together with clearing, would be very expensive and not justifiable

at present, as there would still be the danger of too much water after heavy rains.

Should this land ever be cleared and sufficiently drained, it would be productive and well suited to general farm crops, especially to corn and hay. Under present economic conditions it is best to allow the swamp areas to remain in timber. Very little timber has been cut, as it is very difficult and expensive to remove it. Where cutting has been done, it is necessary to use long cables to drag the logs out to higher land. If the mature timber only is cut, it would provide fuel for household use for many years.

#### RECOMMENDATIONS FOR THE IMPROVEMENT OF AGRICULTURE

More small grain, particularly oats, should be grown to increase the feed supply for livestock and to help provide winter grazing. Oats are valuable feed for work animals and may largely supplant the corn ration for these animals, as they can be produced cheaper than corn. Average yields are low, but they may be increased by proper preparation of the seed bed, by the selection of soils best adapted to the crop, and by proper fertilization. Appler and Fulghum are probably the best two varieties of oats for South Carolina conditions. Seed oats should be treated for smut, as this is one of the most prevalent and destructive diseases of oats, but it can readily be controlled. Oats are adapted to a wide variety of soils and should do especially well on such soils as Marlboro fine sandy loam, Coxville fine sandy loam, and Dunbar fine sandy loam.

The wheat acreage could also be increased, although average yields are very low and the soils are not so well suited to this crop as to oats. For best results wheat should be sown on well-drained heavy soils. The varieties generally recommended for South Carolina are Bluestem, Fulcaster, and Leap Prolific.

Rye is better adapted to poor sandy soils than oats or wheat and may be grown with success on Norfolk sand, Ruston sand, and the deep phases of Norfolk sandy loam and Norfolk fine sandy loam. It can also be grown on better soils, and will give better yields. Rye may be seeded with vetch with good results. If seeded in late summer or early fall it will supply good winter grazing. Abruzzi is the best variety of rye for southern conditions.

Barley is a crop not extensively grown, although the acreage of this crop might well be extended, as it makes good feed for livestock.

One of the most noticeable deficiencies in the agriculture of Dillon County is the small number of cattle and hogs kept. The average number of cattle is about one head to the farm, and on many farms there are no cattle of any kind. Many families do not use milk or butter.

Soil and climatic conditions favor the development of the livestock industry, and both beef and dairy products could be produced with success. Expensive barns are not needed, and year-around pastures can be supplied. Heavy soils, on which good permanent pastures could be established, are extensive.

Dairying could be established, and every farmer should have at least a few cows to supply dairy products for the home. Milk and butter should form part of the diet of every family. To provide a

market for the surplus products, creameries could be established and the output sold through established channels, or new cooperative selling agencies could be built up. The South offers a large market for dairy products, and there seems to be no good reason why butter and cheese should be shipped 1,000 miles into this section when it can be produced more cheaply here.

Many farm families do not produce their own meat. Large quantities of pork and other meats are shipped into the county from distant points. The hog-raising industry should be extended, at least to the extent that there will not be such a large outlay for provisions as at present. The meat bill of every family is large, and this could be greatly reduced by raising more hogs.

More attention should be given to the establishment of permanent pastures. The best permanent pastures can be established on low moist soils, such as the heavy soils of the Coxville and Dunbar series, which are extensive in this county.

Bermuda grass should be the foundation grass for most pastures. It should be grazed closely to prevent becoming tough and unpalatable. Before grass seed is sown for a permanent pasture the land should be cleared and cultivated, as a good seed bed is desirable in obtaining a good stand of grass, and there should be no shade. Carpet grass is a good grass for the moist sandy soils of the coastal-plain section. Where this grass is part of a mixture it furnishes pasture for a longer period than where Bermuda grass is grown alone. Dallis grass has the advantage of furnishing early grazing. This grass has a tendency to form bunches, but if grazed closely it will spread out and form a smooth sod. It should not be allowed to seed, as the seed is attacked by a fungus which, if eaten in great quantity by livestock will cause disease and sometimes death. Redtop, or herdsgrass, is a good grass to include in a pasture mixture on good upland soils, as it will usually last longer than 2 or 3 years. Lespedeza, or Japan clover, is a self-seeding annual legume relished by all classes of livestock. It should be included in every pasture in the State, as it furnishes good grazing in summer and early fall and has a high feeding value. The common, or Japanese, lespedeza is best suited for use in permanent pastures in this section. White clover is another legume that supplies good grazing and may well form part of a pasture mixture on the more fertile soils. For early spring and late fall grazing it is one of the most dependable pasture plants in South Carolina. Bur clover is a good annual winter and spring clover. With this clover in a pasture mixture it is possible for livestock to have almost 12 months' grazing during the year. Sweetclover is a good legume to grow, but it is not easy to establish, as the soil must be limed, the seed must be inoculated if sown on land for the first time, and it requires a good, firm seed bed. Sweetclover is a good soil builder, is deep-rooted, and is drought resistant, and it might well be tried out on a small acreage, especially by dairymen.

