

**UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS**

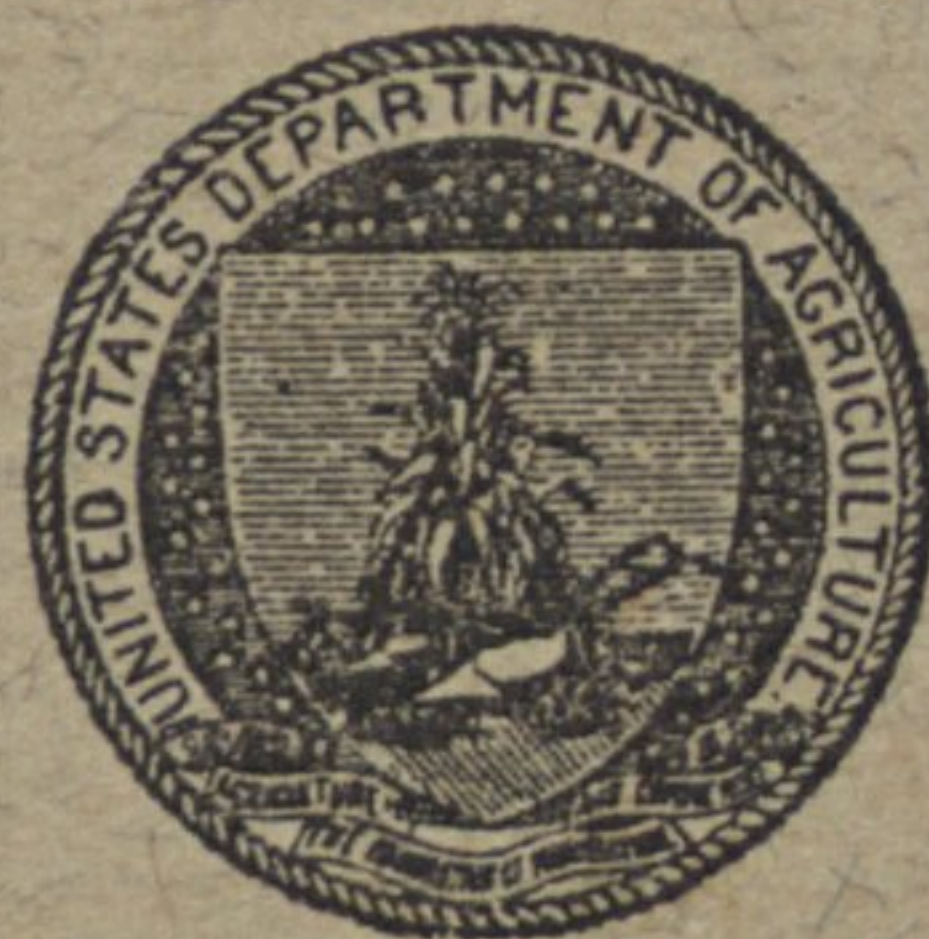
**In Cooperation with the North Carolina Department of Agriculture
and the North Carolina Agricultural Experiment Station**

**SOIL SURVEY
OF
WILSON COUNTY, NORTH CAROLINA**

BY

**R. C. JURNEY, U. S. Department of Agriculture, in Charge
and W. A. DAVIS
North Carolina Department of Agriculture and North Carolina
Agricultural Experiment Station**

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SOIL SURVEY

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W. E. HEARN, *Inspector, District 2*

COOPERATION

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C. B. WILLIAMS, *Head, Department of Agronomy*

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COUNTY SURVEYED

Wilson County is in the east-central part of North Carolina, the western boundary line being about 30 miles east of Raleigh, the State capital, and the northern boundary about 50 miles south of the Virginia State line. The county is oblong in shape, measuring about 30 miles from east to west and about 20 miles from north to south. The included area is 373 square miles, or 238,720 acres.

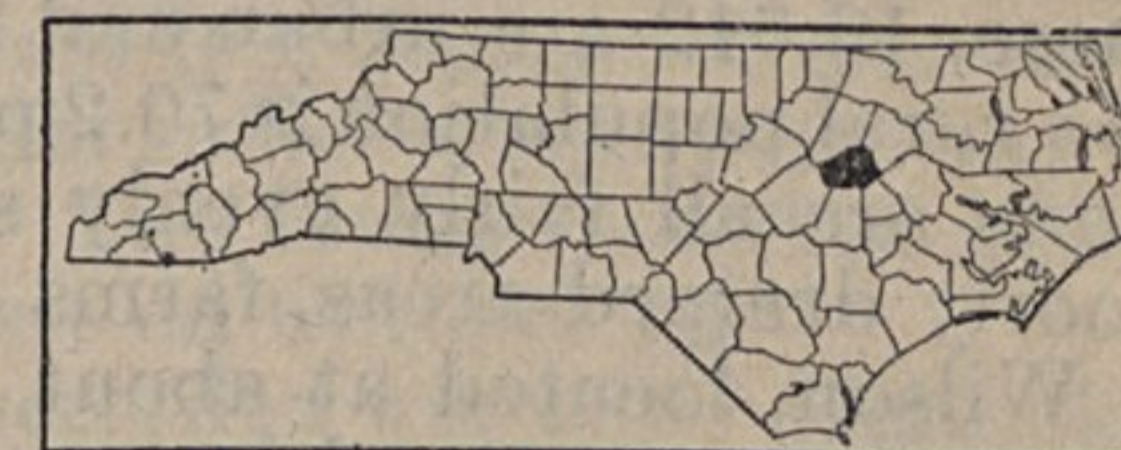


FIGURE 1.—Sketch map showing location of Wilson County, N. C.

Physiographically, Wilson County is an almost level plain in which many streams have worn narrow and comparatively shallow valleys. There are broad expanses of smooth interstream country and comparatively narrow terraces along some of the streams.

The relief of the interstream country ranges from nearly flat and slightly undulating to gently rolling and rolling. The more level areas are in the eastern and southwestern parts of the county, the largest being southwest and east of Wilbanks, northeast of Saratoga, immediately west of Elm City, and in the southwestern part south of Lucama, west of Boyette, and west of Hawra along the Johnston County line. The more rolling country is in the northwestern part of the county, north and west of Rock Ridge. Throughout the greater part of the county the land is undulating or gently rolling, becoming more rolling or slightly broken near the streams. The slopes leading to the streams are generally gradual, although a few areas along the larger streams are comparatively steep.

Well-defined terraces, ranging in width from a few feet to about 1 mile, border some of the larger streams. These terraces are almost level or slightly rolling, with an imperceptible grade toward the stream. Swamps or meadows occur along practically all the streams. The surface of these first bottoms is about level, with a slight grade in the direction of the stream current.

The general slope of the county is toward the southeast. The highest point, 305 feet above sea level, is one-half mile west of Neverson in the northwestern part, and the lowest point, 50 feet above sea level, is near Ruffin Bridge $1\frac{1}{2}$ miles south of Stantonsburg. Elevations for other places are: Bullocks School, 249 feet; Lamms School, 165 feet; Scotts, 155 feet; Boyette, 205 feet; Lucama, 138 feet; Black Creek, 120 feet; Wilson, 138 feet; Elm City, 137 feet; Wilbanks, 124 feet; Saratoga, 121 feet; and Stantonsburg, 94 feet. The difference in elevation between the lowest and highest points is 255 feet; the distance between these two places is about $20\frac{1}{2}$ miles.

The drainage water for most of the county finds an outlet through Contentnea Creek and Toisnot Swamp and their tributaries. The northeastern part is drained by Town Creek and the extreme eastern part by Ward Run and Little Contentnea Creek. The drainage of a small area in the southwestern part flows into Little Buffalo Creek in Johnston County.

Wilson County was formed in 1855 from parts of Edgecombe, Nash, Johnston, and Wayne Counties. The first settlers were of English and Irish descent. They came from Virginia in 1790 and took up lands near Toisnot Swamp and Contentnea Creek immediately east and west of the present town of Wilson. The white population today consists of the descendants of these early settlers, together with others who have moved in from near-by counties. There are no foreigners in the country sections, but the percentage of negroes is very large. The census of 1920 gives the total population as 36,813. Of these, 10,612 are urban and 26,201 are rural. The average density of the rural population is 70.2 persons to the square mile. The rural sections are all fairly evenly settled. In a few places, particularly in poorly drained areas, farms are scarce.

Wilson, located at about the geographical center of the county, is the county seat and largest town in the county. Its population in 1920 was 10,612. It is the largest leaf-tobacco market in the world. During two seasons, 1923 and 1924, 124,448,816 pounds of tobacco, which brought \$29,980,564.71, were sold there. During the 10-year period from 1915 to 1924, 447,875,603 pounds of tobacco were sold for a total of \$124,770,070.10. Wilson is also a large cotton market, the sales of cotton during two years, 1923 and 1924, amounting to \$2,250,000.

Other towns, with their populations, are: Elm City, 725; Lucama, 316; Stantonsburg, 424; and Black Creek, 274. These places serve as trading centers for their respective agricultural communities. Other villages are located along the railroads or at crossroads.

The railroad facilities are excellent. A double-track line of the Atlantic Coast Line Railroad crosses the county from northeast to southwest. Another line of this railroad extends south from Wilson to Wilmington. The Norfolk Southern Railroad traverses the county from southeast to northwest.

The county is served by three State highways, Nos. 22, 40, and 91. Highway No. 22 is of ordinary dirt construction. Highway No. 40 is hard surfaced, and highway No. 91 is hard surfaced from Wilson to the eastern county line. During March, 1925, the county authorized a bond issue of \$1,250,000 to aid the State in hard surfacing all the State highways in the county. In addition to these main roads, county roads, some of which are of the macadam type for about 5 miles out of Wilson, extend from Wilson to the rural sections. All the farming sections are connected with one or more public roads.

Telephone lines and rural mail routes extend to all the farming communities. Well-kept churches are located at convenient places. Public schools, most of which are of the consolidated type and modern in every respect, are distributed throughout the county. Busses are used to convey children who live at places remote from the schools. An institution of higher learning, the Atlantic Christian College, is located at Wilson.

Most of the tobacco grown in the county and much of that grown in adjoining counties is sold at Wilson. This town is also the marketing point for most of the cotton grown in the county, and a large quantity of cottonseed oil and meal is manufactured here.

CLIMATE

There is no Weather Bureau station in Wilson County. The nearest one is at Nashville, Nash County, about 12 miles north of the Wilson County line. Nashville is 190 feet above sea level, and the data obtained at this station will give an approximate idea of climatic conditions in Wilson County.

The winters in this county are usually sufficiently mild for outdoor work. The average annual snowfall of 9 inches comes as light snows which soon melt. Although the summers are hot, there are usually compensating breezes. The average frost-free season of 202 days, extending from April 12 to November 1, is sufficient for maturing all crops commonly grown in the county. The latest recorded killing frost occurred on April 30 and the earliest on October 12.

The total rainfall for the driest year recorded was 28.07 inches less than for the wettest year. The rainfall is well distributed for growing crops.

Tables 1 and 2 give the normal monthly, seasonal, and annual temperature and precipitation as recorded at the Weather Bureau station at Nashville and give the precipitation record for the station at Rocky Mount. Both these stations are in Nash County.

