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BUREAU OF CHEMISTRY AND SOILS

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

SOIL SURVEY  
OF  
NASH COUNTY, NORTH CAROLINA

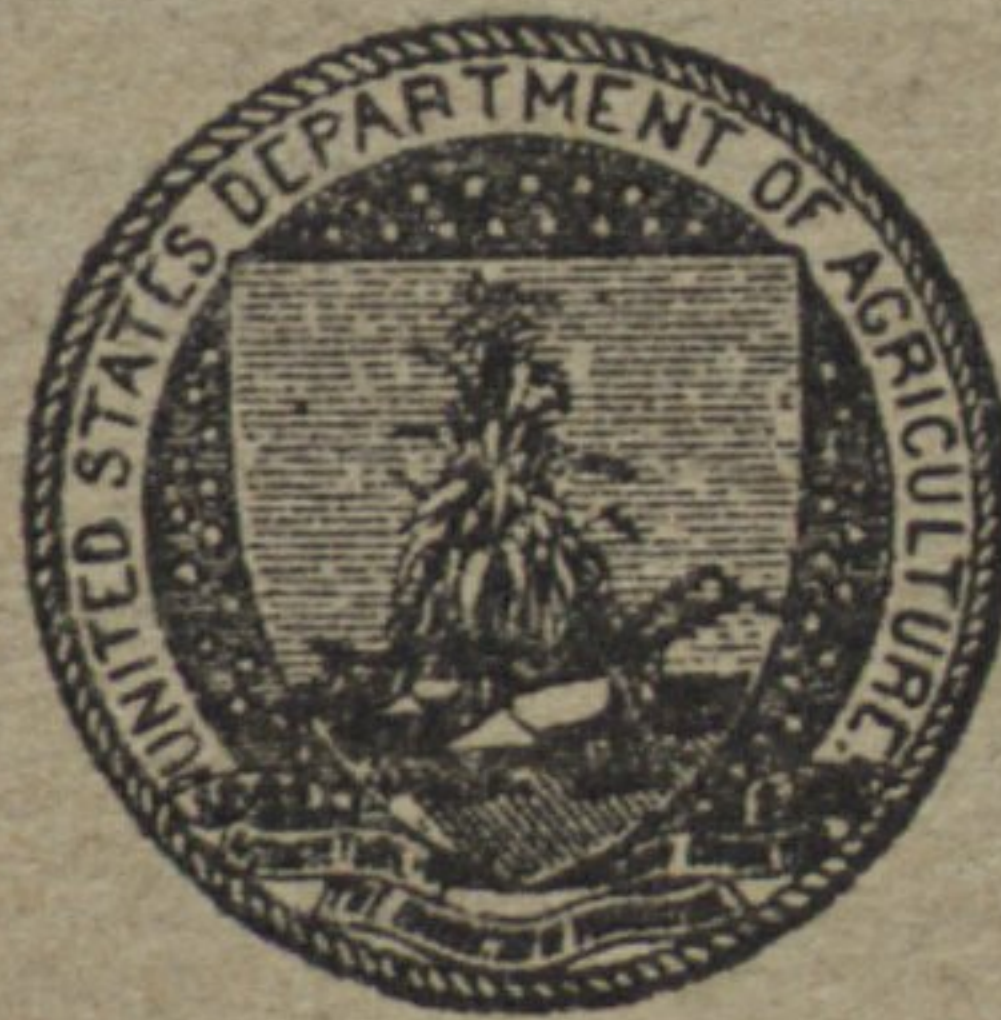
BY

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## SOIL SURVEY OF NASH COUNTY, NORTH CAROLINA

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### COUNTY SURVEYED

Nash County is in the northeastern part of North Carolina. Nashville, the county seat, is about 35 miles northeast of Raleigh. The county is roughly rectangular in shape, the greatest length north and south being 28 miles and east and west 23 miles. The included land area is 549 square miles or 351,360 acres.

Nash County lies within both the piedmont plateau and the coastal plain. The physiographic features of these two divisions are very distinct, but the line of demarcation between them is not sharply drawn. Generally speaking the western side or approximately the western three-fifths of the county is in the piedmont plateau, and the eastern side is in the coastal plain. A line from Meltons Bridge on Fishing Creek, passing through Red Oak, Nashville, Stanhope, Mount Pleasant School, and Bailey, roughly shows the fall line or division between the piedmont plateau and the coastal plain.

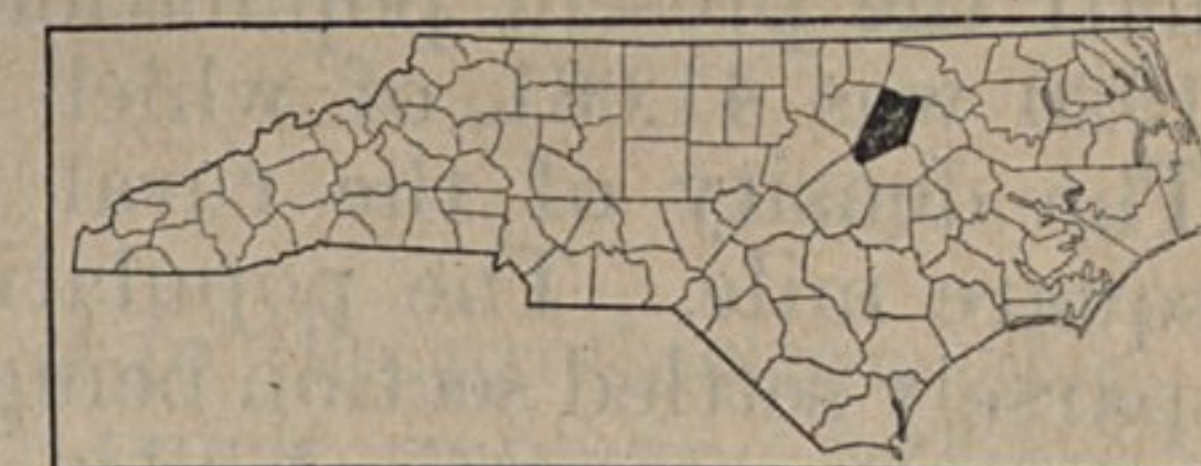


FIGURE 1.—Sketch map showing location of Nash County, N. C.

The relief of the piedmont plateau region is generally rolling or strongly rolling, becoming decidedly broken along the stream courses; that of the coastal plain is prevailingly undulating, with small intervening flat areas and rather gradual slopes to the streams. Most of the larger streams of the county have cut valleys from 50 to 80 or more feet below the general upland level. The valleys are deepest along Tar River and Fishing, Swift, Stony, Sapony, and Turkey Creeks. In the western and central parts of the county, the valleys are all rather deep and narrow. All the streams of the county are swift-flowing.

There are no extensive stream terraces in the county, but narrow strips occur in places along Tar River and some of the larger creeks. The most extensive area of terrace mapped is just north of Rocky Mount on Tar River. Areas of first-bottom soils are also generally narrow and inextensive. The largest area occurs along Swift Creek northwest of Battleboro.

The differences in elevation in various parts of the county are not great. The highest point, 335 feet above sea level, is 1 mile southwest of Union Hope School, near the Franklin County line. The lowest point, where Tar River leaves the county north of Rocky Mount, is 75 feet above sea level.

Nash County is drained by Tar River and Fishing, Swift, Stony, Sapony, and Turkey Creeks and their tributaries. Drainage is well established, and numerous streamlets ramify all parts of the county.



Practically every farm is touched by one or more of these drainage outlets. In the piedmont plateau region drainage is generally excessive, resulting in serious erosion unless terracing is resorted to. In the coastal-plain section drainage is fairly well established. The largest poorly drained areas are in the central part of North Whitakers Township and in the vicinity of Sharpsburg. At Rocky Mount Mills on Tar River some water power has been developed, and some gristmills are operated on streams throughout the county. Considerable water power could be developed on all the larger streams.

Nash County was formed from Edgecombe County in 1777. The early settlers came from or through Virginia. They were principally Scotch Highlanders from Virginia and Pennsylvania and English from New Jersey. The records of the earliest land grants show that the first settlements in the area now embraced by Nash County were made between 1714 and 1720. These early settlers established their homes in the northern, northwestern, and eastern parts of the present county, along Fishing Creek and Tar River. The present white population consists mainly of descendants of the early settlers and of persons who have moved in from adjoining counties. Less than one-half the present population consists of negroes. The population in 1920 was 41,061, of which total 84.5 per cent was classed as rural. The density of the rural population averages 59.2 persons to the square mile. The population is fairly evenly distributed, the only sparsely settled section being the extreme northwestern corner. Settlement is comparatively dense around all the towns and villages. The largest towns wholly within the county and their populations, as reported in the 1920 census, are as follows: Spring Hope, 1,221; Nashville, the county seat, 939; Rocky Mount Mills, 833; Middlesex, 697; Bailey, 518; and Castalia, 263. Three towns along the Atlantic Coast Line Railroad on the eastern border of the county lie about equally within Nash and Edgecombe Counties. With their populations, as of 1920, they are: Rocky Mount, 12,742; Whitakers, 723; and Battleboro, 309. Sharpsburg, lying within Nash, Edgecombe, and Wilson Counties, had a population of 334 in 1920. All of these towns are local trading centers for important agricultural sections.

Nash County is only fairly well served by railways. The main line of the Atlantic Coast Line Railroad forms the eastern boundary of the county, passing through Whitakers, Battleboro, Rocky Mount, and Sharpsburg. A branch line of this road serves the central part of the county, running from Rocky Mount through Nashville to Spring Hope. The Norfolk Southern Railroad from Norfolk to Raleigh crosses the southwestern corner of the county, passing through Bailey and Middlesex.

Public county roads extending to practically all sections of the county are generally good throughout the year. The main routes of travel are the State highways, which are paved. The principal highway passes through the center of the county from Rocky Mount through Nashville and Spring Hope to Raleigh. The main north-and-south highway parallels the main line of the Atlantic Coast Line Railroad and passes through Whitakers, Battleboro, Rocky Mount, and Sharpsburg. The highway from Wilson to Raleigh

crosses the southwestern corner of the county through Bailey and just north of Middlesex. Nash County has recently built a complete system of principal county highways. These highways are of sand-clay and gravel construction, are well graded, and are kept in excellent condition throughout the year.

Telephone service in the county is only fair. Rural mail routes reach practically all parts. The public-school system is good. Many school districts have been combined in recent years, and the pupils are transported to the consolidated schools in trucks or busses. In some of the more outlying districts small schools prevail.

The principal cotton market is Rocky Mount, but some cotton is sold to local buyers in all the towns of the county and in Wilson, Wilson County. About 20 per cent of the total crop is sold through the Cotton Growers' Cooperative Association. Less than 20 per cent of the tobacco crop was sold (1925-1926) through the Tobacco Growers' Cooperative Association, but since its dissolution the bulk of the crop has been sold on the open warehouse markets in Rocky Mount and Wilson. Surplus produce is sold in Rocky Mount and the larger towns of the county. Surplus eggs and poultry are shipped to Richmond and Norfolk.

#### CLIMATE

The climate of Nash County is well suited to the production of a great variety of general farm crops and late truck crops and to livestock farming. The summers are long but are not excessively hot, and the winters are short and comparatively mild. According to the records of the Weather Bureau observer at Nashville, in the center of the county, the extreme range in temperature is 110°F., or from -8° to 102°, and the mean annual temperature is 60.1°.