The following pasture mixtures are recommended for the soils of Dillon County: For dry sandy lands and uplands, Bermuda grass cuttings, and from 20 to 25 pounds to the acre of lespedeza; and for moist lowlands or bottom lands, from 8 to 10 pounds of carpet grass, 20 to 25 pounds of lespedeza, and 2 to 5 pounds of white clover to the acre.

For further information on pastures and methods of planting it would be wise to consult bulletins of the South Carolina Agricultural Experiment Station. The data here given have been taken largely from these publications.

More hay should be grown to provide rough feed for livestock. If there is a surplus, it can usually be sold to neighboring farmers. Among the crops used for hay, the most common is crabgrass. Other hay crops that can be used to good advantage are cowpeas, soybeans, oats, peas, and vetch. For emergency hay crops, millet and Sudan grass are among the best.

Peanuts should be grown more extensively, as a number of the soils are well suited to their culture. Norfolk sandy loam and Norfolk fine sandy loam, together with their deep phases, are well suited to this crop, and peanuts can also be grown successfully on Norfolk sand and Ruston sand, if special fertilization is used. Numerous other soil types are well suited to this crop. The county agricultural agent has conducted some valuable experiments which show that peanuts can be grown here with considerable success.

On four demonstrations covering 16 acres of Virginia bunch peanuts, the average production of hay was 1,108 pounds an acre, valued at \$20 a ton, and 1,497 pounds of peanuts valued at 4 cents a pound, the total value of the hay and nuts being \$70.96 an acre. The average cost, including seed, fertilizer, planting, picking, stacking, and baling the hay was \$37.78 an acre, leaving a net profit of \$33.18 an acre. Dillon County farmers have been planting Virginia bunch peanuts for about 3 years, and although the acreage devoted to this crop is not large, results on the whole have been satisfactory. The acreage should be increased.

Over large areas in this county natural drainage is deficient. It is believed that there is sufficient slope, from an engineering point of view, for practically all the poorly drained land to be readily drained, with the possible exception of the river and creek swamps. However, present economic conditions are factors which must be considered. It may be true that there is overproduction along some lines, and that no more new land is needed for cultivated crops, but there are at least two lines along which it is believed some improvement through drainage would be profitable.

As has been stated, the livestock industry should be extended, and when this is done there will be a call for more permanent pastures. Such soils as Coxville clay loam, Dunbar clay loam, and Leaf clay loam, will supply excellent permanent pastures, but some drainage should be provided, in order that best results may be obtained. Ditches should be provided to carry off the surface water after heavy rains. After the land dries sufficiently it could be plowed, seeded, and permanent pastures established. These lands would provide almost, if not quite, year-round pasture and would add greatly to the producing area of many farms. Pasture is the cheapest feed available, and with it cheap milk can be readily produced.

Other places where drainage under present conditions would be feasible are the small wet spots included in many farms, which, if left undrained, cut up the fields, making irregular patches, and are weed breeders. By the construction of small open ditches, or tile drains, many such unsightly places could be improved with little cost.

Although open ditches are effective in accomplishing drainage, it would doubtless be better and more economical in the long run if tile drains were installed, as cultivation could then proceed over all the land, and there would be no further cost, as there would be for upkeep of the ditches. There are but few tile in use, but it is very evident that their use could be extended, especially for drainage of the small areas.