TABLE 1.—Normal monthly, seasonal, and annual temperature and precipitation at Nashville, Nash County

[Elevation, 190 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1897)	Total amount for the wettest year (1922)	Snow, average depth
	° F.	° F.	° F.	Inches	Inches	Inches	Inches
December	41.6	76	-1	3.43	2.50	3.94	2.6
January	42.8	81	-8	3.50	1.30	4.86	1.1
February	42.4	80	-3	3.77	3.40	8.42	2.3
Winter	42.3	81	-8	10.70	7.20	17.22	6.0
March	51.4	95	16	3.59	4.35	6.22	1.9
April	59.7	95	25	3.51	2.90	3.22	.7
May	69.0	98	33	3.87	2.00	5.31	0
Spring	60.0	98	16	10.97	9.25	14.75	2.6
June	75.2	101	47	5.56	4.56	7.50	0
July	78.4	101	48	6.57	6.75	11.36	0
August	77.5	100	50	5.17	2.60	3.97	0
Summer	77.0	101	47	17.30	13.91	22.83	0
September	72.0	102	39	3.40	.80	3.01	0
October	61.3	94	25	2.86	2.25	6.10	Trace.
November	49.9	84	17	2.19	3.00	.57	.4
Fall	61.1	102	17	8.45	6.05	9.68	.4
Year	60.1	102	-8	47.42	36.41	64.48	9.0

TABLE 2.—Normal monthly, seasonal, and annual precipitation at Rocky Mount No. 1, Nash County

[Elevation, 105 feet]

Month	Mean	Total amount for the driest year (1921)	Total amount for the wettest year (1920)	Month	Mean	Total amount for the driest year (1921)	Total amount for the wettest year (1920)
	Inches	Inches	Inches		Inches	Inches	Inches
December	3.38	3.01	5.89	June	3.91	0.45	4.16
January	3.35	3.81	3.06	July	6.28	3.04	4.32
February	3.61	2.86	6.16	August	4.72	1.29	7.36
Winter	10.34	9.68	15.11	Summer	14.91	4.78	15.84
March	3.31	3.34	5.02	September	3.05	3.16	3.89
April	2.55	3.62	4.40	October	2.92	1.85	1.28
May	2.97	3.75	.68	November	1.69	2.45	4.74
Spring	8.83	10.71	10.10	Fall	7.66	7.46	9.91
				Year	41.74	32.63	50.96

AGRICULTURE

Prior to the arrival of white settlers the region including Wilson County was occupied by Indians who lived mostly by hunting and fishing but who planted corn on small areas on the terraces along the larger streams. The first white settlers came in 1790 and began farming along Toisnot Swamp and Contentnea Creek. At later dates uplands near the present site of the town of Wilson were cleared. As the population increased, other lands in different parts of the county were taken up. The agriculture of the early settlers consisted of growing corn, cotton, rice, wheat, and fruits, and of raising hogs, sheep, and cattle. Most of the farm products were used in the homes, but some hogs and cattle were driven to Richmond to market. The virgin land was covered with fine pine trees, and until about 1880 the tar and turpentine industry flourished. After this time, lumbering was important until the original supply of timber had been exhausted.

Corn has always been the leading subsistence crop in the county. Cotton became an important cash crop immediately after 1865. On September 2, 1890, the first market sale of tobacco was made at Wilson. From this time the acreage increased very rapidly. The minor subsistence crops from 1879 to 1909 were oats, wheat, cowpeas, hay and forage, and sweet potatoes. With the exception of wheat, the acreage of all these crops increased considerably between 1879 and 1909.

Table 3 gives the acreage and yields of the principal crops recorded by the census from 1880 to 1925, inclusive.

TABLE 3.—Acreage and yields of the principal crops in 1879, 1889, 1899, 1909, 1919, and 1924

Crop	1879		1889		1899	
	Acres	Bushels	Acres	Bushels	Acres	Bushels
Corn	27,288	299,957	29,807	288,323	37,005	422,680
Oats	1,590	13,682	3,923	34,413	1,629	19,810
Wheat	2,804	21,115	2,365	20,126	1,142	7,170
Cowpeas		28,034		15,879	2,535	32,169
Sweet potatoes	525	58,336	926	86,177	1,030	96,755
Hay and forage	51	Tons 35	611	Tons 517	593	Tons 720
Cotton	23,706	Bales 13,049	33,285	Bales 11,130	18,699	Bales 10,397
Tobacco	17	Pounds 8,745	483	Pounds 232,966	9,465	Pounds 7,336,450

TABLE 3.—Acreage and yields of the principal crops in 1879, 1889, 1899, 1909, 1919, and 1924—Continued

Crop	1909		1919		1924	
	Acres	Bushels	Acres	Bushels	Acres	Bushels
Corn	30,371	433,575	32,078	771,887	24,357	433,773
Oats	2,533	42,367	823	14,388	2,457	1,692
Wheat	332	3,577	870	9,441	66	1,156
Cowpeas	6,838	40,631	483	2,181		
Sweet potatoes	1,055	122,056	1,128	146,925	629	59,439
Hay and forage	1,026	Tons 906	5,998	Tons 3,083	246	Tons 154
Cotton	33,091	Bales 18,892	31,980	Bales 25,624	43,804	Bales 29,372
Tobacco	11,285	Pounds 7,092,890	20,563	Pounds 15,480,583	19,416	Pounds 13,009,027

¹ Only 34 acres threshed for grain; remainder fed unthreshed and should be included in hay and forage acreage.

The census reports that in 1919 corn yielded an average of 24 bushels to the acre. The corn is fed mostly to hogs and work animals, but a small percentage is made into corn meal. The crop is grown in all parts of the county.

Cotton, which is next to corn in acreage, yielded an average of 0.8 bale to the acre in 1919. This crop is general over the county, being produced on practically all farms.

Tobacco is third in point of acreage. The census of 1920 reports that in 1919 the average yield was 752 pounds to the acre. This crop is also grown in all parts of the county.

In 1919, 1,001 acres of oats and wheat were cut green for feed. Cowpeas were harvested from 483 acres, and legumes were cut for hay from 834 acres. Coarse forage, including corn fodder, was gathered from 3,916 acres. The local production of hay and feed is not sufficient to meet the demands on many of the farms, and large quantities of baled hay and other feeds are shipped in.

Sweet potatoes are grown on most of the farms in the county. Most of the crop is consumed at home, although small quantities are sold at the local markets. Nearly all farmers have small home gardens which supply vegetables for table use and home canning. A few vegetables are grown for sale at the local markets.

According to the 1920 census, there are 16,543 apple trees, 8,193 peach trees, 758 pear trees, 950 plum trees, 562 cherry trees, and 1,265 grapevines in the county. The fruit trees are mostly on farms worked by the owner, although some orchards are on the tenanted lands. A few farmers produce some sorgo (sweet sorghum) cane. In 1919 the 76 acres devoted to this crop produced 3,789 gallons of sirup.

The livestock industry is of comparatively slight importance. The estimated value of animals sold and slaughtered in 1919 was \$775,447, or about 5 per cent of the total value of all agricultural products. A large number of horses, mules, and milk cows are shipped in annually and resold at the local stables. Several dairies, which supply the town with milk, are in the vicinity of Wilson. The dairy cows are Holstein and Jersey or grades of these breeds. The 1920 census reports the value of dairy products, excluding those used at home, as \$38,909 in 1919. Practically every farmer has one or more cows and

from one to four hogs. The hogs are Duroc, Poland China, Berkshire, or grades or crosses of these breeds. Few of the tenant farmers keep either cows or hogs.

Permanent pastures are on a very small percentage of the farms. Lespedeza, carpet grass, herd's grass, orchard grass, white clover, dallis grass, and Italian ryegrass furnish most of the pasturage. There are a few alfalfa pastures. Some farmers sow soybeans for hog pasture.

Poultry and eggs are produced on most of the farms for home consumption, and a few are sold or traded at the local stores. There are a few small poultry yards in the county. The value of poultry and eggs in 1919 was \$298,606.

The total value of all agricultural products in 1919 was \$17,119,873, of which \$1,544,902 represented the value of corn and the other cereals and \$13,675,363 the approximate value of tobacco and cotton.

The census of 1920 shows 77.5 per cent of the county in farms and the remainder in wooded areas. The forest is found mainly in the swamp areas, on slopes approaching the streams, and on flat, poorly drained interstream areas. The trees are prevailing pine with some sweet gum and hardwoods on the uplands, and gum, sweet gum, and a few pine in the swamps. The pine is practically all second-growth shortleaf. Some of the forest is being cut for lumber, but most of it is reserved for further growth, for firewood supply for country homes, and for use in making tobacco sticks or for fuel for curing tobacco.

The farmers recognize in a general way the suitability of certain soils for particular crops. The well-drained mellow sandy loams and fine sandy loams are selected for tobacco and cotton. The heavier-textured well-drained soils and those having a comparatively shallow surface are also considered excellent lands for cotton. Corn produces well on the deeper sandy soils and also on the fairly well-drained darker colored soils. The dark soils are preferred for oats, and the deeper sandy soils are commonly chosen for sweet potatoes. The dark-colored pocosin lands which have a subsoil similar to quicksand are held as the less desirable soils for farming.

In 1920 the average value of all farm property was \$7,003 for each farm. Of this amount 75.7 per cent represented land, 14 per cent buildings, 3.6 per cent implements, and 6.7 per cent domestic animals. The farm homes are, as a rule, substantial and nicely painted. Many of the tenant homes are small. The barns are sufficiently large to house the work animals and feed. Most farmers have a number of small outbuildings to shelter machinery and some of the crops. The tobacco barns are constructed of logs or of planks. Barbed wire is used for fences. Some of the farmers have labor-saving machinery such as disk plows, disk harrows, weeders, manure spreaders, lime distributors, stalk cutters, corn and cotton planters, and riding cultivators, and some use tractors for breaking and harrowing. Many of the small farms are worked with 1-horse implements, including breaking plows, spike-tooth harrows, and walking cultivators. Both horses and mules are used as work animals, but the mules predominate.

Systematic rotation of crops is practiced on only a small percentage of the farms. A favored three-year rotation is: First year, cotton; second year, tobacco; third year, cowpeas. On some farms cotton is followed by rye, then by tobacco in which cowpeas are planted at

the last cultivation. Some farmers alternate corn with cotton or tobacco with cotton. On many farms the same crops are grown for several years in succession.

According to the 1920 census there are 4,439 farms and tenancies in the county, and of this number 4,272 reported the use of fertilizer. The total amount spent for fertilizers was \$1,590,332, or an average of \$372.26 a farm. Most of the fertilizer is purchased ready mixed, although a few farmers use home mixtures.

Corn receives from 200 to 400 pounds to the acre of an 8-2-2¹ or an 8-3-3 mixture, or about the same quantity of a home mixture composed of superphosphate (acid phosphate), kainit, cottonseed meal, and nitrate of soda. A side application of nitrate of soda at the rate of 50 or 100 pounds to the acre is given corn when it is about 3 feet high.

Cotton land is fertilized with from 500 to 800 pounds to the acre of an 8-2-2, 8-3-3, 9-3-2, 9-3-3, or 10-3-3 mixture. The 8-3-3 grade is most commonly used. Nitrate of soda is also applied, in quantities ranging from 50 to 150 pounds to the acre, as a side dressing during cultivation.

Tobacco land is generally fertilized with cottonseed meal in April before the crop is planted. An acreage application is from 800 to 1,000 pounds of an 8-3-3, 8-4-4, 9-3-3, or 10-4-4 grade. It is estimated that about 80 per cent of the farmers use the 8-3-3 grade.

In addition to commercial fertilizers, stable manure is applied to crops in such quantities as are available. Some farmers grow soybeans, clover, or cowpeas to help increase the fertility of the soil. It is estimated about 10 per cent of the farmers use lime, mostly ground limestone, to improve the working and producing qualities of the soil. The lime is used largely on the darker and less well-drained areas of the field and is applied at the rate of 1,000 to 2,000 pounds to the acre. It is used on land planted to legumes, cotton, or corn, and in some cases to tobacco. Land on which lime has been used shows improvement, and the crop yields are higher.

In 1919, 1,794 farms reported labor expenses averaging \$114.66 a farm. Both colored and white laborers are employed. Farm help is scarce. The price paid by the month is \$20 with board or \$35 without board. Day laborers are paid \$2. Women and children assist with the work in cotton and tobacco fields on many of the farms. The price paid for picking cotton ranges from \$1.25 to \$1.50 a hundred pounds. Tobacco loopers receive \$2 a hundred sticks of tobacco, and tobacco primers are paid \$2.50 or \$3 a day.

In 1920, 77.5 per cent of the total area of the county was in farms which averaged 41.7 acres in size. The average acreage of improved land to the farm was 22.2 acres. Farms range in size from about 10 acres to 500 acres, and there are some holdings which range in size from 1,000 to 2,000 acres. The larger farms are commonly divided into small tracts and sublet to tenants.

The percentage of farms operated by owners in 1920 was 24.6; by tenants, 75.2; and by managers, 0.2. During the 40-year period from 1880 to 1920 tenancy increased from 45.8 to 75.2 per cent. The farms are rented mainly on the share basis. In the event the tenant furnishes work animals, equipment, and two-thirds of the fertilizer,

¹ Percentages, respectively, of phosphoric acid, nitrogen, and potash.

he receives two-thirds of the crop. When the landowner furnishes the work animals, equipment, and one-half the fertilizer and seed, the crop is equally divided.