The latest killing frost recorded was on April 30 and the earliest on October 12. The average date of the last killing frost is April 12 and of the first is November 1. This gives a normal frost-free season of 202 days, which is sufficient for the maturing of all the farm crops usually grown. The ground generally freezes to only a slight depth, but the periods of freezing weather are sufficiently numerous to have a beneficial effect on fall-plowed land.

The average annual rainfall of 47.42 inches is ample for the production of all common crops. The precipitation is heaviest during the summer and lightest during the fall or the harvesting season. The rainfall in the driest year on record (1897) amounted to 36.41 inches and that in the wettest year on record (1922) to 64.48 inches. Crops rarely suffer from drought. Hailstorms are very infrequent and are local. Occasional light snows occur from November to early April but remain on the ground only a few days.

Table 1 shows in detail the more important climatic data of the county, as compiled at the United States Weather Bureau station at Nashville.



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

[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

## AGRICULTURE

Agriculture has been the principal industry of Nash County since its settlement more than 200 years ago. The first settlements were made in the northeastern part of the county, in the section now included within North Whitakers and South Whitakers Townships, and in the northwestern part of the county, near Castalia. Located as they were some distance from the towns in southeastern Virginia and lacking adequate water transportation to the towns along Albemarle Sound in this State, the early settlers were forced to produce practically all the necessities of life. Corn, wheat, potatoes, peas, rice, various vegetables, flax, and indigo were grown. The livestock consisted of cattle, hogs, sheep, and poultry, and the work animals were horses and oxen. Homespun clothing was made of flax, wool, or cotton. The lint from the cotton was separated from the seed by hand. Small tanneries furnished leather for shoes, boots, harness, and other uses. Tobacco was the important cash crop and was also grown for home use. It was produced in comparatively large quantities. The sun-cured tobacco was packed in hogsheads and rolled to Suffolk or Norfolk, Va., horses or oxen being the motive power. From Norfolk the tobacco was shipped to England. Some cattle, hogs, and sheep were driven to the nearer Virginia towns and sold. Naval stores (tar, pitch, and turpentine), lumber, staves, hides, furs,

deerskins, beeswax, and honey were marketed in rather large quantities before 1750 and were an important source of income to the early settlers.

In common with the whole of northeastern North Carolina the plantation system of farming prevailed in Nash County until the Civil War. With the freeing of the slaves came a complete demoralization of labor and an unusual drain on capital. A complete readjustment of farm conditions necessarily took place. Crops which required the least labor and which were most readily converted into cash were grown. Cotton became the principal crop. During the latter part of the decade 1880-1890 the production of tobacco on a commercial scale was again begun, and now tobacco ranks a close second to cotton as a cash crop. Corn is the principal subsistence crop. The acreage devoted to small grains has decreased rapidly and is small at present.

Table 2 gives the acreage and production of the principal crops in stated years, as reported by the Federal census.

TABLE 2.—Acreage and production of the principal crops in Nash County in stated years

Year	Cotton		Tobacco		Corn	
	Acres	Bales	Acres	Pounds	Acres	Bushels
1879.....	25,768	12,567	27	7,562	32,490	295,619
1889.....	31,395	8,569	1,823	782,713	34,270	239,787
1899.....	13,602	6,512	12,329	8,253,450	41,204	513,700
1909.....	31,502	17,837	11,438	7,070,686	36,305	468,030
1919.....	30,745	20,910	20,671	13,998,563	32,147	622,437
1924.....	63,532	42,905	16,926	9,566,742	27,149	490,822

The system of agriculture now prevailing in Nash County is largely that common to the central part of eastern North Carolina. Cotton and tobacco are the principal cash crops. The agricultural and commercial standing of the county is based mainly on the prospective cotton and tobacco crops, and the prosperity of the county varies to a large extent with the price of these two crops. Cotton is still considered the staple farm product and is planted on all farms. According to the census, there were 63,532 acres planted to cotton in 1924, when the yield was 42,905 bales, or an average of 0.67 bale to the acre. This is a considerably higher average yield than that of the Cotton Belt.

Tobacco has long been a cash crop of the area now embraced by Nash County. It was the principal source of income from the small cultivated areas of the early settlers. There was a period of decline in the production of tobacco during the second and third quarters of the nineteenth century, but between 1890 and 1895 the growing of tobacco on a large scale was once more begun. At present the value of the tobacco crop is very nearly equal to that of the cotton crop. During the period of high prices following the World War the value of the tobacco crop exceeded that of the cotton crop. The census records a production of 9,566,742 pounds of tobacco on 16,926 acres in 1924, an average of 565 pounds to the acre. In general, a lightweight, bright-leaf type of good texture is produced.



The principal subsistence crop is corn, and the total acreage is second to that of cotton. In 1924 there were 27,149 acres in corn which produced 490,822 bushels. The crop is fed to the livestock on the farm or is ground into meal for home use. The supply is very inadequate, and a large tonnage is shipped in. Wheat was grown on 84 acres in 1924. Some of the wheat is ground into flour and feed at the local gristmills, and the remainder is fed to the work animals. There were 46 acres of oats threshed for grain and 3,005 acres cut and fed unthreshed.

The 1925 agricultural census reports an expenditure of \$336,538 in the county for feed in 1924. This represents an average expenditure of about \$90 a farm for the farms reporting.

According to the census, hay was cut from 1,515 acres in 1924. Of this total 627 acres were tame or cultivated grasses, 369 acres were legumes (mostly cowpeas and soybeans), and 504 acres were small grains. The total yield of hay of all kinds amounted to 2,178 tons. The hay and forage grown are inadequate to meet the demand. It is estimated by local dealers that about 800 carloads of hay alone will be shipped into the county this year (1926) and that practically 80 per cent of all the feedstuffs consumed in the county comes from outside sources. The farmers prefer to grow cotton and tobacco and buy hay and other feedstuffs.

In 1924, 1,735 acres were devoted to peanuts. The total yield was 66,754 bushels, an average of about 33 bushels to the acre.

The more important of the minor crops grown mainly for home use are sweetpotatoes, potatoes, garden vegetables, watermelons, and sorghum. The principal fruit crops are early apples, peaches, pears, figs, scuppernong grapes, and strawberries, which are generally produced only in very small quantities for home consumption.

Soybeans and cowpeas are grown for soil improvement in many parts of the county. Rye is planted in some parts for green manure and is followed by tobacco.

Hogs are raised on most of the farms of the county for home consumption. The supply is inadequate to meet the demand, and large quantities of pork are shipped in. In 1924 there were 10,554 swine on the farms of the county. The hogs produced are mainly grade lard and bacon types, resulting from a crossbreeding of Duroc-Jersey, Poland China, Berkshire, Hampshire, and Essex breeds.

The total number of cattle in the county in 1924 was 4,347. Less than one-half of the farmers of the county have one or more milk cows to furnish milk and butter for home use and for an occasional surplus for sale locally. The census of 1924 records a total of 2,719 dairy cows. The value of dairy products in 1924 was \$136,617.

Surplus poultry and eggs are sold largely on the Rocky Mount and Wilson markets. Of recent years interest in poultry has increased, and some live poultry is shipped to Richmond and Norfolk. Some eggs are bought by local buyers for shipment to Virginia markets. The value of chickens raised in 1924 was \$229,941.

A curb market operated in Rocky Mount furnishes Nash County farmers an excellent outlet for the disposition of garden, poultry, and dairy products, fruits, and flowers, as well as fancywork and culinary products. The market is open twice a week during spring,

summer, and fall, and once a week in winter. A high standard of quality is maintained, and fair prices are charged at all times.

The soils of Nash County are adapted to a widely diversified type of agriculture. Of the 29 soil types mapped in the county only 9 require drainage, and these few poorly drained soils are not extensive. From a careful study of the soils of the county it is believed that all the hay and other feedstuffs, meat, lard, butter, corn, and corn meal, and much of the flour now imported could be produced without any appreciable increase in the acreage now under cultivation. Were as careful attention as is given to cotton and tobacco given to the preparation of the seed bed for small grain and corn, to the cultivation of the corn, and to the fertilization of these crops and were clover and other legumes grown in rotation with cotton and tobacco, corn, and small grain, there would be a great increase in yields. The raising of more hogs, beef cattle, and work animals, resulting in a larger supply of barnyard manure, would bring about still further increases. The production of more feed crops on the farms of the county would result in a balanced type of agriculture and would keep at home the large sums of money which now go outside the county.

There is little specialization of crops in different sections of the county as a result of various soil influences. Cotton, tobacco, and other crops are grown under a wide range of soil conditions. In general, on individual farms tobacco is planted on those areas having the more sandy surface soils, and cotton, corn, and other crops are planted on any fields not used for tobacco. In North Whitakers and South Whitakers Townships, where peanuts are produced commercially, this crop is grown on the more sandy soils.

There is no definite system of handling soils in the county. Fall plowing is not generally practiced, the land, as a rule, being broken in the spring just before planting time. Almost no cover crops are grown. One and two horse turning plows are generally used in breaking the land. As a rule the depth of plowing is not more than 6 inches. Tractors are used on some of the larger farms, the land being broken to a depth ranging from 6 to 9 inches with disk plows and then carefully harrowed.

Systematic crop rotations are very seldom followed in Nash County. Tobacco and cotton are sometimes alternated from year to year, but generally cotton follows cotton and tobacco follows tobacco year after year. Some farmers sow rye on tobacco land in the fall and turn it under in the spring.

There are many large, well-kept farm homes in the county. A few have modern conveniences such as running water and electric lights. However, the average farmhouse is of medium size and is not generally very well cared for. Most of the numerous tenant houses are small. Though the barns are small on practically all farms, they generally are of sufficient size to house the work animals and the various crops. On most farms there are several small out-buildings rather than one large barn. Fences, most of which are of the barbed-wire type, are generally well kept. On the larger farms operated as a unit, there is generally a tractor for breaking the land in the spring. The tractor also serves as a portable power plant for



various operations on the farm. Other machinery includes disk and turning plows for use with the tractor, walking 1 and 2 horse turning plows, disk harrows, spike-tooth harrows, riding and walking cultivators, cotton and corn planters, tobacco-setting machines, and lime and fertilizer distributors.

The work animals consist largely of mules. On farms operated under the tenant system, the tenant is usually furnished one or two mules, a turning plow, cotton and tobacco plows, cotton planter, fertilizer sower, one or two walking cultivators, and hoes and other hand implements.

Commercial and home-mixed fertilizers are used throughout the county. Tobacco receives the heaviest fertilization. It is generally given applications ranging from 800 to 1,200 pounds to the acre of a 3-8-3<sup>1</sup> fertilizer, with later top-dressings of 50 to 100 pounds to the acre of nitrate of soda or like amounts of a 10-0-4 fertilizer after the second hoeing, when the plants are about 12 or 15 inches high. Cotton receives acreage applications ranging from 600 to 1,000 pounds of a 3-8-3 grade fertilizer, with later top-dressings of 100 to 150 pounds to the acre of nitrate of soda when the crop is chopped out, and from 75 to 125 pounds of nitrate of soda about the middle of July when the crop is laid by. Corn receives no definite fertilization but generally is given an acreage application ranging from 400 to 500 pounds of a 3-8-3 grade of fertilizer, and sometimes a top-dressing of 75 or 100 pounds of nitrate of soda at the last cultivation or about the time the plants tassel. Practically all the fertilizer used in the county is of a 3-8-3 grade. A few farmers mix their own fertilizers, using superphosphate (acid phosphate), nitrate of soda, cottonseed meal, and sulphate or muriate of potash in varying quantities but generally in such proportions as to give a fertilizer with approximately a 4-10-4 or a 6-10-6 analysis. Correspondingly smaller quantities of home-mixed fertilizers are used, but with the same top-dressings of nitrate of soda. The quantities of fertilizer listed are the average applications for the lighter or more sandy soils. On the heavier or clay soils of the county the applications for cotton and corn are from one-fourth to one-third less. Tobacco is not planted on heavy soils. From 800 to 1,600 pounds to the acre of lime, in the form of ground limestone, is applied about every third year to fields to be planted in tobacco or cotton. Barnyard manure, although produced in only small quantities, is generally saved and applied to the heavier or clay soils.