Probably one of the most marked characteristics of the soils of Dillon County, as of many soils in the South, is their low content of organic matter. This is owing chiefly to the type of native vegetation and to climatic conditions and resultant rapid oxidation. In the improvement of the soils of this section, one of the first steps should be the incorporation of organic matter in the surface soil. This can best be done by growing legumes, as these plants not only supply organic matter but have the power of collecting nitrogen from the air through nodules on the roots. Through the decay of the roots and plants the nitrogen becomes available to crops. A number of legumes can be used to improve the soil and at the same time supply valuable feed for farm animals. Among these are velvetbeans, soybeans, cowpeas, and the several clovers which do well in this locality. These crops can be grown alone, to be cut for hay or grazed, or they can be planted with corn and grazed after the corn is harvested. When the hay is fed in the feed lot, the manure can be returned to the fields, and thus the soil will be enriched. Aside from supplying vegetable matter and nitrogen to the soils, the decay of organic matter helps to make the mineral plant nutrients available.

The practice of using commercial fertilizers is universal, and it is important that fertilizers containing the proper proportions and kinds of plant nutrients should be used on the different soils. It is common knowledge that soils differ in their fertilizer requirements and also that different crops require different quantities of the several plant nutrients. Complete fertilizers are commonly used, and much nitrate of soda is also used, chiefly as a side dressing or a top dressing. The fertilizer formulas most commonly used here are 3-8-3, 4-8-4, and 4-10-4.

A number of fertilizer experiments on different soil types have been conducted by the South Carolina Agricultural Experiment Station, and others are in progress. It is certain that some of these will be helpful to the farmers of this county in interpreting their fertilizer needs. Some of the results applicable to the soils of Dillon County are given, and from these valuable information as to the best fertilizer practices can be obtained. The cotton crop was selected for the tests, since this is the leading crop and more fertilizer is used on it than on all other crops combined. The most common application is from 800 to 1,000 pounds an acre, but many farmers are beginning to feel that a smaller application would be more profitable under present economic conditions. About 600 pounds an acre of 4-8-3 or 6-8-3 is an application that seems to be growing in favor.<sup>3</sup>

Further information on fertilizer practices can be obtained by writing to the South Carolina Agricultural Experiment Station, Clemson College, S. C.

---

<sup>3</sup> BUIE, T. S., and WARNER, D. COTTON FERTILIZER EXPERIMENTS. S. C. Agr. Expt. Sta. Bull. 245, 32 pp., illus. 1928.

Since fertilizers occupy such an important place in the agriculture of this county and since they are one of the major items of expense, it is well to consider how the cost can be reduced without decreasing the ultimate effectiveness of the fertilizer. Home mixing of fertilizers offers one avenue of economy which should not be overlooked. A home mixture recommended by Clemson College consists of the following ingredients: 100 pounds of 18-percent nitrate of soda, 200 pounds of 16-percent superphosphate, and 50 pounds of 50-percent muriate of potash. This combination analyzes approximately 5 percent of nitrogen, 9 percent of phosphoric acid, and 7 percent of potash. It should be followed by a side application ranging from 100 to 200 pounds of nitrate of soda an acre. If home mixing of fertilizers is practiced, some cost for freight and the cost of mixing can be saved. Additional information on home mixing of fertilizers can be obtained from Circular 107 of Clemson Agricultural College.<sup>4</sup>

As practically all the soils in the county are acid, the question of liming is one which should receive attention. A so-called "acid agriculture" is possible and has been practiced here for a long time. The fact that crops can be grown without the use of lime does not mean that liming would not be profitable. Legumes, as a rule, need more lime than do other crops. Liming should be more commonly practiced, in order to help correct the acidity of the soil and to supply calcium for the needs of the crop grown. Lime has proved beneficial to most farm crops. Two tons of ground limestone an acre is a good application, although smaller applications will be helpful, especially if the lime is in a more concentrated form.

The form of the lime most commonly used in this county is finely ground limestone analyzing 52 percent of calcium carbonate and 36 percent of magnesium carbonate (calcium carbonate equivalent, 95 percent). When broadcast this material is commonly applied at a rate ranging from 700 to 1,000 pounds an acre, and when drilled in the row, from 300 to 500 pounds. In most places these quantities are not sufficient to correct the acidity of the soil, but with frequent applications the needs of the crops for calcium and magnesium can be supplied. This form of limestone costs about \$7 a ton, f. o. b. at Dillon, or it is retailed at 35 cents a hundred pounds in paper bags.