The average assessed value of land in 1920 was \$127.18 an acre. The selling price, however, ranges from about \$100 to as much as \$500 an acre. Good average land brings about \$150 an acre. The price of the pocosin land is dependent usually on the value of the standing timber.

SOILS

The northwestern part of Wilson County lies within the coastal plain region near the piedmont plateau, and the southern and eastern parts are near the flatter coastal plain country.

The soils of the county have developed under forest cover, the original growth being mainly pine. Probably 75 or 80 per cent of the well-drained soils have been cleared. This group of soils comprises all of the members of the Norfolk, Marlboro, Ruston, Cuthbert, Dunbar, Kalmia, and Cahaba series. The surface layers of all the well-drained soils are dominantly light gray or brownish gray. The poorly drained soils, including the members of the Coxville, Portsmouth, Plummer, Leaf, Okenee, Myatt, and Johnston series, range in color from dark gray to almost black. The organic matter in the Portsmouth, Okenee, and Johnston soils has accumulated under swampy conditions, and the percentage present is sufficient to give a black color to the surface layers. In virgin areas of the well-drained soils, a noticeable quantity of coarse, partly decomposed vegetable matter is present to a depth varying from 1 to 3 inches, but this has not become really a part of the soil as it has in the grass-covered region of the Central States.

In this region of fairly heavy rainfall and warm temperature, leaching has been and still is active in the soils. Cotton and tobacco, both clean-cultivated crops, have been generally grown, and practically no organic matter has been added to the soils. Carbonate of lime has not accumulated in these soils, although the materials which have contributed to their formation contain lime. The light-colored soils are either neutral or slightly acid, and the poorly drained dark-colored soils are decidedly acid in character and respond freely to liberal applications of lime. Particularly is this true of the Coxville, Portsmouth, Okenee, and Johnston soils.

The soil map shows the location of the various soils in the county. Norfolk sandy loam, which is extensive in the northern end and the western half of the county, occupies by far the largest area of any soil. This soil may be considered the normally well-developed soil of the region. Large areas of Norfolk very fine sandy loam occur in the northeastern part of the county, and Norfolk fine sandy loam is distributed in small areas throughout the eastern and southern parts. Most of the Marlboro soils are in the central and southeastern parts. In the extreme western part, the Bradley soils occur in large areas. Extensive areas of Plummer fine sandy loam are in the eastern part, and smaller areas are in other parts of the county. Most of the Kalmia and Cahaba soils are found along Contentnea Creek. In texture, the soils range from gravelly sandy loam to very fine sandy loam, but the prevailing textures are sandy loam and fine sandy loam. The gravelly soils occur only in the northwestern or higher part of

the county, and the heavier and finer textured soils are in the southern and eastern parts.

The soils of Wilson County may be placed in two main groups as regards their profiles. The first group includes the well-drained soils or all the members of the Norfolk, Marlboro, Ruston, Cuthbert, Dunbar, Bradley, Kalmia, and Cahaba series. These are the normally well-developed soils of the county and have three distinct horizons. The most striking features of the texture profile of these well-developed soils is the presence in all of them of a comparatively light-textured surface layer overlying a deeper horizon with a heavier texture, in many cases much heavier, and a third still deeper horizon which may vary considerably in texture but which is prevailingly lighter than the second horizon and in most cases is heavier than the first. The actual textures of these layers vary greatly in the soils of the region, the surface layer, or horizon A, ranging from very fine sandy loam to sandy loam, and the second, or horizon B, from friable sandy clay to tough clay. The substratum, or horizon C, consists of unconsolidated geologic material lying beneath the horizon B and may be composed of extremely variable material as regards texture, structure, and color. The thickness of these layers also ranges widely, the surface layer ranging from a very few inches in the very fine sandy loams to a maximum of 18 inches in the sandy loams.

In the soils of the normally developed group, such as the Norfolk, Marlboro, Ruston, Dunbar, Kalmia, and Cahaba series, the intermediate comparatively heavy layer, or subsoil, ranges from friable sandy clay to clay. In the Cuthbert soils the subsoil, or horizon B, is heavy, tough compact clay.

The second group of soils, consisting of the members of the Coxville, Portsmouth, Plummer, Leaf, Okenee, Myatt, and Johnston series, and including also meadow and swamp, are characterized by the absence of any definite horizon development. These soils have developed under wet or semiswampy conditions, and the alternate wetting and drying of the Plummer, Coxville, Leaf, and Myatt soils and the burning off of the surface vegetable matter probably accounts for their light color. The poor drainage and water-logged condition of all these soils has prevented aeration and oxidation of the iron salts, and this accounts largely for the mottled coloration of the subsoils. There is wide variation in the texture and structure of the subsoils of the different soils. Below the uniformly oxidized layer, or horizon B, and commonly at a depth varying from 3 to 5 feet below the surface, the partly weathered material, or horizon C, is present.

The soils of the county are divided into two groups, the residual and alluvial soils. The residual soils have been formed, by the many processes of weathering, from the underlying material which consists of beds of unconsolidated sands, sandy clays, and clays which were deposited ages ago on an ancient sea floor. The alluvial soils, comprising the Kalmia, Cahaba, Leaf, Okenee, Myatt, and Johnston series, consist of material which has been washed from the upland soils and deposited along the stream courses in the form of second-bottom and first-bottom areas. There is no uniformity in the color, texture, and structure of the partly weathered material underlying the upland soils, but there is a noticeable difference in the color of the material underlying the well-drained soils and the poorly drained soils.

The various soils in Wilson County are grouped in series on the bases of color, character of parent material, and structural characteristics. The series are divided into soil types on the basis of difference in the texture of the surface soils, or the proportion of sand, silt, and clay entering into their composition. The type is the unit of soil classification and mapping. There are in the county 23 distinct soil types representing 15 soil series, in addition to the miscellaneous classifications of land (meadow and swamp).

The upland soils include the members of the Norfolk, Marlboro, Ruston, Cuthbert, Dunbar, Coxville, Portsmouth, Plummer, and Bradley series.

The soils of the Norfolk series have gray surface soils, grayish-yellow or pale-yellow subsurface soils, and yellow friable crumbly sandy clay or sand subsoils. The sand, sandy loam, fine sandy loam, and very fine sandy loam members of the series are mapped in this county.

The Marlboro soils differ from the Norfolk in that the surface material is shallower and heavier; the subsoil material is heavier, being firm or slightly sticky clay loam or fine sandy clay; and the upper part of the parent material is redder and in some places is very dry, crumbly, and friable. Marlboro sandy loam and Marlboro fine sandy loam are mapped.

The soils of the Ruston series have gray surface soils, grayish-yellow or pale-yellow subsurface soils, and reddish-yellow or yellowish-red friable crumbly sandy clay subsoils. Ruston sandy loam and Ruston fine sandy loam are mapped.

The soils of the Cuthbert series resemble the Ruston soils in color. The subsoils are much heavier in texture, being heavy, tough, rather compact reddish-yellow clay which, at a depth of about 18 inches, becomes mottled or streaked with light red. Cuthbert fine sandy loam is the only member of the series mapped in Wilson County.

The soils of the Dunbar series have dark-gray surface soils, yellowish-gray subsurface soils, and mottled yellow and light-gray, heavy, slightly plastic fine sandy clay subsoils mottled with red in the lower part. Dunbar sandy loam and Dunbar fine sandy loam are mapped in this county.

The Plummer series is represented by Plummer fine sandy loam. The surface soil is gray, grading to mottled light-gray, friable material, and the subsoil is mottled light gray and yellow or rust brown and is friable in consistence.

The soils of the Coxville series differ from those of the Plummer series in that the subsoils are much heavier and contain bright-red splotches scattered irregularly throughout. These splotches form only a small percentage of the mass. Coxville fine sandy loam is mapped in this county.

The Portsmouth soils have black surface layers, light-gray subsurface layers, and friable or fairly heavy mottled yellow or brownish-yellow and gray sandy clay subsoils. Portsmouth fine sandy loam is the only member of the series mapped in the county.

The soils of the Bradley series are characterized by brownish-gray surface soils, pale-yellow or brownish-yellow subsurface soils, and red or yellowish-red, stiff, brittle clay subsoils. The surface material resembles that of the Norfolk soils, and the subsoils are residual from the rocks of the piedmont plateau. Bradley gravelly sandy loam and Bradley sandy loam are mapped.

The soils of the second bottoms or terraces are mapped in the Kalmia, Cahaba, Leaf, Myatt, and Okenee series, and soils of the first bottoms are included in the Johnston series and the miscellaneous classifications of meadow and swamp.

The soils of the Kalmia series resemble those of the Norfolk series very closely in color and structure characteristics. Kalmia sandy loam and Kalmia fine sandy loam are mapped.

The Cahaba soils have light-brown surface soils and reddish-yellow or light reddish-brown friable sandy clay subsoils. They resemble the Ruston soils in color. Cahaba fine sandy loam is mapped.

The Leaf soils are characterized by gray surface soils and mottled steel-gray or bluish and yellowish-brown heavy, tough, plastic clay subsoils. Leaf fine sandy loam is mapped.

The Myatt series is represented by Myatt sandy loam. In color and structural characteristics the soils of this series are not materially different from the Plummer soils.

In the Okenee series the loam was mapped. This is a black soil with a light-gray subsurface layer and a gray subsoil mottled with rust brown.

Johnston silt loam, the only member of the Johnston series mapped, is very similar to Okenee loam except that the black humus layer is thicker.

Meadow and swamp comprise materials of variable texture lying along the smaller drainage courses. The soil material is poorly drained and is wet or saturated much of the time.

In the following pages of this report the soils of Wilson County are described in detail and their relation to agriculture is discussed; their distribution is shown on the accompanying soil map; and their acreage and proportionate extent are given in Table 4.

TABLE 4.—Acreage and proportionate extent of the soils mapped in Wilson County, N. C.

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Norfolk sandy loam.....	68,992	28.9	Dunbar sandy loam.....	4,800	2.0
Norfolk fine sandy loam.....	26,816	11.2	Dunbar fine sandy loam.....	15,616	6.5
Norfolk very fine sandy loam.....	9,408	3.9	Coxville fine sandy loam.....	1,856	.8
Norfolk sand.....	7,936	3.3	Portsmouth fine sandy loam.....	896	.4
Marlboro sandy loam.....	3,392	1.4	Plummer fine sandy loam.....	24,320	10.2
Marlboro fine sandy loam.....	5,248	2.2	Leaf fine sandy loam.....	3,008	1.3
Ruston sandy loam.....	6,656	2.8	Okenee loam.....	896	.4
Ruston fine sandy loam.....	9,600	4.0	Myatt sandy loam.....	1,536	.6
Cuthbert fine sandy loam.....	3,264	1.4	Johnston silt loam.....	768	.3
Bradley gravelly sandy loam.....	10,624	4.5	Meadow.....	3,968	1.7
Bradley sandy loam.....	2,880	1.2	Swamp.....	12,608	5.3
Kalmia fine sandy loam.....	7,936	3.3			
Kalmia sandy loam.....	4,544	1.9	Total.....	238,720	-----
Cahaba fine sandy loam.....	1,152	.5			

NORFOLK SANDY LOAM

The surface soil in forested areas of Norfolk sandy loam is gray or brownish-gray loamy sand from 3 to 5 inches thick. The gray color results from the presence of vegetable mold. This layer is underlain by pale-yellow light sandy loam which continues to a depth varying from 12 to 18 inches. The subsoil, to a depth varying from 32 to 40 inches, is yellow, friable sandy clay. The substratum consists of mottled gray, yellow, and brown sandy material, slightly hard but brittle. In the plowed areas where the surface material has been

thoroughly mixed the soil is light-gray or yellowish-gray loamy sand or light sandy loam.

Norfolk sandy loam is the most extensive soil in the county. It occurs in the central, western, and northern parts but is found in only comparatively small areas in the extreme eastern and southern parts. Areas range in size from a few acres to large, continuous areas in the vicinity of Elm City, Wilson, and Stotts Crossroads. The soil occupies positions on the broad interstream ridges and to a small extent on the gentle slopes.