There is practically no floating labor in the county. On the majority of the smaller farms and tenant farms the work is performed by the farmer and his family, and during rush times farmers exchange labor. Each small farmer and tenant plans to grow only such acreages of the various crops as he and his family can readily handle. Practically all the farm laborers are colored. When hired by the month they receive from \$15 to \$25 and board. Day laborers receive from \$1 to \$1.75, with meals. Cotton pickers receive an average of \$1 a hundred pounds, with a range from 75 cents to \$1.25, depending on whether adult or child labor is employed. Chil-

dren and women are chiefly depended on for cotton picking. Expenditure for labor is largely for cotton picking and tobacco curing.

In 1925 the average size of farms in Nash County was 43 acres. The census enumerates each tenancy as a farm. Some individual holdings are several hundred acres in extent, but such farms are not generally operated as a unit. There were 6,007 farms in the county in 1925. Of these, 29.5 per cent were operated by the owners, 70.3 per cent by tenants, and 0.2 per cent by managers. Since 1880 there has been a steady increase in the percentage of farms operated by tenants. The farms of the county in 1925 were operated by 3,299 white farmers and 2,708 colored farmers.

Farms are rented almost entirely on a share basis. The general practice is for the landlord to furnish work animals and feed, implements, seed, and one-half the fertilizer, and to receive one-half the crop. When the landlord furnishes all the fertilizer as well as the work animals and equipment, he receives two-thirds of the crop. The cost of ginning cotton is usually borne equally by the landlord and tenant.

There is a very wide range in land values in Nash County. The selling prices of farm lands depend almost entirely on location and not on the state of improvement or the character of the soil. Lands near the towns, on State highways, or near schools are held for the higher prices. Values are highest near Rocky Mount and lowest in the extreme northwestern part of the county. Farms along the paved highway from Rocky Mount through Nashville and Spring Hope are held at prices from two to four times higher than farms located a few miles off this road. In general the extreme range in price of farm lands runs from \$15 to \$200 an acre, with an average of about \$100 an acre. The average assessed value of farm land in the county in 1925, for the purpose of taxation, was \$56.84 an acre. The value of wooded lands depends on the quantity and quality of the timber. In general, prices for improved farms near the towns or along main roads range from \$100 to \$125 an acre, whereas equally improved farms some distance from towns and not on good roads command about \$75 an acre.

#### SOILS<sup>2</sup>

The soils of Nash County are dominantly light colored, ranging from light gray or grayish yellow to red. These soils were developed under forest cover and are naturally poor in organic matter. The immediate surface, in wooded areas, is covered by a very thin layer of leaf mold or the soil, to a depth ranging from 1 to 3 inches, is darkened by an admixture of partly decomposed organic matter. The organic matter is mainly from leaves and is acid and soluble, very unlike the organic matter in the prairie soils. The material in these soils does not absorb and hold organic matter. The soils are slightly podsollic but are not true podsoles. Locally on some of the flatter areas and in the depressions there are small areas of dark-

<sup>2</sup> Nash County joins Edgecombe County on the east. Along the boundary line the soil map of Nash County does not agree with that of Edgecombe County, which was made several years ago. This is owing to changes in correlation resulting from a fuller understanding of the soils of the State.

<sup>1</sup> Percentages, respectively, of nitrogen, phosphoric acid, and potash.



gray or black soils. These soils have remained in a wet or swampy condition for a long time, and vegetation has flourished on them.

Leaching or the washing out of the soluble materials in the soils has been active and is still going on. This probably accounts for the fact that the surface horizon does not contain so much plant nutrient as the subsoil or heavier layer. In this region of heavy rainfall and warm temperature leaching continues during the entire year except at short periods in the winter when the soil is frozen to a depth of a few inches. Also much of the soil in this county is bare during the winter and is used for clean-cultivated crops during the summer.

Erosion and gullying are serious, particularly throughout the areas of Cecil, Appling, and Georgeville soils. Erosion has not only changed the surface features but has caused changes in soil texture. In places the sandy surface material has been entirely removed, exposing the underlying heavier material or partly disintegrated rock. Probably all of Nash County was formerly covered by a thin layer of sandy coastal plain material, as much rounded quartz gravel and coarse sand remain. The coastal plain material may extend into the piedmont plateau on the high, broad, interstream areas, and on the steeper slopes bordering the stream valleys, piedmont material is exposed. This is the result of stream erosion.

In the piedmont plateau part of the county, the Cecil soils predominate. These soils have been derived, in situ, from the underlying rocks, such as granites and gneisses. It is only on the smoother areas and more gentle slopes that a normal soil profile has developed. On the hillsides and steep slopes erosion has kept such close pace with disintegration and soil-forming forces that only the subsoil and substratum exist. This accounts for the extensive areas of clay loam on the more rolling land.

Cecil fine sandy loam may be considered the normally mature soil of the Cecil series in Nash County. The characteristic feature of the profile of the Cecil soils is the subsoil. This is bright-red or deep-red clay ranging in thickness from 3 to 10 feet. It is stiff but brittle, breaks into irregular-shaped lumps or blocks, and finally crumbles into angular and subangular particles. It is hard when dry but sticky when wet. Below it is light-red or reddish-yellow friable crumbly clay, which grades into light reddish-yellow micaceous clay or soft disintegrated rock material, beneath which is light-gray soft rock. The subsoil contains a small quantity of mica scales, increasing with depth, and the lower part of the subsoil and the substratum carry a large quantity. Angular quartz fragments are present on the surface and in veins in many places. The heavier members of the Cecil series have a brown surface soil, with a thin layer of leaf mold, and a reddish-brown subsurface layer. Over the sandy members or the mature soils is a thin veneer of leaf mold underlain to a depth of 1 or 2 inches by brown material containing a small quantity of organic matter. This is underlain by a yellow or reddish layer. In Nash County the Cecil series is represented by the coarse sandy loam, fine sandy loam, fine sandy clay loam, clay loam, and clay loam, gravelly phase.

Associated and intermixed with the Cecil soils are the Appling soils and, to a much less extent, the Durham. The Appling and Dur-

ham soils have light-gray or yellowish surface soils and reddish-yellow and yellow subsoils, respectively. They are derived from light-colored granites and gneisses. The light color and the mottled gray, yellow, and red substrata of these soils indicate that they are probably leached of their iron to a greater extent than the Cecil or that they have not been so thoroughly oxidized and aerated. The Durham soils are in some places imperfectly drained, as is evidenced by the gray and yellow color of the substrata. Durham fine sandy loam, Appling coarse sandy loam, Appling coarse sandy loam, gravelly phase, and Appling fine sandy loam were mapped.

There are several areas of the Georgeville and Alamance soils. These soils are intricately associated and are both derived from the Carolina slates. These are fine-textured rocks, have not weathered deeply anywhere, and give rise to extremely silty soils, practically the only silty or flourlike soils in the piedmont region. The Georgeville soils have red subsoils, occur on the slopes and gently rolling areas, and are naturally well drained. The Alamance soils occupy the smooth, flat areas and are imperfectly drained, as is evidenced by the gray, bluish, and yellowish colors of the substrata. Georgeville silty clay loam and Alamance silt loam were mapped.

The poorly drained areas and slight depressions in the piedmont plateau have a silty surface soil and a mottled yellow, gray, and brown rather heavy subsoil. Such areas were mapped as Worsham silt loam.

Norfolk fine sandy loam and Norfolk sandy loam are the mature or normally developed soils in the coastal plain part of the county. These are smooth soils and have not been thoroughly dissected by streams. The parent material or substratum is mottled, indicating imperfect drainage. The Norfolk soils show the following profile: (1) A gray layer, from 1 to 4 inches thick, containing a small quantity of organic matter and in a few places covered by a thin layer of leaf mold; (2) grayish or pale-yellow light-textured material, underlain at a depth of about 14 inches by (3) yellow heavy sandy loam continuous to a depth ranging from 20 to 38 inches; (4) yellow sandy clay or fine sandy clay which breaks easily into irregular lumps and crumbles readily into a fine mass having no definite structure and underlain, at a depth of 38 inches, by (5) pale-yellow slightly laminated fine or sandy clay materials faintly mottled with light red and containing spots and large lumps of light-gray material. The gray color increases with depth. In Nash County the sand, loamy sand, sandy loam, with a deep phase, fine sandy loam, and fine sandy loam, deep phase, of the Norfolk series were mapped.

The various stages of soil development in the coastal plain of Nash County are represented by meadow and the members of the Portsmouth, Plummer, Dunbar, Norfolk, and Ruston series. The Portsmouth soils are one degree removed from meadow or swamp. They are wet and semi-swampy, and the growth and decay of vegetable matter has made the surface soils black, and poor drainage or a waterlogged condition has removed the iron from the underlying material. Portsmouth sandy loam and Portsmouth fine sandy loam were mapped.



The Plummer soils differ from the Portsmouth mainly in that the surface soils are lighter colored, contain less organic matter, and are slightly better drained. Only Plummer fine sandy loam was mapped in Nash County.

The Dunbar soils have gray surface layers, pale grayish-yellow subsurface soils, and yellow subsoils a few inches thick, representing the beginning of a normally developed subsoil. Below the subsoil is mottled light-yellow and red heavy clay. Dunbar sandy loam and Dunbar fine sandy loam were mapped.

On the slopes and more rolling areas in the part of the county where the Norfolk soils prevail oxidation has proceeded to a greater degree and has brought about the formation of reddish subsoils and more reddish substrata. Such soils belong to the Ruston series. Ruston sandy loam, with a deep phase, and Ruston fine sandy loam were mapped in the county.

Closely associated with the Ruston soils are the Cuthbert soils. They resemble the Ruston in color, but the subsoils are much heavier in texture. Cuthbert fine sandy loam was mapped.

Along the border line of the piedmont plateau and coastal plain there is an overlapping of the coastal plain sandy material over the residual clays of the piedmont plateau. This condition has given rise to two soil series, the Bradley and Chesterfield. The surface soils of members of these two series consist of almost identical very sandy material. The subsoils are residual from granites, gneisses, and slates. In the Bradley soils the subsoils are red, and in the Chesterfield they are yellow. Bradley sandy loam, with a gravelly phase, and Chesterfield sandy loam, with a gravelly phase, were mapped in Nash County.