#### SOILS AND THEIR INTERPRETATION

Dillon County lies entirely within the coastal-plain area, about midway between the Atlantic Ocean and the piedmont plateau. The formations from which the upland soils have been derived are water-deposited materials consisting chiefly of more or less unconsolidated beds of sands and clays. They represent sediments washed from the piedmont plateau and the mountains to the north and west and deposited on the floor of the ocean when the land was submerged. These deposits are in many places about 500 feet thick. The widely different character of the soils of this section is owing, in part, to the reworking and assorting of soil materials by the shore currents, tides, waves, and winds; by weathering, especially oxidation; the

<sup>4</sup>HAMILTON, R. W. THE FERTILIZER PROBLEM IN SOUTH CAROLINA. Clemson Agr. Col. S. C., Ext. Circ. 107, 16 pp. 1930.

washing downward of the fine material; erosion; and the influence of vegetation.

This country was originally covered with dense forests of pine, under which the soils have developed. The climate is humid and warm, with a normal rainfall of about 46 inches and a mean annual temperature of 63.6° F. Under these conditions—warm climate and heavy rainfall—oxidation is rapid and leaching very pronounced. These result in soils low in organic-matter content, and the surface soils are strongly leached.

The average or normal soil profile, which develops under the conditions mentioned, is about as follows:

The A<sub>0</sub> horizon, or the material which has accumulated on the surface of the soil, consists of a thin covering of leaves, pine needles, small twigs, and other organic debris. The A<sub>1</sub> horizon, which extends to a depth of about 1 or 2 inches, consists of dark-gray or nearly black light sandy loam, in which the loaminess is due chiefly to the accumulation of organic matter. Between depths of 1 or 2 inches and 6 inches is the A<sub>2</sub> horizon consisting of gray sand or light sandy loam. Between depths of 6 and 12 or 14 inches the material is pale-yellow sand having a decided leached appearance. This may be considered the A<sub>3</sub> horizon. These layers, from the surface to a depth of 14 inches, comprise the A horizon, or the horizon of eluviation; that is, the part of the soil which has been subjected to marked action of water and weathering. The fine particles of silt and clay and practically all the colloidal material have been removed downward. Oxidation has removed much of the organic matter which would tend to accumulate in greater quantities than are now present. Much of the mineral plant nutrients also are carried into the lower layers, leaving the surface soil in a reduced state of fertility.

Below the A horizon is the B horizon, or the zone of illuviation, where there has been an accumulation of the material carried down from the layers above. The B horizon extends from a depth of about 14 inches to a depth ranging from 30 to 34 inches. The material is yellow sandy clay or, in some places, clay loam. This horizon might be divided into a B<sub>1</sub> horizon and a B<sub>2</sub> horizon, the B<sub>2</sub> horizon beginning below a depth of 2 feet, where the material may be slightly mottled and contain small red specks. The silt, clay, and colloidal material have accumulated in the B horizon. This horizon also contains more of the mineral plant nutrients than the A horizon, and it is the part of the soil which retains the moisture and presents a feature which makes possible high improvement of the soil.

Below the B horizon is the C horizon, or parent material, from which the overlying material has been derived through the complex processes of soil development. This horizon consists of pale-yellow sandy clay. It is somewhat lighter in color and also in texture than the B horizon, but it is heavier than the A horizon. The C horizon extends to a great depth and consists for the most part of unconsolidated sands and clays, deposited in ages past in the bed of the sea, having been carried down by action of water from higher lands in the area now known as the "piedmont plateau." The normal profile, especially the surface soil, is characterized by a very low content of calcium and an acid condition.

The profile described, which represents that normal for the majority of the upland soils, belongs with the group of Yellow soils.

Dillon County is in a section in which differences in surface relief are small. The surface relief of the surrounding country may be described as level or very gently rolling, with maximum differences in elevation throughout the county of not more than 75 feet. The most marked differences in elevation are immediately adjacent to streamcourses where there is sometimes a drop ranging from 5 to 30 feet in the course of a quarter of a mile. Drainage of the upland part of the county may be considered fair or good, although there are numerous "bays" and other depressions, in which natural drainage is deficient.