The relief of Norfolk sandy loam is nearly level, gently undulating, and gently rolling. On the steeper slopes near streams the surface is more rolling. On account of the porosity of the sandy surface soil and the friability of the sandy subsoil, both surface drainage and under-drainage are good. On a few of the steeper slopes terraces have been constructed to prevent erosion. Natural drainage ways reach to nearly all areas of this soil, but in a few flat areas ditches are necessary to insure proper internal drainage. The surface soil dries quickly, and the land can be worked soon after rains.

Norfolk sandy loam is very important as farming land, and more than 90 per cent of it is under cultivation. The remainder is forested with pine, oaks, and some dogwood, sourwood, and sweet gum.

Norfolk sandy loam is used for the production of both subsistence and cash crops. The leading crops are corn, cotton, and tobacco, and crops of minor importance are sweet potatoes, potatoes, cowpeas, soy beans, and garden vegetables. Corn yields from 25 to 40 bushels to the acre, cotton from three-fourths to 1 bale, tobacco from 800 to 1,000 pounds. The minor crops all give good yields.

The leading crops are fairly heavily fertilized, mainly with complete fertilizers, although a few farmers use home mixtures. Corn-land receives from 200 to 400 pounds to the acre of an 8-2-2 or 8-3-3 fertilizer or an equal quantity of a home mixture composed of super-phosphate (acid phosphate), kainit, cottonseed meal, and nitrate of soda. When the stalks are waist high, from 50 to 150 pounds to the acre of nitrate of soda are applied. Many farmers plant soybeans in rows between the corn at its second cultivation, and others broadcast cowpeas at the last cultivation.

Cotton is fertilized mostly with complete fertilizers, although a few farmers use home mixtures. The main cotton fertilizer is an 8-3-3 mixture applied at the rate of from 500 to 800 pounds to the acre. Other grades for cotton are 10-3-3, 8-2-2, 9-3-2, or 9-3-3, applied at the same rate. In addition to the complete fertilizer, from 50 to 150 pounds to the acre of nitrate of soda are applied as a side-dressing during cultivation.

Tobacco land is commonly given an acreage application varying from 800 to 1,000 pounds of an 8-3-3 mixture. Other tobacco fertilizers are 8-4-4, 9-3-3, or 10-4-4 grades. Many farmers apply cottonseed meal to the land before the tobacco is planted.

Crop rotation is practiced by only a few farmers, and only a very few plant winter cover crops. All available stable manure is applied to the land. Legumes are planted by comparatively few farmers, but some broadcast cowpeas on tobacco land at the last cultivation. There are a few small permanent pastures on this soil.

Current prices of this land range from \$100 to \$300 an acre, depending on the state of improvement and the nearness to good roads, markets, and schools.

Norfolk sandy loam is one of the strongest soils in the county. It is well suited to the production of cotton, corn, bright-leaf tobacco, peanuts, crimson clover, sweet potatoes, cowpeas, potatoes, water-melons, cantaloupes, peaches, grapes, rye, vetch, and vegetables.

Owing to long cultivation and the growing of clean-cultivated crops, this soil is deficient in organic matter. This can be supplied by growing and turning under green-manure crops. Systematic crop rotations would be beneficial. The following fertilizer grades are recommended by the North Carolina Department of Agriculture for crops in the coastal plain region: Corn and cotton, 8-5-3 grade; tobacco, 8-4-4 grade; potatoes, 6-7-5 grade; vegetables, 7-5-5 grade; sweet potatoes, 8-4-6 grade.

Table 5 gives the results of mechanical analyses of samples of the surface soil and different layers of the subsoil of Norfolk sandy loam:

TABLE 5.—Mechanical analyses of Norfolk sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236804	Surface soil, 0 to 5 inches.....	6.5	22.3	11.8	31.8	11.1	13.6	3.4
236805	Subsoil, 5 to 16 inches.....	5.0	19.5	10.7	32.1	10.9	16.5	5.8
236806	Subsoil, 16 to 30 inches.....	6.6	20.3	10.2	24.5	7.1	15.1	17.1
236807	Subsoil, 30 to 48 inches.....	7.0	19.9	10.0	27.2	8.4	17.5	10.3
236808	Subsoil, 48 to 75 inches.....	7.8	21.1	11.7	31.8	7.9	10.0	10.3

NORFOLK FINE SANDY LOAM

In wooded areas the surface soil of Norfolk fine sandy loam, to a depth of 3 or 4 inches, consists of gray or grayish-brown mellow loamy fine sand or fine sandy loam. This grades to pale-yellow, very friable, mellow fine sandy loam or loamy fine sand which continues to a depth ranging from 14 to 18 inches. The subsoil, to a depth varying from 32 to 44 inches, consists of yellow friable fine sandy clay, firm but crumbly. Below this is mottled yellow and gray, or yellow, light-gray, and reddish-brown friable fine sandy clay material blotched and streaked in many places.

In cultivated fields the surface soil is light-gray or grayish-yellow loamy fine sand or fine sandy loam from 5 to 8 inches thick. Included with mapped areas of this soil are areas of Dunbar fine sandy loam, too small to indicate on the map. In the more rolling areas, small patches of Norfolk fine sand are also included.

The total area of Norfolk fine sandy loam in the county is large but is not so great as of Norfolk sandy loam. This soil occurs in large areas in the southwestern, southern, and eastern parts of the county, east of Lucama, south and east of Black Creek, along the Wayne County line, in the vicinity of Saratoga, along the Pitt and Edgecombe County lines in the extreme eastern part, and in the vicinity of Wilbanks. Areas occupy smooth interstream country and, to a less extent, gradual slopes. The relief is nearly level or gently rolling, becoming slightly more rolling near the streams.

On account of the porosity and friability of the soil and the favorable surface features, both the surface drainage and underdrainage are good, although in some of the flatter places ditches are necessary for thorough underdrainage. The soil absorbs moisture very rapidly and farming operations can be carried on soon after rains.

Norfolk fine sandy loam is important in the agriculture of the county. Approximately 90 per cent of it is under cultivation, and the remainder is forested with pine, sweet gum, and a few oak, dogwood, and sourwood.

This soil is adapted to a variety of crops, but in this county it is used mainly for the production of corn, cotton, and tobacco. Corn yields from 20 to 40 bushels to the acre, cotton from three-fourths bale to 1 bale, and tobacco from 800 to 1,000 pounds. In addition to these crops, some sweet potatoes, potatoes, oats, cowpeas, fruits, and garden vegetables are produced.

In order to obtain the best results, complete fertilizers are necessary. Corn receives from 200 to 400 pounds to the acre of an 8-2-2 or 8-3-3 grade or of a home mixture of about the same analysis, and a side dressing of nitrate of soda during cultivation. Cotton is fertilized with 600 or 800 pounds to the acre of an 8-2-2 or 8-3-3 mixture and is also given a treatment of nitrate of soda during cultivation. Tobacco land is commonly fertilized with 800 or 1,000 pounds to the acre of an 8-3-3 or 8-4-4 grade.

Crop rotations are practiced by a few farmers. Soybeans or cowpeas are sometimes planted in the corn.

Norfolk fine sandy loam is highly prized as a farming land. Land values range from \$100 to \$300 an acre, depending on the improvements and nearness to good roads, schools, or markets.

This soil is well adapted to the production of bright tobacco, peanuts, cotton, crimson clover, corn, cowpeas, grapes, sweet potatoes, cantaloupes, watermelons, and truck crops such as string beans, garden peas, potatoes, spinach, cabbage, lettuce, cucumbers, kale, and strawberries.

The land is generally deficient in organic matter. The supply could be increased by turning under green-manure crops. Systematic crop rotations which include legumes would also be helpful.

Table 6 gives the results of mechanical analyses of samples of the surface soil and different layers of the subsoil of Norfolk fine sandy loam:

TABLE 6.—Mechanical analyses of Norfolk fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236809	Surface soil, 0 to 4 inches.....	1.2	7.0	4.6	28.1	20.4	34.2	4.8
236810	Subsoil, 4 to 17 inches.....	1.6	5.4	3.5	23.0	27.3	33.1	6.5
236811	Subsoil, 17 to 34 inches.....	1.3	4.4	2.6	19.9	21.1	28.4	21.8
236812	Subsoil, 34 to 60 inches.....	1.4	4.8	3.1	19.9	25.4	29.2	17.1

NORFOLK VERY FINE SANDY LOAM

In forested areas the surface soil of Norfolk very fine sandy loam consists of gray or brownish-gray mellow very fine sandy loam 2 or 3 inches thick, underlain by mellow, yellow very fine sandy loam which continues to a depth varying from 12 to 15 inches. The subsoil consists of yellow friable very fine sandy clay or clay loam from 18 to 24 inches thick. This material is firm but crumbles readily. Underlying this is mottled light-gray, pale-yellow, and yellowish-brown very fine sandy clay material. The cultivated areas of this soil are very light-gray or pale-yellow mellow very fine sandy loam. When wet the soil in the fields is somewhat darker in color. On

some of the steeper slopes the surface mantle is shallower from erosion, and the soil has a deeper yellow cast.

Norfolk very fine sandy loam is not so extensive as Norfolk sandy loam and Norfolk fine sandy loam. It is found almost exclusively in the eastern part of the county, although there is a comparatively small area west of Wilson. The largest areas are north, east, and south of Wilbanks, north of Saratoga, and east of Uptown Church. This soil occurs on the comparatively flat interstream country and on gradual slopes.

The surface relief is nearly level or gently undulating and is gently rolling near streams. The soil is more compact than Norfolk sandy loam, and for this reason the drainage is not quite so well established. The firm subsoil does not permit percolation of water so easily as do sandier materials. The surface soil, on account of its very fine texture, tends to clod, and the land can not be worked so soon after rains as the sandy soils. Drainage is, in general, good, but ditches are required in the flatter areas.

Although Norfolk very fine sandy loam is of rather small total extent, it is important farm land. It is estimated that about 85 per cent of it is cleared for cultivation, and the remainder supports a growth of pine, sweet gum, and a few oak, dogwood, and sourwood trees.

This land is used mostly for growing corn, cotton, and tobacco. Sweet potatoes, potatoes, garden vegetables, and fruits are produced, mainly for home use. A few farmers grow cowpeas, soybeans, and clover, and small areas are used for pasture. Corn yields from 20 to 35 bushels to the acre, cotton from one-half to 1 bale, and tobacco from 600 to 800 pounds. The minor crops all produce well.

The fertilizer treatment for crops on this soil is similar in kinds and quantities of fertilizer to the treatment for Norfolk fine sandy loam, and the selling price of the two soils is about the same.

Norfolk very fine sandy loam is well adapted to cotton, corn, oats, peanuts, cowpeas, soybeans, vetch, and garden vegetables. Like other members of the Norfolk series, this soil is deficient in organic matter.

Table 7 gives the results of mechanical analyses of samples of the surface soil and different layers of the subsoil of Norfolk very fine sandy loam:

TABLE 7.—Mechanical analyses of Norfolk very fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236813	Surface soil, 0 to 2 inches.....	0.2	1.2	0.6	19.3	43.0	28.9	5.9
236814	Subsoil, 2 to 15 inches.....	.4	.8	.4	4.7	59.7	30.5	3.8
236815	Subsoil, 15 to 34 inches.....	.4	.6	.4	27.5	21.5	26.2	23.0
236816	Subsoil, 34 to 60 inches.....	.2	.6	.4	19.6	40.0	21.5	17.3

NORFOLK SAND

In forested areas the surface soil of Norfolk sand, to a depth varying from 2 to 4 inches, consists of gray or brownish-gray medium sand containing a small quantity of organic matter. This is underlain by pale-yellow, loose, incoherent medium sand which continues to a depth varying from 30 to 50 inches. Below this is brownish-yellow loamy sand or sandy loam which becomes heavier in texture with depth. In cultivated fields where the soil material has been mixed through

cultivation the surface soil, to a depth varying from 5 to 8 inches, is light-gray or grayish-yellow sand.

Included in mapped areas of Norfolk sand are several comparatively small areas of Norfolk fine sand, which is similar to Norfolk sand except that the sand grains are smaller. These included areas are south of Black Creek and near the Wayne County line.