In many places along the larger streams of the county which have their origin in and flow through the piedmont plateau are narrow strips of second bottoms or terraces, as well as some first-bottom overflowed areas. The soils in such locations have been formed from materials brought down from the piedmont plateau and deposited along the streams. Wickham fine sandy loam is the best-drained soil on these terraces. It is characterized by a brown surface soil and reddish-brown subsoil. Altavista fine sandy loam has a gray surface layer and a yellow subsoil mottled with gray at a depth of about 30 inches. Roanoke silt loam, closely associated with the Wickham and Altavista soils and occurring in the depressions, is naturally poorly drained and has not developed a normal soil profile.

In the first bottoms are Congaree silt loam and Wehadkee silt loam. The Congaree soil is dominantly brown throughout, and the Wehadkee has a gray surface soil underlain by mottled gray and yellow or rust-brown material. The classification meadow consists of mixed material in the first bottoms.

In the following sections of this report the several soil types are described in detail and their relation to the agriculture of the county is discussed. The soil map shows their occurrence, and their acreage and proportionate extent are given in Table 3.

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

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Cecil coarse sandy loam.....	1,344	0.4	Norfolk fine sandy loam.....	16,832	7.2
Cecil fine sandy loam.....	2,752	.8	Deep phase.....	8,512	
Cecil fine sandy clay loam.....	29,120	8.3	Ruston sandy loam.....	1,536	.9
Cecil clay loam.....	2,944	4.4	Deep phase.....	1,856	
Gravelly phase.....	12,800		Ruston fine sandy loam.....	1,728	.5
Durham fine sandy loam.....	3,776	1.1	Cuthbert fine sandy loam.....	3,200	.9
Appling coarse sandy loam.....	13,184	4.5	Dunbar sandy loam.....	4,800	1.4
Gravelly phase.....	2,304		Dunbar fine sandy loam.....	22,144	6.3
Appling fine sandy loam.....	6,080	1.7	Portsmouth sandy loam.....	1,920	.5
Worsham silt loam.....	3,456	1.0	Portsmouth fine sandy loam.....	9,984	2.8
Georgeville silty clay loam.....	4,736	1.3	Plummer fine sandy loam.....	1,792	.5
Alamance silt loam.....	4,416	1.3	Wickham fine sandy loam.....	2,240	.6
Bradley sandy loam.....	22,528	12.2	Altavista fine sandy loam.....	5,888	1.7
Gravelly phase.....	20,224		Roanoke silt loam.....	2,432	.7
Chesterfield sandy loam.....	55,296	19.5	Wehadkee silt loam.....	15,040	4.3
Gravelly phase.....	13,184		Congaree silt loam.....	704	.2
Norfolk sand.....	5,376	1.5	Meadow.....	10,816	3.1
Norfolk loamy sand.....	7,936	2.3			
Norfolk sandy loam.....	12,096	8.1	Total.....	351,360	-----
Deep phase.....	16,384				

#### CECIL COARSE SANDY LOAM

Virgin Cecil coarse sandy loam, to a depth of 1 or 2 inches, consists of gray or brown coarse sand. This is underlain by pale-yellow or grayish-yellow loose coarse sandy loam which continues to a depth ranging from 7 to 10 inches. The upper layer of the subsoil is reddish-yellow or salmon-colored friable clay containing a large quantity of angular fine quartz gravel. This passes, at a depth varying from 12 to 15 inches, into red, hard, stiff but brittle clay which may extend to a depth of 60 or more inches. The underlying material consists of friable, partly decomposed and disintegrated red rock streaked and specked with yellow, white, and brown. The bed-rock of coarse-grained granite occurs at varying depths.

Some angular quartz gravel is found in places on the surface of this soil, and included in mapping is an area, south and southwest of Richardson School, of typical gravelly coarse sandy loam. This area is shown on the soil map by gravel symbols. In a few places the surface soil has been washed off, leaving exposed red or reddish-yellow coarse sandy clay loam.

Cecil coarse sandy loam occupies a small acreage in Manning Township in the vicinity of Hunts School and the Franklin County line along Little Peachtree and Turkey Creeks. The soil occupies high interstream ridges as well as the slopes to streams and is gently or strongly rolling. It is naturally well drained.

Only a small percentage of the Cecil coarse sandy loam is cultivated. The greater part is cut-over land or abandoned fields. Originally forested areas support a fair growth of pine, oak, hickory, and dogwood. Abandoned fields and cut-over areas are growing up in old-field pine. Cotton, corn, and tobacco are grown, a slightly larger acreage being devoted to corn than to cotton and tobacco. Corn yields from 12 to 25 bushels to the acre, cotton about one-half



bale, and tobacco from 500 to 600 pounds. Patches of wheat, rye, oats, and clover are grown for feeding livestock on the farm. Garden vegetables, potatoes, and small fruits are produced for home use.

The methods of handling Cecil coarse sandy loam and the fertilizer treatment are about the same as for Appling coarse sandy loam, described later, with which this soil is rather closely associated.

#### CECIL FINE SANDY LOAM

The surface soil of Cecil fine sandy loam is pale-yellow or light grayish-yellow heavy fine sandy loam to a depth ranging from 5 to 7 inches. The upper layer of the subsoil is yellowish-red heavy sandy clay ranging in thickness from 2 to 6 inches. The true subsoil is red, heavy, brittle clay continuous to a depth ranging from 40 to 60 or more inches. This layer grades into partly decomposed and disintegrated fine-grained granite or gneiss. In some places a few finely divided mica particles and quartz sand grains are found throughout the subsoil. In many places white quartz stones appear on the surface, and in a few localities an occasional outcrop of the bedrock may be seen. Included with this soil in mapping are spots of Cecil sandy loam. In cultivated fields the surface soil is grayish yellow or reddish brown and is mellow and friable.

Cecil fine sandy loam occurs in the northwestern part of the county, mainly in Griffin Township. The largest areas are north of Harrison School and north of Sandy Creek along the Franklin County line. The soil occupies positions on ridges and gentle slopes. The relief is undulating or gently rolling and the soil is well drained.

Only a few small areas of Cecil fine sandy loam are cultivated. Cotton, corn, and tobacco are grown. The greater part of the soil is recently cut-over land on which a fair growth of yellow pine and oak is springing up.

Cecil fine sandy loam is well adapted to the production of grains, cotton, tobacco, and fruits. It is handled much as is Cecil fine sandy clay loam.

#### CECIL FINE SANDY CLAY LOAM

In general, the surface soil of typical Cecil fine sandy clay loam, to a depth ranging from 2 to 4 inches, consists of grayish-yellow or reddish-brown fine sandy loam which is underlain by reddish-yellow friable, heavy fine sandy loam or fine sandy clay continuous to a depth ranging from 8 to 12 inches. The subsoil is brittle, stiff, brick-red clay which extends to a depth ranging from 4 to 6 or more feet.

As mapped in Nash County Cecil fine sandy clay loam represents an admixture of Cecil fine sandy loam and Cecil clay loam, so closely associated and occurring in such small areas that a separation can not be made. It is, in reality, the intermediate or gradational soil between the fine sandy loam and the clay loam of the series. It appears to be largely the product of uneven erosion and is a soil condition rather than a definite soil type. In all probability the areas now mapped as Cecil fine sandy clay loam were once Cecil fine sandy loam, but owing to the rolling relief, abundant rainfall, and lack of a heavy forest cover, part of the fine material has been removed.

The erosion has not taken place evenly and has left a surface soil of very variable texture, color, and structure.

The thin covering of fine sandy material in wooded areas makes this soil resemble closely the fine sandy loam of this series, but in tilled fields under ordinary plowing the heavier subsoil is mixed with the surface soil, resulting in a yellowish-red or gray soil of a fine sandy clay loam texture. Cultivated fields have a spotted appearance; that is, there are areas of gray, of yellowish gray, of reddish yellow, and of red, depending on the thickness of the fine sandy material.

On practically all areas of Cecil fine sandy clay loam varying quantities of angular quartz gravel are strewn on the surface and occur throughout the subsoil. These angular fragments range from the size of a pea to 3 or more inches in diameter. In a few local areas the gravel interferes with successful cultivation but, in general, the presence of the gravel has a beneficial effect in that it tends to prevent further erosion and keeps the soil more open and porous.

Cecil fine sandy clay loam occurs in comparatively large areas. The largest development is reached in Dry Wells Township, but the soil is also extensive in Ferrells, Griffin, and Manning Townships. Smaller areas are in Castalia Township. This is the predominating and most important soil in the piedmont plateau division of the county. It occupies broad interstream divides as well as slopes approaching the streams. In general, the areas are moderately rolling, but near the streams the relief becomes strongly rolling or somewhat broken. Drainage is well established throughout the soil, and on the more broken stream approaches the run-off is excessive.

Wooded areas support a fair or good growth of yellow and loblolly pine, various oaks, and scattered maple, elm, dogwood, beech, ash, longleaf pine, holly, gum, and cedar. Approximately one-half of the soil is under cultivation to all the crops common to the county. Tobacco is planted on the smoother areas of deeper fine sandy material, and cotton and corn are grown on any fields not desired for tobacco. Peanuts are grown on areas similar to those used for tobacco. The yields of cotton range from one-fourth to 1¼ bales to the acre, with an average of about two-thirds bale. Tobacco yields from 600 to 900 pounds to the acre and corn from 12 to 35 bushels. The crops produced chiefly for home consumption are sweetpotatoes, potatoes, garden vegetables, watermelons, and fruits. Rye, oats, vetch, cowpeas, soybeans, and clover are grown in a small way as soil-improving crops and for feed. A few patches of sorgho are grown for the production of sirup for home use and for sale locally.

All crops are fertilized on this soil. Cotton receives from 600 to 800 pounds to the acre, tobacco about 800 pounds, and corn 400 pounds of a 3-8-3 mixture. Two top-dressings of nitrate of soda at the rate of about 100 pounds to the acre are applied to cotton when the plants are chopped out. Corn is given one application of nitrate of soda. Tobacco receives a top-dressing of a mixture of nitrate of soda and kainit or sulphate of potash, which is equivalent to a 10-0-4 or 10-0-6 commercial grade. About 125 pounds to the acre of this mixture is applied when the plants are about 15 inches high. A number of farmers use home-mixed fertilizers on cotton and tobacco, and to



some extent on corn. Superphosphate, cottonseed meal, nitrate of soda, kainit, and sulphate of potash are the ingredients commonly used, and the resultant mixtures are practically equivalent to a 6-10-6 commercial fertilizer. About 600 pounds to the acre is the general application of such mixtures on cotton, about 700 pounds on tobacco, and 300 or 400 pounds on corn.

This soil is not generally broken deeply. Moderately heavy work animals and implements are used. A few farmers use tractors for breaking the land and preparing the seed bed. Practically no farmers rotate crops.

This soil is naturally strong, and it can be maintained in a high state of productivity where the relief is not too great. The greatest needs are the prevention of erosion, which can be accomplished by the careful maintenance of terraces; deeper plowing; and the incorporation of organic matter by turning under such crops as rye, clover, cowpeas, soybeans, oats, and vetch. Winter cover crops should be grown on the more rolling areas.

#### CECIL CLAY LOAM

In wooded areas Cecil clay loam has a brown, dark-brown, or reddish-brown loam surface soil, 1 or 2 inches thick, underlain by reddish-brown heavy clay loam which extends to a depth ranging from 5 to 8 inches. The subsoil is red, heavy, stiff clay continuing downward to the partly decomposed and disintegrated soft rock material which is found at a depth varying from 30 to 50 or more inches. This material, in turn, grades into the granite or gneiss bedrock. In cultivated areas the surface soil is more shallow and redder. Mica flakes and quartz sand grains occur in the subsoil in many places, and occasional outcrops of bedrock occur. In a few areas, the largest of which is south of Webbs Mill, the surface soil approaches clay in texture.