Because of the slight differences in elevation, there are few steep slopes, and these are short. However, there is a marked difference in soils, owing to slight differences in elevation. Differences ranging from 1 to 3 feet in elevation are, in many places, accompanied by a change in texture from sand or sandy loam to clay loam. There is also a difference in the organic-matter content of the soils, many of the lower lying areas having sufficient accumulation of organic matter to give the soil a black color.

The comparatively smooth character of the surface relief results in a minimum of erosion, and very few gullies have been formed. The only marked type of erosion is sheet erosion, which is caused by heavy rainfall flowing down the slopes and washing off the surface soil. It is not uncommon to find that from 6 to 12 inches of surface soil have been removed from slopes and from the tops of knolls, leaving the subsoil, or B horizon, exposed. This gives cultivated fields a spotted appearance and makes cultivation more difficult.

Owing to differences in topography and surface features, considerable difference exists in drainage conditions on the various soils, and this has resulted in part in different rates of oxidation, which in turn have brought about various colors, especially in the subsoil. The most highly oxidized soils are the Orangeburg, Ruston, and Cuthbert, which are various shades of red. Next in order are the Norfolk, Marlboro, Dunbar, and Coxville. Such soils as Portsmouth, Plummer, Okenee, and muck are the least oxidized, partly because of inferior drainage. Leaching has been most pronounced in the well-drained soils, and among these it is most pronounced in the soils of loose open structure, such as Norfolk sand, Norfolk sandy loam, and Norfolk sandy loam, deep phase. It is less pronounced in the Marlboro and Dunbar soils, although even in these soils its results are plainly seen.

Accompanying leaching, there has been a gradual reduction in the fertility of the soil, through the loss of organic matter and mineral plant nutrients. But in areas where there is a heavy B horizon so that a good amount of moisture can be retained, the soils can be gradually improved through the growing of legumes and the use of mineral fertilizers. The sands are the most difficult soils to improve, as they are so loose and open they will not long retain moisture or fertility. Such soils as Marlboro fine sandy loam, Marlboro sandy loam, Norfolk sandy loam, and Norfolk fine sandy loam can be readily built up and made very productive, since they contain sufficient clay to render them retentive of moisture and fertility.

All the soils are more or less acid. Samples of Coxville, Leaf, Norfolk, St. Lucie, Marlboro, Dunbar, Okenee, and Ruston soils were

collected by H. P. Cooper, agronomist of Clemson College. The pH values determined by Dr. Cooper, using the quinhydrone-electrode method, are shown in table 4.

TABLE 4.—pH determinations of samples of several soils in Dillon County, S. C.

Soil type and sample no.	Location	Horizon	pH
Coxville clay loam:			
1802.....		Surface soil.....	5.1
1803.....		Subsoil.....	5.2
Leaf clay loam:			
1804.....	2 miles south of Oak Grove.....	Surface soil.....	5.1
1805.....		Subsoil.....	4.9
Norfolk sand:			
1806.....	Near Oak Grove.....	Surface soil.....	5.1
1807.....		Subsoil.....	5.0
1808.....		Surface soil.....	5.5
1809.....		do.....	5.5
1810.....		do.....	6.1
St. Lucie sand:			
1811.....	Along Little Pee Dee River, near Floyd Dale.....	do.....	4.7
1812.....		do.....	4.9
1813.....		do.....	4.5
1814.....		do.....	4.6
1815.....		do.....	4.6
Marlboro fine sandy loam:			
1816.....	1½ miles north of Mallory.....	do.....	5.6
1817.....		do.....	5.1
1818.....		do.....	5.5
1819.....		do.....	5.6
1820.....		do.....	5.7
Dunbar fine sandy loam:			
1821.....	3 miles north of Mallory.....	Subsoil.....	4.8
1822.....		Surface soil.....	5.0
1823.....		do.....	5.1
1824.....		do.....	5.4
1825.....		do.....	5.0
Marlboro fine sandy loam:			
1826.....	5 miles west of Dillon.....	Subsoil.....	4.9
1827.....		Surface soil.....	6.4
1828.....		do.....	6.2
1829.....		do.....	6.3
1830.....		do.....	6.1
Norfolk sandy loam, deep phase:			
1831.....	1 mile west of Latta.....	Subsoil.....	5.0
1832.....		Surface soil.....	5.2
1833.....		do.....	5.4
1834.....		do.....	5.4
1835.....		do.....	5.3
Okenee loam:			
1836.....	Pee Dee River terrace.....	do.....	4.2
1837.....		do.....	4.6
1838.....		do.....	4.2
Ruston fine sandy loam:			
1839.....	1½ miles east of Oakland.....	Subsoil.....	5.5
1840.....		Surface soil.....	5.6
Norfolk sandy loam:			
1841.....	3 miles southeast of Hamer.....	do.....	5.4
1842.....		do.....	5.5
1843.....		do.....	5.7
1844.....		do.....	5.7
1845.....		do.....	5.6
Norfolk fine sandy loam: <sup>1</sup>			
1851.....	On farm of C. Bullock, near Lake View...	do.....	5.8
1852.....		do.....	6.4
1853.....		do.....	6.6
1854.....		do.....	6.0
1855.....		do.....	5.6