Norfolk sand occurs in the northwestern part of the county in the vicinity of Sims, and in the northern part south of Silver Lake along the slopes of Toisnot Swamp. A fairly large area is in the southwestern part southeast of Boyette. In the neighborhood of Sims and Boyette the soil occurs on smooth ridges, and a few areas are on gentle slopes. In other places it occupies sloping positions. On the smooth ridges, the surface is nearly level or gently rolling, and on the slopes the surface becomes more rolling.

Owing to the openness of the soil, drainage conditions are everywhere good. The land is light and mellow and can be tilled soon after rains. It warms up early in the spring.

Although Norfolk sand is comparatively inextensive, it is a rather important soil in the agriculture of the county. About 85 per cent of it is cleared and used for crops. The remainder supports a forest growth consisting of pine, oaks, sweet gum, and a few dogwood and sourwood trees.

Norfolk sand is used for the production of corn, cotton, tobacco, sweet potatoes, potatoes, oats, cowpeas, and garden vegetables.

Corn yields from 20 to 35 bushels to the acre. It is used mainly as subsistence for work animals. Cotton yields from one-half to three-fourths bale to the acre, and bright-leaf tobacco from 500 to 800 pounds. These are strictly cash crops. Sweet potatoes and garden vegetables yield well.

Successful yields of crops on Norfolk sand require heavy applications of complete fertilizers. Corn receives 200 pounds to the acre of superphosphate (acid phosphate) and cottonseed meal mixed or of a complete fertilizer of the 8-3-3 grade and in addition is given a side dressing of nitrate of soda when the stalks are sufficiently high. Cotton land receives from 500 to 700 pounds to the acre of an 8-3-3 fertilizer and a side dressing of about 200 pounds to the acre of nitrate of soda. Tobacco land is given an acreage application varying from 600 to 1,000 pounds of an 8-3-3 mixture.

Improved soil of this kind is held at about \$100 an acre. Norfolk sand is suited to the production of truck crops, grapes, sweet potatoes, rye, watermelons, and vegetables. The soil would be improved by growing and plowing under cover crops of vetch or rye.

MARLBORO SANDY LOAM

In forested areas the surface soil of Marlboro sandy loam is gray or grayish-brown light sandy loam 2 or 3 inches thick. Below this is brownish-yellow heavy loamy sand which continues to a depth of about 8 inches. The subsoil consists of deep-yellow heavy slightly sticky sandy clay which extends to a depth varying from 24 to 30 inches. The parent material is mottled yellow, light-gray, and light-red friable heavy sandy clay.

In cultivated fields the soil is light-brown or light grayish-yellow sandy loam. The surface mantle is rather shallow in comparison with that of Norfolk sandy loam, and it carries more fine material. In many small areas the plow turns up the brownish-yellow subsoil.

When wet the soil has a decidedly brown cast. Included in mapped areas of this soil are areas of Dunbar sandy loam and of Norfolk sandy loam, too small in extent to separate.

Marlboro sandy loam, in contrast to Norfolk sandy loam, is of small total extent in the county. Rather large areas occur north and northeast of Lucama and northwest, east, and southeast of Wilson. Smaller areas are elsewhere in the central part of the county. The soil occurs mostly on the smooth parts of the interstream country, although a small part lies on gentle slopes.

The surface is nearly level or undulating but is more rolling on the slopes. Drainage is well established, but ditches are necessary in some of the flat areas. The soil can not be cultivated so soon after rains as can Norfolk sandy loam, because of the shallowness of the surface soil and the heavier texture of the subsoil.

Marlboro sandy loam is important agriculturally, although it is of comparatively small extent. It is practically all under cultivation, but a few small areas are forested with pine, oak, and dogwood.

This soil is especially well suited to corn, cotton, and tobacco and is used mainly for these crops. The minor crops are sweet potatoes, potatoes, oats, soy beans, cowpeas, and garden vegetables.

Corn produces from 30 to 35 bushels, cotton from 1 to 1 $\frac{1}{4}$ bales, and tobacco about 1,000 pounds to the acre. The minor crops thrive and give excellent yields.

The fertilizer treatment for this land is similar to that for Norfolk sandy loam. The selling price of these two soils is also about the same.

Marlboro sandy loam is a strong soil and can be built up and kept in a high state of productivity. It is especially suited to cotton but is also well adapted to corn, tobacco, cowpeas, oats, soybeans, crimson clover, vetch, potatoes, and garden vegetables.

The suggestions for the improvement of Norfolk sandy loam apply to this soil.

MARLBORO FINE SANDY LOAM

In forested areas the surface soil of Marlboro fine sandy loam is grayish-brown fine sandy loam or very fine sandy loam 2 or 3 inches thick. The subsurface layer, to a depth of 6 or 8 inches, is brownish-yellow fine sandy loam. The subsoil consists of deep-yellow, friable, rather heavy, slightly sticky fine sandy clay, from 24 to about 30 inches thick. This is underlain by mottled yellow, gray, and red, heavy, friable clay material. The surface soil in plowed fields is rather light-brown or grayish-yellow fine sandy loam which becomes darker brown when it is wet.

This soil differs from Norfolk fine sandy loam in having a much shallower surface covering and a heavier subsoil. In some fields the subsoil is plowed up in many places. In some places the texture of the surface soil is very fine, but these areas were too small in extent to show separately on the map. Mapped areas also include small patches of Dunbar fine sandy loam and of Coxville fine sandy loam.

Marlboro fine sandy loam occurs exclusively in the southwestern, southern, and southeastern parts of the county. Comparatively large areas are south of Lucama and in the vicinity of Black Creek, and smaller areas occur elsewhere. The soil lies mostly on the broad, smooth uplands, but a small percentage of it is on gentle slopes.

The surface is almost level or gently undulating, but near the drainage ways the land becomes more rolling. Drainage is adequate for most of the land, but in some fields ditches are necessary to insure good underdrainage. The surface soil is rather heavy and retentive of moisture and, consequently, can not be tilled so soon after rains as can Norfolk fine sandy loam.

Marlboro fine sandy loam is important in the agriculture of the county. Practically all of it is farmed, and the small remainder is in forest composed of pine, oak, dogwood, and sweet gum.

As on other good farming soils, the principal crops on this soil are corn, cotton, and tobacco. Some sweet potatoes, potatoes, soybeans, cowpeas, oats, and garden vegetables are grown. Corn yields from 30 to 35 bushels to the acre, cotton about 1 bale, and tobacco from 800 to 1,000 pounds. The fertilizer treatment is the same as for similar crops on Norfolk fine sandy loam. On a few small areas of this soil line is used with good results.

The selling price of Marlboro fine sandy loam ranges from \$150 to \$250 an acre, depending on the improvements and nearness to towns, good roads, and schools.

The suggestions for improving Norfolk fine sandy loam apply to this soil.

Table 8 gives the results of mechanical analyses of samples of the surface soil, subsurface soil, and two layers of the subsoil of Marlboro fine sandy loam:

TABLE 8.—Mechanical analyses of Marlboro fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
236821	Surface soil, 0 to 2 inches.....	0.7	2.9	1.5	17.8	36.3	37.4	3.9
236822	Subsurface soil, 2 to 8 inches.....	.5	2.1	1.0	14.4	34.8	31.6	15.9
236823	Subsoil, 8 to 32 inches.....	.7	1.8	.7	10.2	25.9	28.7	32.1
236824	Subsoil, 32 to 55 inches.....	.5	1.2	.6	8.2	22.9	9.1	57.7

RUSTON SANDY LOAM

Under forest conditions the surface soil of Ruston sandy loam is gray or grayish-brown light sandy loam or loamy sand 2 or 3 inches thick. This grades to pale-yellow light sandy loam which ranges in depth from 14 to 18 inches. The subsoil, to a depth of 30 or 40 inches, is reddish-yellow or reddish-brown friable but crumbly rather heavy sandy clay. Below this is mottled yellow, light-gray, and reddish-brown rather heavy clay. The substratum begins at a depth of about 48 inches and is mottled gray, yellow, and reddish-brown very friable sandy clay. In cultivated fields the surface soil, to a depth of 7 or 8 inches, is light-gray or grayish-yellow friable light sandy loam underlain by pale-yellow material. On some of the steeper slopes the surface material has been eroded in spots, exposing the reddish-yellow subsoil.

Ruston sandy loam occurs in the central, northeastern, and southwestern parts of the county. The largest areas are adjacent to Toisnot Swamp, parts of Contentnea Creek, and Town Creek and its tributaries. Other areas are near stream bottoms in the southwestern part of the county. The soil occupies positions on the steeper slopes leading to drainage ways, and small areas occur on high points of the uplands.

The surface relief is gently sloping or rolling, the more rolling areas being near streams. Owing to its position, the soil is well drained. On some of the steeper slopes the surface run-off is excessive, and erosion is active. Terraces have been constructed in some places to prevent washing. The land is open and porous and can be cultivated soon after rains.

On account of its comparatively small extent, Ruston sandy loam is not very important agriculturally. About 65 per cent of it is farmed, and the remainder is forested with pine, sweet gum, and a few oak, dogwood, and sourwood trees. A small acreage is used for pasture.

The principal crops are corn, cotton, and tobacco, and the minor crops are sweet potatoes, potatoes, soybeans, cowpeas, oats, and garden vegetables. The yields of corn, cotton, and tobacco are about the same as on Norfolk sandy loam, and the fertilizer treatment is similar to that for the latter soil.

Ruston sandy loam is closely associated with the Norfolk soils, and the suggestions for the improvement of Norfolk sandy loam apply also to this soil.

Table 9 gives the results of mechanical analyses of samples of the surface soil and different layers of the subsoil of Ruston sandy loam:

TABLE 9.—Mechanical analyses of Ruston sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
236825	Surface soil, 0 to 3 inches.....	3.8	17.4	11.6	28.8	18.4	16.8	3.9
236826	Subsoil, 3 to 16 inches.....	5.0	16.4	11.5	26.6	18.2	19.1	4.0
236827	Subsoil, 16 to 30 inches.....	6.5	13.1	9.8	17.8	10.4	13.3	30.0
236828	Subsoil, 30 to 50 inches.....	2.9	6.5	2.3	8.3	18.7	26.6	35.4
236829	Subsoil, 50 to 96 inches.....	12.2	21.8	5.0	24.8	5.3	12.4	18.9
236830	Subsoil, 96 to 116 inches.....	.6	1.2	.4	21.0	6.2	42.4	28.2

RUSTON FINE SANDY LOAM

In forested areas the surface soil of Ruston fine sandy loam is gray or brownish-gray mellow loamy fine sand or fine sandy loam from 2 to 4 inches thick. The subsurface layer consists of pale-yellow or brownish-yellow loamy fine sand or fine sandy loam which continues to a depth varying from 14 to 18 inches. The typical subsoil is reddish-yellow, yellowish-red, or light reddish-brown friable crumbly fine sandy clay which continues to a depth varying from 30 to 36 inches. Beneath this is mottled yellow, gray, and reddish-brown friable clay continuing to a depth of about 48 inches. The substratum consists of mottled yellow, reddish-brown, gray, and in some places pink sticky sandy clay, which is lighter in texture than the subsoil.

In cultivated fields where the surface soil has been thoroughly mixed by plowing, the soil is light-gray or grayish-yellow loose mellow loamy fine sand or light sandy loam 6 or 8 inches thick. On some of the steeper slopes are eroded or "galled" spots where the reddish-yellow subsoil is exposed. Such spots were too small to show on the soil map.

Ruston fine sandy loam occurs mainly in the south-central, southern, and eastern parts of the county. The largest areas are west of Wilson and along the slopes leading to Contentnea Creek, Black Creek,

Toisnot Swamp, and Goss Swamp, and tributaries of Town Creek in the northeastern part of the county. Smaller areas are elsewhere. The soil occurs principally on the steeper slopes near streams and commonly adjoins the more level areas of the Norfolk soils.

This land is sloping or gently rolling, the more rolling areas being near the streams. Drainage is adequate, and on some of the steeper areas the surface soil has been eroded. Because the soil is so sandy and mellow, it absorbs moisture readily and can be cultivated soon after rains.

Ruston fine sandy loam, which is of comparatively small total extent, is not important in the agriculture of the county. Approximately 60 per cent of it is used for crops. The forested areas support a growth of pine, together with a few dogwood, oak, and sweet gum trees.