Cecil clay loam occurs in comparatively small areas, the largest of which are mapped at the junction of Stony and Pig Basket Creeks, at Middlesex, and at Spring Hope. The surface is prevailingly rolling or strongly rolling, becoming broken near the streams. On all of the soil drainage is good or excessive.

About 60 per cent of the Cecil clay loam has at one time been cleared and cultivated, and at present nearly half of it is tilled. The forest growth consists of various oaks, pines, hickory, dogwood, and scattered maple, cedar, holly, and other hardwoods. The principal crops are cotton and corn. No tobacco is grown on this soil. Small patches of rye, oats, wheat, clover, and soybeans are grown, and vegetables and fruits are produced for home consumption. Cotton yields from one-fourth to three-fourths bale to the acre, with an average of nearly one-half bale, and corn from 8 to 25 bushels, with an average of about 17 bushels.

Cotton is generally fertilized with from 500 to 700 pounds to the acre of a 3-8-3 grade fertilizer and corn with 300 or 400 pounds of a similar analysis.

Cecil clay loam is a difficult soil to handle. It can be tilled only under a rather narrow range of soil-moisture conditions. Heavy

implements and work animals are required for successful plowing and tilling. This is a strong soil and is capable of being built up and maintained in a high state of productiveness. The chief problem is generally the prevention of erosion, which may be accomplished by the construction and maintenance of terraces. The more broken areas can better be utilized as pasture or left to grow up in pines. Liming, growing cover crops for turning under, and deeper plowing and more careful preparation of the seed bed aid in maintaining this soil in a state of profitable production.

*Cecil clay loam, gravelly phase.*—The gravelly phase of Cecil clay loam is separated from the typical soil solely on the basis of the gravel content. In the gravelly phase the surface is rather thickly strewn with angular and water-rounded quartz gravel, and throughout the soil varying numbers of angular quartz fragments are found. The water-rounded gravel is an indication that this soil was at one time covered with a mantle of Norfolk material, from which all the finer sand grains have been removed by erosion.

This gravelly soil is much more extensive than typical Cecil clay loam, and it occurs in comparatively large areas. The largest areas are in Manning, Ferrells, and Dry Wells Townships, and smaller areas are mapped in Griffin and Castalia Townships. The areas are rolling or strongly rolling and broken. Drainage is good or excessive, but the gravel present tends to check erosion.

Approximately 25 per cent of this soil is under cultivation. The gravel interferes with tillage to some extent. Wooded areas are covered with a fair or good growth of oaks and various other hardwoods, and pine. Yields of cotton and corn are about equal to those obtained on typical Cecil clay loam. Although the large amounts of gravel present may interfere with cultivation to some extent, the gravel aids in conserving moisture and tends to prevent the soil from clodding and becoming compact and hard as a result of being plowed when too wet.

#### DURHAM FINE SANDY LOAM

In wooded areas the surface layer of Durham fine sandy loam, to a depth ranging from 2 to 4 inches, is gray fine sandy loam or heavy fine sandy loam underlain, to a depth ranging from 8 to 14 inches, by mellow, friable light-yellow or grayish-yellow heavy fine sandy loam or very fine sandy loam. The upper layer of the subsoil, to a depth between 25 and 35 inches, is yellow clay which is rather stiff but is brittle and somewhat friable; and the lower part of the subsoil is light-yellow, friable, crumbly clay faintly mottled with white, which extends to a depth varying from 40 to 70 or more inches. This grades into mottled light-red, whitish, and yellowish friable material resembling clay and is underlain by the bedrock at a depth generally below 120 inches.

Durham fine sandy loam is probably the oldest and most deeply weathered soil in Nash County. Scattered over the surface of most areas are numerous angular quartz fragments, and throughout the soil are varying quantities of gravel. Some gravel is present in practically all areas of Durham fine sandy loam. Quartz fragments



occur in places just at the point where the surface soil merges into the subsoil. In cultivated fields the surface soil is light gray or almost white. The more gravelly areas are shown on the soil map by gravel symbols.

On account of its small extent this soil is comparatively unimportant agriculturally. It occurs in the western part of the county, chiefly in Manning, Ferrells, and Dry Wells Townships. Areas lying adjacent to the streams are nearly level, but some approaching the streams are rolling or strongly rolling, and interstream areas are also rolling. Drainage is fairly well established throughout even the more level areas and is excessive on the more strongly rolling stream approaches.

Only a small percentage of the Durham fine sandy loam is under cultivation. The greater part supports a growth of white and post oaks, loblolly and shortleaf pines, and scattered dogwood, maple, and sweetgum. Cotton is the principal crop, but tobacco is grown on a few small areas. Corn is grown on fields not desired for the production of cotton or tobacco. Average acre yields for cotton are one-half bale, for tobacco about 650 pounds, and for corn 15 bushels. Commercial fertilizers are used on all crops, cotton receiving about 800 pounds to the acre, tobacco 1,000 pounds; and corn from 400 to 600 pounds of a 3-8-3 analysis. Later top-dressings are used on cotton and tobacco. This soil is deficient in organic matter, which may be supplied by turning under rye, clover, oats, vetch, and other green-manure crops.

Table 4 shows the results of mechanical analyses of samples of the surface soil, subsurface soil, and several layers of the subsoil of Durham fine sandy loam.

TABLE 4.—*Mechanical analysis of Durham 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>
237011	Surface soil, 0 to 4 inches.....	6.4	8.4	3.9	17.4	26.5	31.0	6.8
237012	Subsurface soil, 4 to 12 inches..	3.6	7.8	3.8	19.6	25.4	33.8	6.0
237013	Subsoil, 12 to 30 inches.....	3.6	6.2	3.4	14.2	16.4	25.1	30.6
237014	Subsoil, 30 to 44 inches.....	2.8	5.4	2.8	11.2	15.4	36.7	25.5
237015	Subsoil, 44 to 60 inches.....	2.6	5.8	3.2	13.9	20.9	32.5	20.9

#### APPLING COARSE SANDY LOAM

The surface soil of virgin Appling coarse sandy loam, to a depth of 3 inches, is gray coarse sandy loam or loamy coarse sand, containing a large quantity of fine gravel. Underlying the surface soil is grayish-yellow coarse sandy loam continuous to a depth of 7 or 9 inches. The upper layer of the subsoil is yellow heavy sandy clay for an inch or two, grading into the reddish-yellow friable clay extending to a depth of 15 or 20 inches. This passes into a layer of splotted and streaked red and yellow hard but brittle clay. The lower part of this layer is in many places salmon colored and does not show distinctly the red and yellow colors, but it is nowhere decidedly red. In general this subsoil is intermediate in color between the red subsoils of the Cecil and the yellow of the Durham

soils. The soft disintegrated rock is reached at a depth varying from 30 to 50 inches. Throughout the subsoil are considerable quantities of angular or very slightly rounded fine quartz gravel. A characteristic feature of areas of Appling coarse sandy loam is the outcropping in places of the bedrock, a coarse-grained granite, in rounded or dome-shaped forms ranging in size from that of a bushel measure to 20 or 30 feet in diameter, and from 1 to 15 or more feet in height. Included with this soil in mapping are a few areas of Cecil coarse sandy loam too small to be shown separately on the soil map.

Appling coarse sandy loam occurs mainly in comparatively large areas in Castalia Township along the Franklin County line. A comparatively small area is mapped in Bailey Township near the Wilson County line southwest of Bailey.

This soil occurs on broad interstream ridges, as well as on slopes to the stream courses. The surface ranges from undulating to rolling, and in places to strongly rolling. Although drainage is very well established, owing to the relief and porosity of the soil, the subsoil is retentive of moisture. Some areas on the steeper slopes to stream courses are somewhat eroded, and the surface soil is coarse sandy clay in texture and is spotted yellow and gray or reddish yellow in color.

Appling coarse sandy loam is an important agricultural soil in Nash County, and approximately 65 per cent of it is under cultivation. A large part of the uncleared areas is recently cut-over land. Originally forested sections are covered with a fair growth of white, red, post, and black oaks, maple, hickory, shortleaf pine, and scattered beech, black gum, and dogwood, and an occasional longleaf pine. Cotton is the principal crop, followed by tobacco. Corn and other crops are produced on smaller acreages. Potatoes, garden vegetables, some fruits, and small patches of oats and rye are grown for home use. Abandoned areas are growing up in old-field pine.

On this soil cotton generally yields from one-half to 1½ bales to the acre, with an average yield of about 0.8 bale. Tobacco is of good body and quality and of a bright-yellow color. Yields average about 600 pounds to the acre, with a range from 400 to 800 pounds. Fertilizers are always used on cotton and tobacco and generally on corn. The average application for cotton is about 700 pounds to the acre of a 3-8-3 grade, with later applications of about 100 pounds of nitrate of soda when the crop is chopped out and about 50 pounds of nitrate of soda about the middle of July when the crop is laid by. Tobacco receives about 900 pounds to the acre of a 3-8-3 fertilizer, and a later top-dressing of about 100 pounds of a 10-0-4 fertilizer when the plants are about 15 inches high. Corn yields range from 10 to 30 bushels to the acre, depending on the amount of fertilizer used and the care given the crop. The average yield is about 22 bushels. Most farmers use from 300 to 600 pounds of 3-8-3 fertilizer on corn at planting time and generally a top-dressing of 75 pounds of nitrate of soda about the time the plants tassel. Crops are not generally rotated on this soil, but occasionally cotton and tobacco are alternated on certain fields.



Appling coarse sandy loam is deficient in organic matter, which can be supplied by turning under such crops as rye, oats, cowpeas, or clover. Deeper plowing should also be practiced. This soil is well adapted to all the crops grown in the county. It is easily tilled, can be cultivated under a wide range of moisture conditions, warms up early in the spring, and, owing to its well-drained condition, can be plowed sooner after rains than most soils in the county.

*Appling coarse sandy loam, gravelly phase.*—The gravelly phase of Appling coarse sandy loam is separated from the typical soil entirely on the basis of the gravel content. In the gravelly soil the surface is thickly strewn with angular quartz fragments of varying size, and throughout the soil mass varying quantities of gravel are present. In a few places some rounded gravel is found.

This gravelly soil occurs in close association with the typical soil, almost entirely in Castalia Township. About 40 per cent of it is under cultivation, but the presence of the gravel interferes to some extent with successful cultivation. Abandoned areas are covered with old-field pine. The relief is rolling or strongly rolling. Erosion is checked to a great extent by the presence of the gravel. The tree growth consists mostly of oaks and pines, with some hickory, gum, dogwood, and maple. The soil material is considered very valuable for road-building purposes and is used locally with much success. This gravelly soil should be devoted to forestry and pasture.