<sup>1</sup> 1,000 pounds of limestone to the acre were applied in 1926 and 1927.

Table 5 shows the pH values of samples of soil taken from several layers of the profile of Marlboro fine sandy loam in Dillon County. These determinations were made in the laboratories of the Bureau of Chemistry and Soils. The hydrogen-electrode method was used in making the determinations.

TABLE 5.—*pH determinations of samples of Marlboro fine sandy loam in Dillon County, S. C.*

Sample no.	Depth	pH	Sample no	Depth	pH
243901.....	<i>Inches</i> 0- 4	5.8	243904.....	<i>Inches</i> 20-36	4.9
243902.....	4- 8	4.8	243905.....	36-60	5.3
243903.....	8-20	4.7			

The Norfolk and Marlboro sandy loams and fine sandy loams may be considered the normally developed soils of Dillon County; that is, the soils having a mature profile, belonging to the group of Yellow soils. These soils are typical of large areas in the Carolinas. Orangeburg fine sandy loam, Ruston fine sandy loam, and Ruston sandy loam are also normally developed soils, belonging to the group of Red soils, but these soils occur in comparatively small areas here. The soils of the Coxville, Portsmouth, Plummer, Myatt, and Okenee series have not developed a normal soil profile, owing to poor drainage and to the fact that they have lain for a long time in a wet or semiwet condition, and there has been no opportunity for much leaching, aeration, and oxidation. The soils of the Dunbar series are, in point of development, intermediate between the well-drained Norfolk soils and the poorly drained Coxville soils.

Following is a description of a profile in a virgin area of Marlboro fine sandy loam  $1\frac{1}{2}$  miles southwest of Dillon, near United States Highway No. 301:

- A. 0 to 2 inches, dark-gray, brownish-gray, or almost black fine sandy loam having a high content of organic matter.
- A. 2 to 8 inches, grayish-yellow or pale-yellow light fine sandy loam containing enough clay and silt to give the material a decidedly loamy feel. The material in this layer is mellow and friable.
- B. 8 to 24 inches, deep-yellow or cottonseed-meal colored rather heavy fine sandy clay which is slightly sticky but, in general, is friable and crumbly. This material does not pack on the soil auger but has a tendency to roll and stick together. It has a peculiar slight green tinge.
- B. 24 to 36 inches, deep-yellow heavy fine sandy clay, slightly heavier than the material in the layer above. The lower part of the layer shows slight mottlings of light red.
- C. 36 to 60 inches +, the material is light fine sandy clay of a deep-yellow color, rather strongly mottled with light red and yellow and in places with a little gray. The material in this layer is brittle and crumbly, readily crumbling to a friable mass.

The B horizons of the Ruston soils are intermediate in color between the yellow of the Norfolk and the bright red of the Orangeburg. Ruston fine sandy loam in virgin areas has the following profile:

- A. 0 to 4 inches, grayish-brown loamy fine sand containing a small amount of organic matter.
- A. 4 to 14 inches, brownish-yellow or deep-yellow loamy fine sand of single-grain structure.
- B. 14 to 16 inches, reddish-yellow or yellowish-brown heavy fine sandy loam. This is the gradational layer between the true A and B horizons.
- B. 16 to 40 inches, yellowish-red or yellowish-brown fine sandy clay of uniform color. This material breaks into various-sized lumps having no definite cleavage. The lumps are easily crushed into a granular or mealy mass.