The principal crops are corn, cotton, and tobacco, and the minor crops are sweet potatoes, soybeans, cowpeas, oats, and garden vegetables. The crop yields are approximately the same as on Norfolk fine sandy loam with which this soil is closely associated, and the crops are treated with about the same kinds and quantities of fertilizer.

Ruston fine sandy loam is deficient in organic matter. The soil would be improved by growing more green-manure crops and more legumes in rotation with other crops.

The results of mechanical analyses of samples of the surface soil and different layers of the subsoil of Ruston fine sandy loam are given in Table 10:

TABLE 10.—Mechanical analyses of Ruston fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
236831	Surface soil, 0 to 2 inches.....	4.9	11.3	6.4	35.0	29.0	12.2	2.7
236832	Subsoil, 2 to 16 inches.....	1.8	8.8	5.6	41.1	17.6	20.6	3.8
236833	Subsoil, 16 to 34 inches.....	1.2	5.0	3.1	15.7	15.0	13.8	46.2
236834	Subsoil, 34 to 48 inches.....	.8	5.3	4.4	27.1	13.1	11.9	37.9
236835	Subsoil, 48 to 58 inches.....	3.6	22.8	10.1	32.1	3.6	6.0	22.2

CUTHBERT FINE SANDY LOAM

In wooded areas of Cuthbert fine sandy loam the surface layer consists of gray fine sandy loam 1 or 2 inches thick. The subsurface layer consists of pale-yellow or grayish-yellow fine sandy loam which continues to a depth of 8 or 10 inches. The subsoil, to a depth of about 30 inches, is of reddish-yellow or yellowish-red heavy, tough, compact clay. In this layer the color is similar to that of the Ruston soils, but the soil is very much heavier and tougher. Beneath this material is mottled yellow and light-red heavy tough clay in which there is a little gray. Below a depth of about 60 inches is light-gray heavy laminated clay streaked with rust brown.

In cultivated areas the surface soil is grayish-yellow or pale-yellow fine sandy loam from 5 to 8 inches thick. On many of the steeper slopes there are small areas where the surface mantle has been removed by washing or by wind action and the yellowish-red subsurface material is exposed. The texture of most of this soil is fine sandy loam, but along Hominy Swamp immediately north and south of Wilson the soil is medium sandy loam.

Cuthbert fine sandy loam occurs mainly in the eastern half of the county and is of comparatively small extent. It occupies slopes approaching drainage ways. The largest areas are along the upper course of Whiteoak Swamp, east of Bridgersville, and in places near Toisnot and Hominy Swamps. The surface is gently sloping or rolling. Owing to its position on slopes and knolls near streams, the land is well drained. In some places the surface run-off is excessive and the soil mantle has been washed off, exposing the heavy reddish-yellow clay.

On account of its small extent, this soil is unimportant agriculturally. It is estimated that about 65 per cent of it is under cultivation. The remainder is in forest consisting of pine and a few oak, sweet gum, and dogwood trees. A few small areas are used for pasture.

The principal crops on this soil are corn and cotton. Tobacco is grown to some extent, as are small acreages of sweet potatoes, potatoes, cowpeas, and garden vegetables. Corn yields from 20 to 25 bushels to the acre, cotton from one-half to three-fourths bale, and tobacco from 700 to 800 pounds. The crops on this soil are fertilized in about the same way as those on Norfolk fine sandy loam.

Cuthbert fine sandy loam, like the other farmed soils, is deficient in organic matter. Green-manure crops would prove beneficial. The steeper areas should remain in forest, as the soil erodes easily. This soil is suited to corn, cotton, oats, peanuts, cowpeas, and vetch.

In Table 11 are given the results of mechanical analyses of samples of the surface soil, subsurface soil, and different layers of the subsoil of Cuthbert fine sandy loam:

TABLE 11.—Mechanical analyses of Cuthbert fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
236836	Surface soil, 0 to 1 inch.....	0.9	2.4	0.7	13.3	63.6	15.4	3.7
236837	Subsurface soil, 1 to 10 inches..	.5	1.4	.8	46.5	29.2	15.5	5.6
236838	Subsoil, 10 to 28 inches.....	.5	.6	.3	14.2	15.2	21.8	46.7
236839	Subsoil, 28 to 46 inches.....	.0	.3	.2	1.4	7.7	30.5	59.5
236840	Subsoil, 60 to 96 inches.....	.0	.6	.3	4.2	17.6	31.6	45.4

BRADLEY GRAVELLY SANDY LOAM

In wooded areas the surface soil of Bradley gravelly sandy loam consists of gray or grayish-brown loamy sand or sandy loam which grades to brownish-yellow friable sandy loam ranging in depth from 12 to 18 inches. Scattered over the surface and mixed with the soil are numerous rounded gravel, principally quartz, which compose from 15 to 35 per cent of the soil mass and give it a gravelly texture. The subsoil consists of light-red or mottled light-red and yellow, yellowish-red, or red brittle clay or silty clay which continues downward to a depth varying from 30 to about 50 inches and grades to mottled red, yellow, and gray disintegrated soft slate or granite rock. In cultivated fields the surface soil is light-gray or grayish-yellow gravelly sandy loam from 6 to 8 inches thick. Over the plowed surface are many galled or eroded spots where the red clay subsoil is exposed.

Bradley gravelly sandy loam represents a soil condition rather than a consistent soil type. The surface material is Norfolk sandy loam overlapping the red clay subsoil of the piedmont plateau soil material. The surface mantle is variable in thickness. The shallower

areas occur mostly on the steep slopes. On the slopes the surface texture varies from silt to fine sand and sand. In some places the surface mantle has been entirely washed away. Such areas would have been mapped as Cecil or Georgeville clay loam had they been of sufficient extent.

Bradley gravelly sandy loam occurs only in the extreme western and northwestern parts of the county. The largest areas are west and north of Rock Ridge along the slopes and breaks of drainage ways. The surface is gradually sloping, gently rolling, or rolling and somewhat broken near the streams. This land is the most rolling in the county and resembles the piedmont plateau in relief. On account of the rolling surface, the soil is well or excessively drained.

This soil is important agriculturally, and approximately 60 per cent of it is used for farming. The forest growth consists of large oaks, shortleaf pine, hickory, dogwood, sourwood, and some sweet gum. A small percentage of this soil is used for pasture.

The leading crops are corn and cotton. Tobacco is grown to a small extent, and wheat is grown on some of the farms. Other minor crops are oats, sweet potatoes, cowpeas, potatoes, fruits, and garden vegetables.

Crop yields are good. Corn yields from 20 to 35 bushels, cotton from three-fourths to 1 bale, and tobacco from 800 to 1,000 pounds to the acre. Cornland receives 200 pounds to the acre of an 8-3-3 fertilizer, and the crop is given an acreage application varying from 50 to 100 pounds of nitrate of soda during cultivation. Cotton is fertilized with applications varying from 400 to 600 pounds to the acre of the same grade of fertilizer, and tobacco with 800 or 1,000 pounds of a like grade.

Bradley gravelly sandy loam is a good, strong farming soil. It is well suited to cotton, corn, tobacco, and oats. The land is deficient in organic matter, which could be supplied by turning under green-manure crops.

The more rolling areas erode easily and should remain in forest or be seeded to pasture grasses.

Table 12 gives the results of mechanical analyses of samples of the surface soil, subsurface soil, and two layers of the subsoil of Bradley gravelly sandy loam.

TABLE 12.—Mechanical analyses of Bradley gravelly sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236860	Surface soil, 0 to 3 inches-----	15.8	16.9	4.8	22.4	13.2	19.6	6.9
236861	Subsurface soil, 3 to 12 inches--	16.7	17.5	4.5	19.9	14.2	21.9	5.4
236862	Subsoil, 12 to 50 inches-----	3.6	2.5	.5	4.1	17.2	37.6	34.3
236863	Subsoil, 50 to 60 inches-----	.4	1.0	.4	2.6	19.8	49.9	26.1

BRADLEY SANDY LOAM

In forested areas the surface soil of Bradley sandy loam is gray or brownish-gray light loamy sand or sandy loam 3 or 4 inches thick. This grades to yellow or brownish-yellow sandy loam which continues to a depth varying from 12 to about 18 inches. The subsoil consists of yellowish-red, mottled red and yellow, or red stiff, brittle clay or silty clay which extends to a depth ranging from 30 to 48 inches. Beneath this is mottled or streaked yellow, gray, and red decomposed

slate or granite material. The soil of the two upper layers is derived from coastal-plain material, but the subsoil is formed from the rocks of the piedmont plateau. After being mixed through cultivation the surface soil, to a depth of 6 or 8 inches, is light-gray or pale-yellow sandy loam. On some of the steeper slopes erosion has been active and galled spots of the red clay subsoil are exposed.

Bradley sandy loam occurs only in the western and southwestern parts of the county and is much less extensive than Bradley gravelly sandy loam. The larger areas are east of Buckhorn Crossroads and in the vicinity of Boyette and Aycock Crossing. This soil occurs on the steeper slopes where erosion has exposed the underlying piedmont material. Areas are sloping, gently rolling, and rolling. Drainage is well established, and on some of the steeper slopes the surface runoff is excessive. The land is open and porous and can be tilled soon after rains.

This soil is not important agriculturally, because of its comparatively small extent. About 80 per cent of it is cultivated, and the remainder is forested with pine, oak, dogwood, and sweet gum. The principal crops are corn, cotton, and tobacco, and the farm practices and fertilizer treatment are about the same as for Bradley gravelly sandy loam.

This soil is well suited to corn, cotton, tobacco, oats, vetch, sweet potatoes, and vegetables. Like the Norfolk soils, it is deficient in organic matter. The steeper areas are best suited to forestry or pasture.

KALMIA FINE SANDY LOAM

In wooded areas the surface soil of Kalmia fine sandy loam is gray or light-gray mellow loamy fine sand or fine sandy loam 3 or 4 inches thick. This is underlain by pale-yellow mellow fine sandy loam which continues to a depth varying from 12 to 18 inches. The subsoil is yellow friable fine sandy clay to a depth of 30 or 34 inches. Below this depth the material consists of mottled yellow, gray, and rust-brown friable sandy clay or fine sandy clay.

The surface mantle in plowed fields is mellow light-gray or grayish-yellow fine sandy loam from 5 to 8 inches thick. Included in mapped areas of this soil are a few small patches of deep fine sandy loam and fine sand which were not of sufficient importance to show on the map. In some places the surface soil is somewhat darker, and the subsoil is heavy, mottled, yellow, gray, and red fine sandy clay or clay. Had such areas been sufficiently extensive they would have been mapped as a well-drained phase of Leaf fine sandy loam. The largest area of this soil occurs west of Stantonsburg.

Kalmia fine sandy loam is a terrace soil and occurs on the terraces along Contentnea and Black Creeks, Toisnot Swamp, and a few of the smaller streams. The largest areas are in the central and southeastern parts of the county from Hornes Mill to the southeastern corner near Stantonsburg. The soil occurs in strips ranging in width from a few yards to nearly a mile. The largest areas are east of Hornes Mill, near Roundtree Bridge, and west of Stantonsburg.

Areas of this soil are nearly level or gently undulating. A few slight ridges occur in places. The soil lies largely above overflow, although some of it is inundated during protracted rainy seasons. Except in small flat areas, drainage is good. The land absorbs moisture readily and can be tilled soon after rains.

Kalmia fine sandy loam is an important soil agriculturally, and about 80 per cent of it is farmed. The remainder supports a timber growth consisting mainly of old-field pine and sweet gum. A few small tracts are used for pasture.

This soil is adapted to general farm crops. It is used mainly for the production of corn, cotton, and tobacco. Some sweet potatoes, potatoes, cowpeas, oats, soybeans, and garden vegetables are grown. Corn yields from 15 to 30 bushels, cotton from one-half to three-fourths bale, and tobacco from 600 to 800 pounds to the acre. These crops are fertilized in about the same way as on Norfolk sandy loam.

This soil is deficient in organic matter, and the growing of green-manure crops would improve it.