#### APPLING FINE SANDY LOAM

In forested areas the surface soil of Appling fine sandy loam is gray fine sandy loam from 1 to 3 inches thick, underlain by grayish-yellow heavy fine sandy loam continuous to a depth ranging from 6 to 9 inches. The upper 2 or 4 inches of the subsoil is yellow friable sandy clay. The typical subsoil is reddish-yellow stiff but brittle clay. Below a depth ranging from 14 to 20 inches is mottled light-red and yellow hard but brittle clay. The lower part of the subsoil is in many places pinkish or salmon colored and does not show distinctly the red and yellow mottles, but it is in no place decidedly red. The parent material occurs at a depth varying from 35 to 60 or more inches and consists of friable, crumbly, partly disintegrated and decomposed mottled or streaked and specked gray, light-red, whitish, and yellowish rock. Bedrock of fine-grained granite or gneiss is present in most places at a depth of 5 or 10 feet. In cultivated fields the surface soil is grayish-yellow or almost white and in places on the somewhat eroded areas is reddish yellow.

As mapped in Nash County Appling fine sandy loam is not a uniform soil. Over the greater part of it there are varying quantities of angular quartz gravel ranging from the size of a pea to 2 or 3 inches in diameter. The more gravelly areas are shown on the soil map by gravel symbols. In Griffin Township a few small areas of Durham fine sandy loam are included with Appling fine sandy loam in mapping. Some inextensive areas of Appling sandy loam in Griffin Township along Fishing Creek and a few small areas of Appling very fine sandy loam in Ferrells and Dry Wells Townships are also included in mapping. All of these variations occur in such small areas that it was not practical to show them separately on the soil map.

Appling fine sandy loam occurs chiefly in Griffin Township, but smaller areas are mapped in Manning, Ferrells, and Dry Wells Townships. The largest area lies just south of Fishing Creek and north of Harmony Church. The surface relief ranges from undulating or gently rolling on the interstream areas to strongly rolling and broken along the stream courses. On account of the comparative porosity of the soil and the rolling surface, drainage is good and, in places, is almost excessive.

Less than 25 per cent of this soil has been brought under cultivation. The greater part of the soil in Griffin Township is recently cut-over land on which a fair growth of pine and oak is springing up. Forested areas in Ferrells and Dry Wells Townships support a fair or good growth of various oaks, shortleaf pine, loblolly pine, and scattered hickory, dogwood, maple, beech, gum, and other hardwoods. Cotton and corn are grown on about equal acreages, and a rather large acreage is planted to tobacco. Potatoes, vegetables, and fruits are produced for home use. In Griffin Township some farmers grow small patches of sorghum for making sirup. Cotton yields slightly more than one-half bale to the acre, corn about 18 bushels, and tobacco about 700 pounds. This soil is rather heavily fertilized. Cotton receives from 800 to 1,000 pounds to the acre of a 3-8-3 grade with later top-dressings of 100 or 200 pounds of nitrate of soda; tobacco receives about 1,000 pounds of a 3-8-3 or 4-9-4 grade to the acre; and corn is treated with from 400 to 600 pounds to the acre of a 3-8-3 mixture.

Moderately heavy work animals and implements are needed for the successful cultivation of this soil. Suggestions for the improvement of Appling coarse sandy loam apply also to Appling fine sandy loam.

#### WORSHAM SILT LOAM

Worsham silt loam is gray or bluish-gray silt loam to a depth ranging from 6 to 10 inches, where it passes into light-gray or grayish-yellow silty clay loam slightly specked with rust brown. This material is underlain, at a depth of 12 or 14 inches, by mottled light-gray or almost white and yellow clay, which is slightly plastic but friable.

Worsham silt loam is one of the most variable soils in Nash County. The greater part of it is silt loam or heavy very fine sandy loam, but locally the surface soil may be sandy loam, fine sandy loam, or even silty clay loam. The color of the surface soil when moist is dark gray. In many areas the subsurface layer contains a slight accumulation of iron concretions. In a few places the lower part of the subsoil is yellow and does not show distinctly the light-gray or whitish mottles, and in places it may be dark gray. As the areas of Worsham soil in Nash County are all rather small, it was not practical to show more than one soil type, and the predominant one, the silt loam, includes all the variations mentioned.

Worsham silt loam occurs throughout the piedmont plateau region of the county, in areas ranging in size from about 3 to about 50 acres. It occurs in association with the Cecil, Durham, Appling, Bradley, and Chesterfield soils and occupies depressions and low, flat areas around stream heads and at the base of slopes. The surface is generally level or nearly flat, with an almost imperceptible



slope in the direction of the stream flow. Owing to its position, this soil receives seepage and run-off water, and drainage is poor. The greatest development of this soil is in the southern half of Dry Wells Township, particularly in the vicinity of Middlesex.

Artificial drainage of this soil would be difficult on account of its low position. The only areas cultivated are narrow strips, generally only a few feet wide, where fields of well-drained soils border areas of Worsham silt loam. A few areas are utilized as pasture. On most areas there is a good growth of timber, including white, willow, post, red, and water oaks, sweetgum, black and tupelo gums, loblolly and shortleaf pines, and scattered maple, beech, birch, ash, and hornbeam. There is a heavy undergrowth of brambles, coarse grasses, reeds, and various shrubs.

Worsham silt loam is an unimportant soil in Nash County, on account of its low position and the small size of the individual areas. Its best adaptation is as woodland. Cut-over and burned areas may be utilized as pasture. In order to establish adequate drainage, ditches must be carefully maintained and dikes or other means resorted to in order to prevent run-off water from higher areas overflowing the fields. When good drainage is obtained, flooding of the fields is prevented, and the soil is heavily limed, fair yields of corn, oats, and grasses are produced. This land would make good summer pasture for cattle.

#### GEORGEVILLE SILTY CLAY LOAM

The surface soil of Georgeville silty clay loam, to a depth ranging from 3 to 5 inches, is brownish-yellow heavy silt loam. This layer is underlain by reddish-yellow or reddish-brown silty clay loam which extends to a depth ranging from 7 to 12 inches. The subsoil is very dark-red or maroon-red, smooth, brittle heavy silty clay extending to a depth varying from 30 to 45 inches. It passes into light-red heavy silt loam mottled with yellow and white, and this grades into blotched purplish-red, light-yellow, and whitish, soft, disintegrated slate. When moist both surface soil and subsoil have a slightly purplish cast. Over most areas the surface is strewn with fragments of slate rock, and throughout the soil sharp angular particles of slate of varying size occur. In a few places white quartz rock appears as veins in the slate. Outcrops of bedrock are to be seen in places. The more gravelly areas are shown by gravel symbols. On the smoother areas the soil has weathered deeply, and on the steeper slopes adjacent to the streams a few outcrops of bedrock and an occasional boulder occur. Here the surface soil is red silty clay loam. Over part of the smoother uncleared areas, the surface soil to a depth of 1 or 2 inches is grayish-brown heavy very fine sandy loam.

Georgeville silty clay loam occurs in the northwestern part of the county in Griffin and Castalia Townships. The largest areas are mapped along Sandy Creek and some of its tributaries. In general the surface is rolling, but along the stream courses it becomes rather steep and broken. Drainage is well established and on the steeper slopes is excessive, resulting in serious erosion.

Georgeville silty clay loam is not an important agricultural soil in Nash County on account of its comparatively small extent. Very little of it is under cultivation. Cotton and corn are the only crops

grown, except garden vegetables, potatoes, and fruits for home use, and a few small patches of rye and oats. Yields and methods of management are similar to those on Cecil clay loam, which this soil closely resembles. The forest growth on uncleared areas consists of various oaks, hickory, poplar, elm, sycamore, shortleaf pine, and scattered dogwood, cedar, beech, and an occasional longleaf pine.

The more broken areas of this soil could best be utilized as forest land. The smoother areas are adapted to the crops grown on Cecil clay loam.

#### ALAMANCE SILT LOAM

In wooded areas there is generally a layer of gray loam, in most places one-half inch or less thick, on the surface of Alamance silt loam. The soil itself is pale-yellow silt loam from 6 to 9 inches thick, very floury or powderlike when dry and extremely smooth or slick when moist. The fairly friable and crumbly subsoil of yellow silty clay loam grades, at a depth between 25 and 35 inches, into mingled or streaked yellow and whitish friable silt loam; and this in turn passes, at a depth between 38 and 50 inches, into light-gray, soft, disintegrated slate. In cultivated fields the soil has a yellow or slightly grayish-yellow color.

Over considerable areas of Alamance silt loam there is some angular quartz gravel and a noticeable accumulation of sharp, angular slate fragments varying from the size of a pea to 3 or 4 inches in diameter. The gravel does not interfere with cultivation to any great extent but has a tendency to keep the soil somewhat more open and porous and to check clodding or puddling. These gravelly areas are shown on the soil map by gravel symbols.

This soil occurs only in the northwestern part of the county, chiefly in Griffin Township, though smaller areas are in the northeastern part of Castalia Township. It is derived from slate rock of the Carolina slate belt and is closely associated with Georgeville silty clay loam. The largest areas are mapped south of the old Argo Gold Mine and along Jumping Run and Pig Basket Creek between Taylors Store and Mays Crossroads. The soil occurs along stream courses and on some of the comparatively smooth interstream ridges. The surface relief ranges from undulating and gently rolling on the interstream ridges to rolling and strongly rolling along the stream courses. Drainage is naturally good.

Alamance silt loam occupies a small acreage in Nash County and is comparatively unimportant agriculturally. About 20 per cent of it is used for farming. The greater part is recently cut-over land and is growing up to pines and various oaks and other scattered hardwoods. The original timber consisted largely of white, red, black, and post oaks; loblolly and shortleaf pines; and some maple, gum, ash, elm, hickory, cedar, and dogwood.

Corn and cotton are the chief crops grown on this soil. A slightly greater acreage is devoted to corn than to cotton. Some oats and small patches of wheat are also produced. Potatoes, vegetables, and fruits are grown only for home use. Corn yields about 15 bushels to the acre, cotton less than one-half bale, and oats about 12 bushels.

Cotton is the only crop on this soil which receives definite fertilization. Generally 800 pounds to the acre of a 3-8-3 mixture is



applied, with two later top-dressings of 100 pounds each of nitrate of soda. Corn sometimes receives about 400 pounds to the acre of a 3-8-3 fertilizer and a later top-dressing of 150 or 200 pounds of cottonseed meal.

This soil is deficient in organic matter, and if plowed or tilled when too wet it has a tendency to puddle or run together, a condition locally called clodding. In order to improve the soil the liberal use of stable manure and the turning under of green-manure crops, such as clover, cowpeas, soybeans, or rye, are essential. Deep fall plowing, proper preparation of the seed bed, and systematic rotation of crops including legumes and winter cover crops with the cotton and corn would prove beneficial. Grasses grow well, and some of the recently cut-over and burned areas could be utilized as pasture lands for cattle or sheep. Liberal applications of lime would prove beneficial.

#### BRADLEY SANDY LOAM

The virgin surface soil of Bradley sandy loam consists of gray or light-gray sand or loamy sand 2 or 3 inches thick, underlain by grayish-yellow or light-gray sandy loam which extends to a depth varying from 8 to 30 inches. In some areas a third layer consisting of moderately heavy, friable, yellow sandy loam extends from a depth of about 18 inches to a depth of 30 inches. The subsoil is red, moderately stiff, hard but brittle clay, commonly containing finely divided mica scales and a small percentage of angular quartz sand. In Griffin Township a few areas having a maroon-red or purplish-red silty clay subsoil are mapped. Partly weathered parent material occurs at a depth ranging from 30 to 60 or more inches. The underlying rocks are granite, schist, gneiss, and slate. In a number of places outcrops of the bedrock occur. A few rounded quartz gravel are present in a few places.