- C. 40 to 60 inches +, mottled or streaked light-red, reddish-yellow, yellow, and light-gray or almost white fine sandy clay material which is slightly compact but brittle and is lighter in texture than the material in the B horizon.

A description of the profile of a virgin area of Dunbar fine sandy loam, in the vicinity of Latta, follows:

- A<sub>1</sub>. 0 to 3 inches, dark-gray fine sandy loam or loamy fine sand carrying a small quantity of organic matter. On the surface is a fine layer of leaf mold and pine needles.
- A<sub>2</sub>. 3 to 8 inches, yellowish-gray mellow and friable loamy fine sand which contains very little organic matter, except some grass roots.
- A<sub>3</sub>. 8 to 14 inches, pale-yellow mellow and friable fine sandy loam.
- B<sub>1</sub>. 14 to 20 inches, yellow, heavy, slightly plastic, fine sandy clay or clay loam. When dry the material breaks into small angular fragments.
- B<sub>2</sub>. 20 to 36 inches, mottled yellow and light-gray clay containing faint reddish-yellow mottlings and bright-red splotches. The material in this layer is the heaviest in the profile.
- C. 36 to 48 inches +, light-gray, mottled with yellow and containing a few red splotches, heavy fine sandy clay or clay. The material in the lower part of this layer is not quite so heavy as that in the B<sub>2</sub> layer. The lower part of the B<sub>2</sub> layer and the upper part of the C layer are very similar, in color, texture, and structure, to the B layer of Coxville fine sandy loam.

#### SUMMARY

Dillon County is in the northeastern part of South Carolina, bordering the North Carolina State line. It has an area of 408 square miles. It has good railroad transportation facilities, as well as several paved highways.

The surface relief ranges from flat and almost level to gently sloping and rolling. The undulating or rolling areas are naturally well drained, and the flat areas and slight depressions have not been invaded by streams.

The principal agricultural soils are the Marlboro, Norfolk, Ruston, and Orangeburg. These are the light-colored sandy upland soils with sandy clay subsoils, ranging in color from yellow to red. These soils dominate the agriculture of the county and are representative of large areas of soils in this part of the State. They constitute the best agricultural soils in the coastal plain of South Carolina, and nearly all these lands have been cleared and used for agricultural purposes.

There are large areas of light-colored poorly drained soils, including the soils of the Dunbar, Coxville, and Leaf series. These soils are well distributed over the county, but they occupy a much smaller acreage than the well-drained soils. They have potential agricultural possibilities, but only a small percentage of them, except the Dunbar soils, has been cleared and drained. Areas of good soil could be brought under cultivation by digging canals and supplementing these by open lateral ditches.