KALMIA SANDY LOAM

In forested areas the surface soil of Kalmia sandy loam is gray or brownish-gray loamy sand or light sandy loam from 2 to 4 inches thick. The subsurface soil is yellow or pale-yellow light sandy loam which extends to a depth varying from 14 to 18 inches. The subsoil consists of yellow friable sandy clay which may continue to a depth varying from 30 to 36 inches, where it grades to mottled yellow and gray sticky sandy clay. In cultivated fields the surface soil, to a depth of 6 or 8 inches, is light-gray or pale-yellow sandy loam. Kalmia sandy loam is similar in color and structure to Norfolk sandy loam. Included in mapped areas of Kalmia sandy loam are patches of deep sandy loam and sand which occur on slight ridges or hummocks in some of the fields. These patches are too small in extent to show on the map as separate soils.

Kalmia sandy loam differs from Norfolk sandy loam in that it is of alluvial origin and occurs on terraces or second bottoms along streams. The soil is of small extent in the county. The largest areas are along Contentnea Creek in the western and southeastern parts of the county, and adjacent to Town Creek in the northeastern part. The soil occurs in strips varying in width from a few yards to about one-half mile. Most areas are above ordinary overflow, but at times during excessive rains much of the land is flooded. The surface is almost level or gently undulating, with a few slight ridges or hummocks. The soil is open and porous and drainage is good, except in some flat places where ditches are necessary.

Kalmia sandy loam, owing to its comparatively small extent, is not important agriculturally. Approximately 70 per cent of it is cultivated, and the remainder is mostly in old fields grown up with short-leaf pine, sweet gum, and a few myrtle bushes. A small part of it is used for pasture. The main crops are corn, cotton, and tobacco, and some sweet potatoes, potatoes, cowpeas, and garden vegetables are produced. The crop yields and fertilizer treatment are similar to those for Norfolk sandy loam.

This soil is deficient in organic matter. Green-manure crops would help supply this material. The suggestions for the improvement of Norfolk sandy loam apply to Kalmia sandy loam.

CAHABA FINE SANDY LOAM

In forested areas the surface soil of Cahaba fine sandy loam consists of light-brown fine sandy loam 8 or 10 inches thick. The subsoil is reddish-yellow or brownish-red friable fine sandy clay to a depth varying from 30 to 36 inches. The substratum is light reddish-yellow

very friable fine sandy loam. The material in this layer is much lighter, both in color and texture, than the subsoil. In cultivated fields the surface soil is light gray, grayish brown, or reddish brown. At Roundtree Bridge, the soil is medium sandy loam in texture.

Cahaba fine sandy loam is of comparatively small extent. It occurs only in small areas on the terraces along Contentnea Creek. The larger areas are north of Wiggins Mill, near Roundtree Bridge, near Woodard Bridge, and west of Stantonsburg. This soil commonly adjoins areas of the Kalmia soils. The surface is nearly level or gently undulating, and the drainage is generally well established. In some flat areas ditches are necessary to insure better drainage.

Practically all of this soil is under cultivation, but on account of its comparatively small extent it is unimportant agriculturally. On the few small forested areas the growth consists of pine, sweet gum, and a few oak trees. The principal crops are corn and cotton. A smaller acreage of tobacco is grown. The yields are similar to those obtained on Kalmia fine sandy loam. The crops are fertilized with about the same kinds and quantities of fertilizer as are similar crops on Norfolk sandy loam. This soil, like the other cultivated well-drained soils, is deficient in organic matter.

Table 13 gives the results of mechanical analyses of samples of the surface soil and subsoil of Cahaba fine sandy loam:

TABLE 13.—Mechanical analyses of Cahaba fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236872	Surface soil, 0 to 8 inches.....	0.4	2.0	3.8	58.4	9.6	16.3	8.9
236873	Subsoil, 8 to 34 inches.....	.0	.4	1.5	41.5	10.2	22.7	23.4
236874	Subsoil, 34 to 55 inches.....	.0	.2	1.9	64.4	7.8	12.6	13.0

DUNBAR SANDY LOAM

Under forest conditions the surface soil of Dunbar sandy loam consists of dark-gray or brownish-gray loamy sand or light sandy loam 3 or 4 inches thick. This grades to pale-yellow or yellowish-gray sandy loam which continues to a depth of 8 or 10 inches. The subsoil, to a depth of about 18 inches, is pale-yellow heavy sandy loam or friable sandy clay. The substratum is mottled light-gray and yellowish-brown, and in places bright-red, heavy sandy clay which is slightly plastic. The surface soil in cultivated areas is light-gray or yellowish-gray sandy loam which becomes darker in color when it is wet.

Dunbar sandy loam occurs in the central and northern parts of the county, the largest areas being southwest of Wilbanks, east and northwest of Wilson, near New Hope, and north of Uptown Church in the northeastern part. Smaller areas are elsewhere in the county.

Dunbar sandy loam occurs in flats and depressions in the inter-stream country and also around the sources of streams. The surface is nearly flat or slightly undulating. Drainage conditions are midway between the better drained Norfolk soils and the poorly drained Coxville and Portsmouth soils. The underdrainage for nearly all this soil is poor, and the water table is within 36 or 40 inches of the surface. Ditching is necessary to grow crops successfully.

Because of its small extent this soil is comparatively unimportant in the agriculture of the county. Approximately 30 per cent of it is used for crops, and the remainder is forested, mainly with shortleaf pine, sweet gum, a few oak, and sourwood trees, and an undergrowth of gall-berry bushes and various briars. Some areas are used for range for cattle.

Dunbar sandy loam, when properly drained, makes good farm land. It is used mainly for the production of corn and cotton, but tobacco is grown on some of the higher areas. More oats are produced on this soil than on the better drained soils. Cowpeas, soybeans, and some garden vegetables are grown. The land does not yield quite so well as the Norfolk soils. Corn yields from 20 to 30 bushels to the acre, cotton from one-half to three-fourths bale, and tobacco from 600 to 700 pounds. Oats, soy beans, and cowpeas give good returns. The fertilizer treatment is similar to that for the same crops on Norfolk sandy loam. Many farmers use lime to correct acidity, and the results have been highly satisfactory.

Dunbar sandy loam is used mostly for growing timber and for wood lots. Some trees of timber size are sawed into lumber, but most of them are used as firewood for homes and as fuel for tobacco curing. The price of the land is governed mainly by the value of the timber growth.

Dunbar sandy loam, on account of its poor drainage, is acid. In order to get the best results, the land should be properly drained and should be given heavy applications of ground limestone. When reclaimed the soil is well suited to corn, cotton, soy beans, cowpeas, oats, vetch, hay crops, truck crops, and strawberries.

DUNBAR FINE SANDY LOAM

The surface soil of Dunbar fine sandy loam in wooded areas is gray, dark-gray, or brownish-gray loamy fine sand or fine sandy loam 3 or 4 inches thick. The subsurface layer, to a depth of 8 or 10 inches, is pale-yellow or grayish-yellow friable fine sandy loam. The subsoil consists of pale-yellow slightly sticky fine sandy loam or fine sandy clay which continues to a depth varying from 18 to 22 inches, where it grades to mottled brownish-yellow and gray, heavy and somewhat plastic clay with small splotches of bright red in some places. The plowed surface is gray or light-gray mellow fine sandy loam which becomes darker when wet.

Included in mapped areas of Dunbar fine sandy loam are several comparatively small areas in which the texture is very fine. The largest of these occur south of Wilbanks and in the vicinity of Saratoga. These areas were not of sufficient agricultural importance to warrant separation on the soil map.

Dunbar fine sandy loam occurs in scattered areas over nearly the entire county, except the northwestern part. The areas range in size from a few acres to nearly a square mile, the largest being in the southwestern, southern, and eastern parts of the county. Large areas are southwest of Lamms Crossroads, north and east of Black Creek, in the vicinity of Saratoga, southeast of Wilson, and in the vicinity of Wilbanks.

This soil occurs in flats or depressions on the broad interstream divides and at the sources of streams. The surface is about level or slightly undulating. Owing to the position of the soil and its rather heavy texture, the natural drainage is poorly established. The

water table is commonly reached at a depth varying from 36 to 40 inches, and drainage ditches are necessary on most of the farmed land.

Dunbar fine sandy loam, although rather extensive, is not an important soil agriculturally. Much of it is farmed in small tracts in connection with the adjoining better drained lands. It is estimated that approximately 35 per cent of it is used for farming. The remainder is in timber consisting mainly of shortleaf pine, some sweet gum, maple, small oak, and holly. Gall-berry bushes are characteristic in the undergrowth. Some wooded areas serve as range for cattle.

The leading crops are corn and cotton. Tobacco is grown on some of the higher and better drained areas. The land is used more extensively for oats than the better drained lands. Most of the fields are small, ranging in extent from about 2 to 10 acres. Some cowpeas, soybeans, and garden vegetables are produced. Corn yields from 20 to 30 bushels to the acre, cotton from one-half to three-fourths bale, and tobacco about 600 pounds. The minor crops produce well. The fertilizer treatment is similar to that for like crops on Norfolk fine sandy loam. Lime is applied by some farmers to correct the acidity of the soil.

The selling price of this soil is governed largely by the value of the timber, which is used mainly for firewood in the home and for fuel to cure tobacco. Some timber is sawed for lumber. When it is thoroughly drained and the acidity is corrected with lime, Dunbar fine sandy loam makes good general-farming land. More of it could be used for the production of hay and forage crops.

Table 14 gives the results of mechanical analyses of samples of the surface soil, subsurface soil, and subsoil of Dunbar fine sandy loam.

TABLE 14.—Mechanical analyses of Dunbar fine sandy loam

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
236845	Surface soil, 0 to 3 inches.....	0.5	1.4	0.8	46.5	29.2	15.5	5.6
236846	Subsurface soil, 3 to 9 inches..	.8	4.6	4.6	37.7	25.1	21.7	6.1
236847	Subsoil, 9 to 20 inches.....	1.0	3.4	3.6	30.8	21.7	23.7	15.7
236848	Subsoil, 20 to 46 inches.....	1.2	3.9	4.0	29.6	15.6	16.9	29.4

COXVILLE FINE SANDY LOAM

Under forest conditions the surface soil of Coxville fine sandy loam consists of dark-gray or brownish-gray fine sandy loam 3 or 4 inches thick. The subsurface material, to a depth of 8 or 10 inches, is light-gray fine sandy loam. The subsoil, to a depth of 20 or 24 inches, is mottled pale-yellow and light-gray fine sandy clay which grades to mottled yellow, gray, and bright-red, heavy, tough, slightly plastic clay. In some places the red mottling is not present. Included in mapped areas of this soil are a few small patches of Coxville sandy loam. The largest of these patches are east of Wilson and near the Wayne County line.

Coxville fine sandy loam is of small extent in the county. It occurs mostly in the southern and eastern parts. The largest areas are 2½ miles southwest of Black Creek, and southeast and west of Saratoga. The soil occupies flats and slight depressions on the uplands and near the source of streams.

The surface is approximately level, and because of this and the heaviness of the subsoil, the natural surface and internal drainage

are poor and it is necessary to ditch the land before it can be used successfully for farming.

Coxville fine sandy loam is not used for agriculture. Practically all of it is forested, except a few small areas which are in corn or pasture. The timber growth is mostly shortleaf pine, with a few scrub oak and sweet gum. An undergrowth of gall-berry bushes covers most of the land.

This soil is probably best suited to forestry. When it is properly drained and limed, it is adapted to corn, cotton, hay and forage crops, and oats. The soil is especially well suited to strawberries.

PORTSMOUTH FINE SANDY LOAM

In forested areas the surface soil of Portsmouth fine sandy loam consists of dark-gray or almost black fine sandy loam 10 or 12 inches thick. The dark color results from the large quantity of organic matter accumulated under swampy or semiswampy conditions. The subsoil, to a depth of 18 or 20 inches, is composed of light-gray fine sandy clay mottled in places with pale yellow or rust brown. The substratum consists of mottled yellow and light-gray slightly plastic fine sandy clay.

This soil occurs in only a few scattered areas in the eastern and southwestern parts of the county. The larger of these are near the Edgecombe County line in the extreme eastern part, south of Bridgersville, and 2 miles south of Buckhorn Crossroads in the southwestern part. This soil occupies flat places near the sources of streams.