Bradley sandy loam represents an overlapping of the coastal plain on the residual piedmont plateau and is a soil condition rather than a distinct soil type. It is widely distributed and highly variable. The surface soil belongs to the Norfolk series and the subsoil largely to the Cecil series, though a few small areas of Georgeville silty clay loam occur. On the smoother areas the surface coating of Norfolk material may be uniformly from 15 to 30 inches thick, but on the slopes to stream courses the greater part of this surface layer has been removed, leaving the piedmont subsoil exposed in many places, with the resultant sandy clay soil condition. At the base of slopes the Norfolk material is in places as much as 32 inches thick. In cultivated fields the color of the surface soil ranges from gray through yellowish gray to yellowish red or even red, depending largely on the thickness of the soil and the depth of plowing. Locally throughout the county there is considerable variation in the texture of the surface soil. In general this layer is sandy loam of medium texture. In a few places in Griffin and Castalia Townships there are small areas having a coarse sandy loam surface soil, and in the southern part of the county inextensive areas having a fine or very fine sandy loam surface soil are mapped. These variations occur in such small areas that it is not possible to indicate them separately on the soil map.

Bradley sandy loam occurs chiefly in the northern, western, and central parts of the county, in areas varying from a few acres to 3 or 4 square miles in extent. It is found on the smoother areas as well as on the slopes to streams throughout the western part of the county, and in the central and north-central parts it generally occurs only along the stream courses. The streams in this part of the county have largely cut through the coastal plain material to the residual piedmont plateau. The more extensive areas are in Griffin, North Whitakers, and Manning Townships.

Bradley sandy loam is well drained, owing to the relief and the porosity of the surface soil, but the subsoil is retentive of moisture. On the steeper slopes the run-off is excessive, and serious erosion results unless terracing is resorted to.

Although less than 40 per cent of this soil is under cultivation, it is one of the important soils of Nash County on account of its wide extent and distribution. About half of it has at one time been cleared and cultivated, but part of this acreage has been abandoned and is now growing up in old-field pine. These abandoned areas are largely on the steeper slopes and are so deeply cut by numerous gullies that successful cultivation is impossible. Areas covered with original forests support a fair growth of various oaks; yellow, loblolly, and a few longleaf pines; and scattered hickory, maple, poplar, elm, gum, birch, beech, redbud, cedar, dogwood, and sourwood trees. The undergrowth consists of a poor or fair stand of huckleberry and serviceberry bushes, with some wire grass.

Bradley sandy loam is used for the production of all the crops commonly grown in the county. Cotton, corn, and tobacco are the principal crops. The crops produced largely for home consumption are garden vegetables, potatoes, sweetpotatoes, fruits, and melons. Patches of rye, oats, soybeans, clover, and vetch are grown for soil improvement and for feed. Tobacco is planted on those areas of Bradley sandy loam having the deeper sandy covering. Crop yields vary widely, the yields of cotton ranging from one-fourth to  $1\frac{1}{4}$  bales, of corn from 8 to 35 bushels, and of tobacco from 500 to 800 pounds to the acre.

All crops are fertilized on this soil. Cotton receives acreage applications ranging from 600 to 1,100 pounds of a 3-8-3 fertilizer, depending on the thickness of the sandy material. A top-dressing of about 125 pounds to the acre of nitrate of soda is used on cotton when the plants are chopped out, and 75 pounds about mid-July, when the crop is laid by. Tobacco fields receive an average acreage application of 900 pounds of a 3-8-3 fertilizer before setting the plants and generally a top-dressing of 75 or 100 pounds of a 10-0-4 fertilizer or 75 pounds of nitrate of soda. Corn is not given definite fertilization.

Bradley sandy loam is a fairly desirable type of soil. It is well drained, fairly easily tilled, and capable of being maintained in a high state of productiveness. Suggestions given for the improvement of Chesterfield sandy loam apply equally well to this soil.

*Bradley sandy loam, gravelly phase.*—The gravelly phase of Bradley sandy loam was separated from the sandy loam on account of the gravel content of the soil. In the gravelly phase the surface is rather thickly strewn with water-rounded quartz gravel varying



from the size of a pea to several inches in diameter, with an average diameter of about 1 inch; and throughout the subsoil gravel in varying quantities and sizes is present. In a few places angular quartz and slate fragments are found on the surface and throughout the soil. Occasional outcrops of bedrock occur. In general, the surface mantle of sandy material is somewhat more uniform in depth than on the typical soil.

The gravelly phase of Bradley sandy loam occurs in close association with the typical soil. The largest areas are in the southern half of Manning Township and in the eastern part of Griffin Township.

Probably 25 per cent of this soil is under cultivation. The large quantities of gravel present interfere with cultivation to some extent but tend to reduce erosion. This soil is handled like the typical soil, but heavier implements are sometimes used. Crop yields are somewhat less for all the crops grown. The areas are rolling or steep. Abandoned areas soon grow up in old-field pine.

Generally this soil is too gravelly for successful cultivation. It can better be utilized as forest land. Originally forested areas support a fair or good growth of oaks and pines, and some hickory, black gum, cedar, beech, and dogwood. The soil material is highly valued for road-construction purposes.

#### CHESTERFIELD SANDY LOAM

In virgin areas the surface 2 or 3 inch layer of Chesterfield sandy loam is gray or light-gray loamy sand or loose sandy loam. This is underlain by pale grayish-yellow loamy sand or sandy loam which continues to a depth ranging from 10 to 20 and in places 30 inches. Underlying this there is in a few places another layer which consists of yellow sandy loam continuous from a depth of about 18 inches to about 24 inches. The upper layer of the subsoil is yellow, rather heavy, gritty but friable clay. It occurs at a depth varying from 20 to 32 inches and is underlain by yellowish-red or mottled red and yellow, friable, somewhat gritty clay. In many places there is only one layer in the subsoil, and this may consist of either yellow, rather stiff, hard clay or yellow, friable, gritty clay, or of salmon-colored or mottled red and yellow, stiff, hard clay or friable, gritty clay. The subsoil is in no place distinctly red. The mottled yellow and red, friable, disintegrated, and partly decomposed parent rock is reached at a depth varying from 30 to 60 inches. The rocks consist of gneiss, granite, schist, or slate. In many places outcrops of the bedrock occur.

Chesterfield sandy loam, like Bradley sandy loam, represents an overlapping of the coastal plain on the residual piedmont plateau. As such it is the most variable as well as the most widely distributed soil in the county. The surface soil belongs to the Norfolk series and the subsoil to the Durham, Alamance, and Appling series. On the smoother areas the surface coating of Norfolk material may be uniformly from 24 to 30 inches thick, but on the slopes to streams the greater part of this surface layer has been removed leaving the piedmont subsoil exposed in many places, with the resultant sandy clay soil condition. At the base of slopes there is a greater accumulation

of sandy material, in many places 30 or more inches thick. There is also considerable variation in the texture of the layer of Norfolk material. In many small areas throughout the northern half of the county the surface soil is coarse sandy loam, whereas in the southern half, chiefly in Coopers, Jackson, and Bailey Townships, some areas have a fine or very fine sandy loam surface soil. All of these variations occur in such small areas that it is not possible to show them separately on the soil map.

Chesterfield sandy loam occurs in all sections of the county, in areas varying in size from a few acres to 2 or 3 square miles. It occurs on the smoother areas as well as on the slopes to stream courses throughout the western half of the county; in the eastern half it generally occurs along the stream breaks, the streams having largely cut through the mantle of coastal plain material to the residual material. The more extensive areas occur in Griffin and Oak Level Townships.

Owing to the relief and porosity of the surface soil Chesterfield sandy loam is well drained, yet the clay subsoil is retentive of moisture. On the steeper slopes the run-off is excessive, and unless slopes are terraced serious erosion results.

This is the most extensive soil in Nash County. Approximately half of it is under cultivation at present. About 65 per cent of it has at some time been under cultivation, but nearly one-fourth of this has been abandoned and is now growing up in old-field pine. A large part of the uncleared area is cut-over land. Originally forested areas support a fair growth of yellow, loblolly, and longleaf pines, various oaks, and scattered maple, hickory, gum, poplar, elm, beech, birch, redbud, dogwood, persimmon, sassafras, holly, cedar, and sourwood. The undergrowth consists of some gallberry, huckleberry, and serviceberry bushes, and some wire grass. As a rule areas of this soil are rather expensive to clear, owing to the character of the tree growth.

This soil is used for the production of all of the crops common to the county. Cotton, corn, and tobacco are the principal crops. The crops produced chiefly for home consumption are sweetpotatoes, potatoes, garden vegetables, melons, and fruits. Rye, oats, soybeans, cowpeas, and clover are grown locally for soil improvement and for feed. Peanuts are grown as a commercial crop on a few areas of this soil in central North Whitakers Township. Tobacco and peanuts are planted on areas having the deeper covering of sandy material.

Yields on this soil vary more widely than on any other soil in the county. The yield of cotton is from one-third to 1½ bales to the acre, of tobacco from 400 to 900 pounds, of corn from 10 to 35 bushels, and of peanuts from 25 to 45 bushels.

All crops are fertilized. Cotton receives acreage applications of 800 or 1,000 pounds of a 3-8-3 fertilizer on the fields having the heavier covering of sandy material, and on the fields with a thinner surface soil from 200 to 400 pounds to the acre less fertilizer is used. Top-dressings of about 125 pounds to the acre of nitrate of soda are applied when the crop is chopped out, and from 75 to 100 pounds of nitrate of soda is used when the squares on the plants open in mid-July. Tobacco fields receive an average acreage application of 900 pounds of a 3-8-3 grade of fertilizer before setting the plants and



generally a top-dressing of 75 pounds to the acre of a 10-0-4 fertilizer when the plants are about 16 inches high. Fields to be planted in peanuts are not generally heavily fertilized but receive applications ranging from 400 to 800 pounds to the acre of agricultural gypsum or land plaster before planting. Commercial fertilizer is generally applied at the rate of 400 or 600 pounds to the acre of a 3-8-3 grade before planting. When peanuts are alternated with tobacco, a heavily fertilized crop, only gypsum is applied to the soil. Corn receives no definite fertilization. Sometimes it is given acreage applications of 400 or 600 pounds of a 3-8-3 grade and later top-dressings of 50 or 100 pounds of nitrate of soda about the time the plants tassel.

Chesterfield sandy loam has the widest range in values of any soil in the county. The extreme range is from \$15 to \$200 an acre, depending almost entirely on the location. On improved roads \$100 an acre is the average, and near the larger towns and on paved roads values sometimes run to \$200 an acre.

Chesterfield sandy loam is a desirable soil in Nash County. It is well drained, is generally mellow, is rather easily tilled, and is capable of being maintained in a high state of productiveness. It is deficient in organic matter, which can be supplied by growing and turning under green-manure crops such as rye, oats, vetch, clover, cowpeas, and soybeans. The smoother areas are well suited to the production of all the crops grown in the county. On the more rolling areas corn and cotton are more profitable than tobacco. Truck crops and potatoes could profitably be grown on the smoother areas. Lime and nitrogen are more limiting factors in the production of the average farm crops on Chesterfield sandy loam than are phosphoric acid and potash. Nitrogen may be more profitably supplied in the form of legumes, green-manure crops, and stable manure. Lime should be supplied in liberal quantities. Potash and phosphates, although less important than nitrogen and lime, must be used in some form.