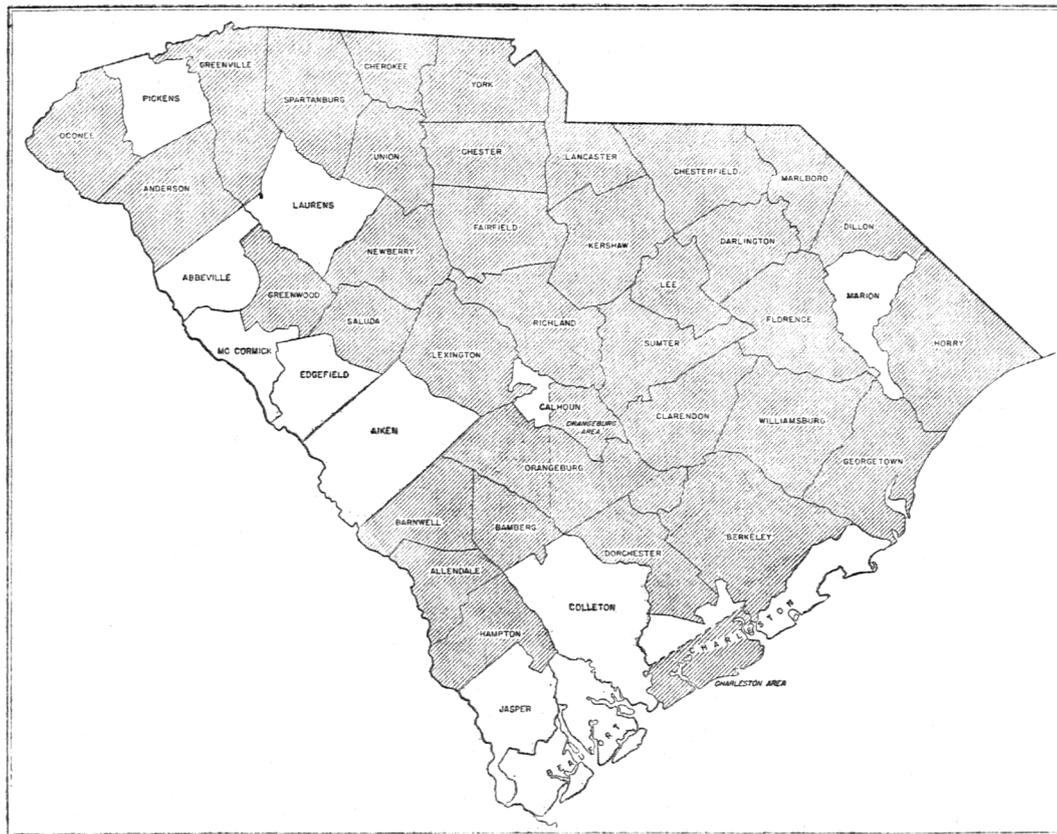
Soils of another group have developed in flatter areas, saucerlike depressions, and low-bottom positions along the streams. These soils contain a large amount of organic matter and, if drained and reclaimed, would produce good yields of corn and oats and would be well suited to the growing of pasture grasses. However, their reclamation for agricultural purposes would be rather expensive, and present economic conditions do not appear to warrant such expenditure.

Dillon County has been for a long time and is still recognized as one of the good agricultural counties in the State. The main crops are cotton (the principal cash crop), corn, and tobacco. Sweetpotatoes and garden vegetables do well, and peanuts can be successfully grown. Both the climate and soils are favorable to the production of a wide variety of garden vegetables and truck crops.



Authority for printing soil survey reports in this form is carried in the Appropriation Act for the Department of Agriculture for the fiscal year ending June 30, 1933 (47 U. S. Stat., p. 612), as follows:

There shall be printed, as soon as the manuscript can be prepared with the necessary maps and illustrations to accompany it, a report on each soil area surveyed by the Bureau of Chemistry and Soils, Department of Agriculture, in the form of advance sheets bound in paper covers, of which not more than two hundred and fifty copies shall be for the use of each Senator from the State and not more than one thousand copies for the use of each Representative for the congressional district or districts in which a survey is made, the actual number to be determined on inquiry by the Secretary of Agriculture made to the aforesaid Senators and Representatives, and as many copies for the use of the Department of Agriculture as in the judgment of the Secretary of Agriculture are deemed necessary.



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

# Accessibility Statement

---

This document is not accessible by screen-reader software. The U.S. Department of Agriculture is committed to making its electronic and information technologies accessible to individuals with disabilities by meeting or exceeding the requirements of Section 508 of the Rehabilitation Act (29 U.S.C. 794d), as amended in 1998. Section 508 is a federal law that requires agencies to provide individuals with disabilities equal access to electronic information and data comparable to those who do not have disabilities, unless an undue burden would be imposed on the agency. The Section 508 standards are the technical requirements and criteria that are used to measure conformance within this law. More information on Section 508 and the technical standards can be found at [www.section508.gov](http://www.section508.gov).

If you require assistance or wish to report an issue related to the accessibility of any content on this website, please email [Section508@oc.usda.gov](mailto:Section508@oc.usda.gov). If applicable, please include the web address or URL and the specific problems you have encountered. You may also contact a representative from the [USDA Section 508 Coordination Team](#).

## **Nondiscrimination Statement**

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the

Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by:

- (1) mail: U.S. Department of Agriculture  
Office of the Assistant Secretary for Civil Rights  
1400 Independence Avenue, SW  
Washington, D.C. 20250-9410;
- (2) fax: (202) 690-7442; or
- (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer, and lender.