Areas are nearly level, and because of its position and lack of relief the soil is poorly drained. The water table is reached at a depth varying from 24 to 30 inches below the surface.

This soil is unimportant agriculturally. Practically all of it is in forest, mostly of shortleaf pine and a few sweet gum, maple, oak, and bay trees. A few small tracts of the soil are used for corn and oats.

This soil, when it is properly drained and limed is suited to corn, cotton, oats, cowpeas, soybeans, hay crops, strawberries, cabbage, onions, and potatoes.

PLUMMER FINE SANDY LOAM

The surface soil in the forested areas of Plummer fine sandy loam is gray or dark-gray fine sandy loam from 2 to 4 inches thick. It is underlain to a depth of about 8 inches by light-gray or ash-colored fine sandy loam. The subsoil, to a depth varying from 18 to 22 inches, consists of mottled pale-yellow and light-gray fine sandy clay. Below this layer the material is mottled yellow and light-gray loose, friable, and crumbly fine sandy clay. Pockets or layers of gray or white fine sand are commonly present. The soil of this layer is more friable and crumbly than that in the corresponding layer in the Portsmouth or Coxville soils. Included in mapped areas of Plummer fine sandy loam are areas of Plummer sandy loam too small to be indicated on the map.

Plummer fine sandy loam occurs extensively in pocosins in nearly all parts of the county. It is extensive south of Buckhorn Crossroads in the southwestern part of the county, west of Elm City, northeast of Uptown Church, and northeast of Saratoga. It occupies positions

on the broad uplands where the regional drainage is poorly established or is lacking. The smaller areas are near the sources of small streams.

The surface of the soil is generally level, with a few slight hummocks and depressions. In the pocosins the general surface slopes gradually from the center toward the border. On account of the level surface and lack of well-defined drainage ways, the soil is poorly drained.

The water table is commonly within 30 or 40 inches of the surface. Because of the crumbly structure of the lower part of the subsoil, ditch banks do not stand up well and it is difficult to keep ditches open.

Plummer fine sandy loam is not an agricultural soil in this county. A few small areas have been reclaimed and are used for corn and oats, but most of the land is held as a forest reserve and to some extent as range for cattle. The timber is mostly of shortleaf pine and is used chiefly for fuel, although a few of the larger trees are sawed into lumber. In addition to pine, there are some sweet gum, scrub oak, water oak, and holly trees and an undergrowth of gall-berry bushes and various wild grasses. The pitcher plant is a characteristic flower on this soil.

The selling price of this soil is governed largely by the value of the timber growth. Plummer fine sandy loam is best suited to forestry.

LEAF FINE SANDY LOAM

In uncultivated areas the surface soil of Leaf fine sandy loam consists of gray or dark-gray heavy fine sandy loam from 6 to 10 inches thick. The subsoil is steel-gray clay mottled or streaked with yellowish-brown heavy plastic clay of undetermined thickness. In some places an intermediate layer between the surface soil and subsoil consists of light-gray or grayish-yellow rather heavy fine sandy clay. This layer ranges in thickness from 6 to 8 inches.

Leaf fine sandy loam occurs mainly on the terraces along Contentnea Creek, where it occupies broken areas from Hornes Mill to the southeastern county line. A few small areas are along other streams. The soil occurs in flat and poorly drained areas on the terraces, in some places adjoining the uplands and in other places adjoining the swamps or first bottoms. Areas are practically level, and because of this and the heaviness of the subsoil, the land is poorly drained.

Leaf fine sandy loam is unimportant agriculturally. Less than 5 per cent of it is used for crops, a small percentage is in pasture, and the remainder is forested with shortleaf pine and sweet gum. There is commonly an undergrowth of gall-berry bushes and wild grass. A small acreage is used for corn, oats, cowpeas, and hay.

Leaf fine sandy loam is probably best suited to forestry or pasture. The soil, when reclaimed by thorough drainage and liming, gives fair yields of corn, cotton, soybeans, cowpeas, and forage crops.

OKENEEO LOAM

The surface soil of Okeneeo loam is dark-gray or almost black smooth loam or silt loam 10 or 12 inches thick. The dark color results from the large percentage of organic matter present in the soil. The subsoil consists of gray or brownish-gray friable fine sandy clay or fine sandy loam, which continues to a depth varying from 34 to 38 inches and is underlain by light-gray loamy fine sand.

Okenee loam occurs in only a few places on the terraces in the southern part of the county. The larger areas are 2 miles west of Stantonsburg and west of Woodard Bridge, and small areas are along Toisnot Swamp.

This soil occupies positions on the terraces adjoining the uplands, and seepage water keeps the land wet much of the time. Some of the higher areas are better drained, but ditches are necessary everywhere for successful farming. The land is practically level.

This soil is of too small extent to be of much agricultural importance. A small part of it is used for corn and oats, and the remainder is forested with sweet gum, water oak, birch, a few pines, and a heavy undergrowth of bushes and briers. Some of the land is in old fields covered with broom sedge. When it is properly drained and limed, it gives good yields of corn, oats, and forage crops.

MYATT SANDY LOAM

In forested areas the surface soil of Myatt sandy loam is dark-gray or brownish-gray sandy loam or heavy sandy loam from 8 to 10 inches thick. The subsoil, to a depth of about 24 inches, is light-gray or light-gray slightly mottled with brown sticky sandy clay underlain by light-gray sticky sandy loam or loamy sand. In plowed fields the surface soil is gray or ash-colored sandy loam.

Myatt sandy loam occurs on some of the terraces along Toisnot Swamp, Contentnea Creek, and a few other streams. The larger areas are south of Contentnea Junction, southeast of Wilson, and west of Evansdale. Most of the soil lies on the side of the terraces adjoining the uplands, but in places areas adjoin the first bottoms. The surface is almost level, and the soil is poorly drained. Much seepage water comes from the uplands, and the water table is generally found at a depth varying from 32 to 40 inches below the surface. Owing to its position and the looseness of the subsoil, the land is difficult to drain.

Myatt sandy loam is of comparatively small extent. About 20 per cent of it is farmed, and the remainder is forested with sweet gum, shortleaf pine, maple, small oaks, and holly. The usual undergrowth is of gall-berry bushes and in places of reeds. A small part of the soil is in pasture. Corn, oats, and hay are the main crops grown. The yields are lower than on the Kalmia soils. Myatt sandy loam is best suited to forestry.

JOHNSTON SILT LOAM

The surface soil of Johnston silt loam is dark-gray, brownish-gray, and in places almost black smooth silt loam from 12 to 15 inches thick. The subsoil consists of gray, brownish-gray, or bluish-gray sticky fine sandy clay which continues to a depth of 30 or 35 inches. Below this depth the subsoil grades to pale-yellow or light-gray loamy sand.

Johnston silt loam is of small extent. The larger areas are east of Wilson along Toisnot Swamp, and smaller areas lie southeast of Elm City and along swamps in the southern part of the county near the Wayne County line. The soil occurs in the first bottoms of streams and is subject to overflow during high water. The surface is nearly level, with a slight grade in the direction of the stream flow. Drainage is poor, and canals or ditches are required for successful farming.

This soil, because of its comparatively small extent, is not important agriculturally. About 60 per cent of it is used for crops, and the remainder supports a growth of sweet gum, water oak, maple, and birch, and a heavy undergrowth of various bushes and briers. Corn is the principal crop, and oats and hay are produced to a small extent. Corn yields from 30 to 40 bushels to the acre.

MEADOW

Meadow comprises low-lying first-bottom land along some of the streams. The soil is mixed and variable in texture and color and can not be classed as a definite soil type. Drainage conditions are slightly better in meadow than in swamp. The surface soil ranges in texture from sandy loam to fine sandy loam and silt loam. Much sandy material is sometimes washed from the adjoining slopes and deposited on the surface. The color of the surface soil ranges from brown to gray and nearly black. The subsoil in many places is sandy loam or silt loam, but it commonly grades to lighter and more friable material as the depth increases. In most areas layers of sand occur at a depth varying from 30 to 36 inches. The color of the subsoil may be gray, mottled gray, yellow, and rust brown or brown.

Meadow occurs in only a few areas along a few of the streams of the county. The larger areas are along parts of Black Creek and Goss, Hominy, and Whiteoak Swamps. Smaller areas are along other streams. The soil occurs in strips ranging in width from a few feet to about one-fourth mile. The surface is nearly level but slopes slightly in the direction of the stream flow. Areas are subject to frequent overflow and remain in a partly saturated state during most of the winter.

Meadow is not a farming soil in this county. A rather large proportion of it is used for summer pasture land. If reclaimed by dredging and ditching, it would in places give fair yields of corn, oats, and hay.

SWAMP

Swamp comprises material which varies in color, texture, and structure. The texture ranges from sandy loam to loam and silt loam, and the color may be brown, gray, or black. The subsoil varies from heavy to friable, and the texture ranges from silty clay to sandy clay or loamy sand. The color varies from dull gray, mottled yellow and gray, and light gray, to brown. The subsoil is generally more friable with increasing depth, and layers of sand are present in many places.

Swamp occurs as first bottoms along most of the streams of the county. The areas range in width from a few feet to nearly one-half mile. The wider areas are along Black, Contentnea, and Town Creeks and Toisnot Swamp. The land is low and is frequently overflowed and, except during the summer, is covered or saturated with water. The surface is practically level, with an imperceptible slope in the direction of the stream flow.

Swamp is not used for farming purposes in the county. It is forested with black gum, sweet gum, and a few pine, poplar, and oak trees, and with an undergrowth of various aquatic plants. A few small areas are used as summer pasture. Swamp is best suited to forestry. In order to be of any agricultural use, the streams would have to be dredged and the land ditched.

SUMMARY

Wilson County is in the east-central part of North Carolina, its western boundary line being about 30 miles east of Raleigh, the State capital. The county comprises an area of 373 square miles, or 238,720 acres.

The relief ranges from almost flat to undulating, gently rolling, and rolling. The general slope is toward the southeast. In elevation above sea level the county ranges from 305 feet at the highest point to 50 feet at the lowest point.

The county is drained largely through Contentnea Creek and Toisnot Swamp and their tributaries. Branches of these streams connect with nearly all farms, but large areas throughout the county are poorly drained.

In 1920 the population of the county was 36,813, of which 26,201 were rural. The average density of the rural population was 70.2 persons to the square mile. The rural sections are fairly evenly populated.

Lines of the Atlantic Coast Line and Norfolk Southern Railroads furnish good railroad transportation. Good county roads extend to all the rural districts, and several State highways radiate from Wilson. Churches and schools are located at convenient places.

The mean annual temperature is 60.1° F., and the annual rainfall is 47.42 inches. The frost-free season averages 202 days.

Agriculture began in the county in 1790 and was at first conducted only on some of the terrace lands. At present agriculture consists mainly of the production of corn, cotton, and tobacco. Corn is grown as a subsistence crop, mainly for work animals. Cotton and tobacco are the strictly cash crops. The less important crops are oats, wheat, cowpeas, hay and forage, and sweet potatoes. Livestock raising is of little importance.

The systematic rotation of crops is followed by only a few farmers. Commercial fertilizers are used on practically all the farms.

The average size of farms is 41.7 acres. In 1920 the percentage of farms operated by owners was 24.6 and by tenants 75.2.

The soils of the county are deficient in organic matter and lime. They are also poorly supplied with phosphorus, nitrogen, and potash.

Wilson County is in the coastal plain province, and most of the soils are derived directly from the underlying material. In addition to meadow and swamp, 23 soil types are mapped in the county. Norfolk sandy loam, Norfolk fine sandy loam, Norfolk very fine sandy loam, Marlboro fine sandy loam, Ruston sandy loam, Ruston fine sandy loam, and Bradley gravelly sandy loam are the leading upland agricultural soils. Kalmia sandy loam and Kalmia fine sandy loam are the important second-bottom soils. The poorly drained upland soils are Dunbar sandy loam, Dunbar fine sandy loam, and Plummer fine sandy loam. The Dunbar soils are used to some extent for farming, but the Plummer soil is practically all forested. The principal poorly drained terrace soils are Leaf fine sandy loam and Myatt sandy loam. Swamp is the most extensive poorly drained first-bottom soil.

[PUBLIC RESOLUTION—No. 9]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided,* That in addition to the number of copies above provided for 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 area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved, March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]