A recommended 4-year rotation and fertilizer treatment for the improvement and maintenance of the smoother areas of Chesterfield sandy loam in a high state of productiveness are: First year, cotton followed by rye sown after the first picking, to be turned under the following spring. At planting, from 150 to 300 pounds to the acre of superphosphate, from 200 to 400 pounds of cottonseed meal, and from 100 to 200 pounds of kainit to be applied. Later top-dressing of 100 or 200 pounds to the acre of nitrate of soda to be made. Second year, soybeans for seed or hay and crimson clover, to be turned under the following spring after the first cutting. From 200 to 400 pounds to the acre of superphosphate and from 50 to 75 pounds of kainit to be used. Third year, tobacco, with rye sown in the fall, to be turned under the following spring. From 600 to 800 pounds to the acre of lime, from 150 to 200 pounds of kainit, and a top-dressing of 100 pounds of nitrate of soda to be applied. Fourth year, corn, with cowpeas or soybeans sown in late July, and all roughage later turned under. From 100 to 200 pounds to the acre of superphosphate, from 50 to 100 pounds of kainit, and from 50 to 75 pounds of nitrate of soda as a top-dressing to be used. All available stable manure should be applied to the land each year.

A recommended 3-year rotation is as follows: First year, tobacco, followed by crimson clover sown in the fall; second year, crimson clover turned under, corn planted, and soybeans or cowpeas sown in the corn in July; third year, cotton, with rye sown in the cotton in early fall.

On the more strongly rolling areas of Chesterfield sandy loam, where a large part of the sandy material has been washed off, a 3-year rotation, in which tobacco is not included, is recommended. The omission of the third year in the 4-year rotation given and the use of the other three years as a regular 3-year rotation furnish a systematic soil-building rotation.

*Chesterfield sandy loam, gravelly phase.*—The gravelly phase of Chesterfield sandy loam is differentiated from the sandy loam on account of the gravel content. In the gravelly phase the surface is thickly strewn with water-rounded quartz gravel varying from the size of a pea to 2 or 3 inches in diameter, and throughout the soil mass varying quantities of gravel are present. In a few places angular quartz fragments are on the surface and throughout the soil. Occasional outcrops of bedrock are to be seen. In general, owing to its gravel content tending to check erosion, the surface mantle of sandy material is deeper on the phase than on the typical sandy loam.

The gravelly phase of Chesterfield sandy loam has developed in close association with the typical soil. The phase is much less extensive than the typical soil and does not occur in large areas.

Probably one-fourth of this soil is under cultivation, but the gravel present interferes with cultivation. Crop yields average somewhat less than on the typical soil. Abandoned areas are covered with second-growth pine. The surface is rolling or steep and broken. Erosion is not excessive, owing to the great amount of gravel present on the surface and throughout the soil.

The more gravelly areas of this soil can best be utilized as forest land. Originally forested areas support various pines and oaks and scattered hickory, dogwood, gum, beech, cedar, elm, and maple. The soil material is considered very valuable for road-building purposes, and large quantities have been used locally with great success.

#### NORFOLK SAND

In wooded areas the surface soil of Norfolk sand, to a depth ranging from 1 to 5 inches, consists of gray, loose, mellow sand containing a small amount of organic matter. This grades into pale-yellow, loose sand which continues to a depth varying from 40 to 60 inches and is underlain by brownish-yellow loamy sand commonly containing lumps or lenses of sandy loam and fine sandy loam. In cultivated fields the surface soil has a pepper-and-salt appearance or may be practically white, owing to the leaching out of the organic matter.

Several small areas of Norfolk fine sand are included with this soil in mapping. These areas occur in very close association with the sand. Some small areas of Norfolk sand are covered with varying quantities of water-rounded gravel. Such areas are shown on the soil map by gravel symbols.



Norfolk sand occurs chiefly in comparatively small areas throughout the coastal plain region of the county but reaches its best development in the south-central part in Bailey, Jackson, and Coopers Townships. The only extensive area is mapped in Bailey Township between White Oak Church and the Wilson County line. The soil occupies slightly higher elevations than the surrounding soils. The surface is undulating or gently rolling and somewhat hummocky, with an occasional ridge or knoll, and as streams are approached the relief becomes more rolling.

Norfolk sand is of little importance in the agriculture of Nash County. It is subject to excessive leaching, is droughty, and is not naturally productive. About 60 per cent of it has at one time been cleared and brought under cultivation, but approximately one-third of this has been abandoned and is now growing up in old-field pine, blackjack oak, and scrub oak. Originally forested areas support a poor or fair growth of blackjack oak, scrub oak, longleaf pine, loblolly pine, some dogwood, and an undergrowth of wire grass.

Tobacco is a more important crop on this soil than cotton or corn. Peanuts are produced commercially on a few areas, and a few small peach orchards have been planted in Bailey Township during the last two or three years. The trees have made a good growth and will probably come into bearing at the age of 3 and 4 years. Potatoes and vegetables are grown only for home use. Yields of tobacco average about 600 pounds to the acre, of cotton one-third bale or less, of corn from 8 to 15 bushels, and of peanuts 25 bushels.

Crops are more heavily fertilized on this soil than on any other soil in the county. Average applications for tobacco run from 1,000 to 1,200 pounds to the acre of a 3-8-3 mixture, with a later top-dressing of 100 or 150 pounds of nitrate of soda or 150 or 200 pounds of cottonseed meal to the acre. Cotton receives from 800 to 1,000 pounds to the acre of a 3-8-3 commercial grade at planting and generally two top-dressings of either cottonseed meal or nitrate of soda at the rate of 100 or 200 pounds each. Corn receives about 600 pounds of a 3-8-3 mixture and generally a top-dressing of 150 pounds of cottonseed meal to the acre. Available stable manure is used.

Norfolk sand works easily with light implements and work animals and can be cultivated soon after heavy rains. It is decidedly deficient in vegetable matter, which can be supplied by growing and turning under green-manure crops. Systematic rotations will be helpful. Suggestions given for the improvement of Norfolk fine sandy loam apply equally well to Norfolk sand.

#### NORFOLK LOAMY SAND

Virgin Norfolk loamy sand has a surface soil of gray medium sand or fine sand from 3 to 5 inches thick. This is underlain by grayish-yellow or pale-yellow mellow sand or fine sand which continues to a depth ranging from 24 to 32 inches and grades into yellow sandy loam, loamy sand, or slightly sticky sandy clay. Below a depth of 50 or more inches is mottled light-gray and yellow friable sandy clay material streaked or splotched with red.

There is considerable variation in the texture of this soil, and in many places it is difficult to differentiate between the areas of loamy medium sand and loamy fine sand. Areas of the loamy sand and loamy fine sand occur in close association, and there is practically no difference in their agricultural value in Nash County. As the medium loamy sand predominates the soil is classed as a loamy sand in this county.

Norfolk loamy sand occurs in comparatively small areas. It occupies high, rather rolling, interstream areas, slopes to stream courses, and isolated knolls or hummocks. It lies somewhat higher than the surrounding soils. Surface drainage is excellent, and internal drainage is excellent or excessive.

Norfolk loamy sand is not an important farming soil in Nash County. To a somewhat less extent than Norfolk sand, this soil is subject to excessive leaching. It is droughty and is not naturally productive. About 70 per cent of it has at one time or another been under cultivation. At present less than 40 per cent is tilled. The abandoned areas support a fair growth of old-field pine, longleaf pine, blackjack oak, and scrub oak. On the originally forested areas the growth consists of loblolly, longleaf, and shortleaf pines, various oaks, and scattered hardwoods.

Tobacco is a more important crop on this soil than cotton and corn. Peanuts are grown to a small extent. Tobacco yields about 600 pounds to the acre, corn about 15 bushels, cotton two-fifths bale, and peanuts 30 bushels.

Heavy fertilization is general on all areas of this soil. Tobacco fields receive about 1,000 pounds to the acre of a 3-8-3 fertilizer, cotton 800 or 900 pounds, and corn 600 pounds.

Like Norfolk sand, Norfolk loamy sand is easily tilled and may be worked under almost any moisture conditions without injury. Light implements and work animals can be used. The soil may be greatly improved by the incorporation of organic matter in the form of green-manure crops. Suggestions given for the improvement of Norfolk fine sandy loam apply also to this soil.

#### NORFOLK SANDY LOAM

In wooded areas the surface soil of Norfolk sandy loam consists of a layer, from 2 to 4 inches thick, of gray or dark-gray loamy sand over pale-yellow or grayish-yellow loamy sand or light sandy loam which continues to a depth ranging from 12 to 18 inches. The subsoil to a depth of 35 or more inches is light-yellow or yellow friable crumbly sandy clay. It grades into the partly weathered hard but brittle mottled or streaked and splotched yellow, light-gray, and red sandy clay material. In cultivated fields the surface soil, to a depth ranging from 4 to 7 inches, is loamy gray or light-gray sand, depending on the quantity of organic matter present.

Norfolk sandy loam occurs in areas of varying extent throughout the coastal plain province of the county. The largest areas are mapped southwest of Strickland Church in Jackson Township and south of Perry Cross Roads in Bailey Township. Numerous smaller areas are in South Whitakers, Red Oak, and Nashville Townships.



The soil occurs on comparatively high interstream areas and on ridges adjacent to the stream slopes. The relief is prevailingly undulating or gently rolling. Owing to the porosity of the surface soil, the friability of the subsoil, and the relief, drainage is excellent.

This is one of the more important soils in Nash County, and considerably more than one-half of it is under cultivation. Uncleared areas support a fair growth of various oaks; loblolly, shortleaf, and longleaf pines; and some dogwood, hickory, maple, elm, gum, beech, holly, and other hardwoods. Areas that have been abandoned have largely grown up with old-field pine.

Tobacco and cotton are the important crops on this soil, and the fields not used for these crops are planted to corn. Generally sufficient corn is produced to feed the work animals and supply the needs of the farm. Some farmers grow rye, clover, cowpeas, soybeans, or oats and vetch for soil improvement and for feed. A few areas are devoted to peanuts. Among the crops grown chiefly for home use are sweetpotatoes, potatoes, vegetables, melons, fruits, and some sorgho for sirup. Occasionally small patches of melons are grown for local markets. This soil warms up early in the spring and is excellent for early truck crops. Hardy vegetables such as collards, cabbage, and turnips make good winter and early spring crops.

In general, Norfolk sandy loam is one of the best-farmed soils in the county. Yields of slightly more than 1 bale of cotton to the acre are commonly obtained by the better farmers; the average yield is three-fourths bale. Tobacco yields range from 500 to 900 pounds to the acre, with an average of about 700 pounds. Corn, which is secondary to cotton and tobacco, varies in yields from 15 to 40 bushels. Peanuts yield 35 bushels to the acre. Crops on this soil receive the same fertilizer treatment as crops on Norfolk fine sandy loam.

Norfolk sandy loam is a very desirable soil for the production of all the crops commonly grown in Nash County. It is capable of being maintained in a highly productive state by proper rotation, fertilization, and tillage. Suggestions for the improvement and maintenance of Norfolk fine sandy loam apply equally well to the sandy loam. This soil is particularly suited to the production of bright tobacco, peanuts, and cotton, and a wide variety of truck crops.

*Norfolk sandy loam, deep phase.*—The deep phase of Norfolk sandy loam differs from the typical soil in that the subsoil is covered with a much deeper mantle of sandy material. It lies at a depth ranging from 20 to 30 inches below the surface. In wooded areas the surface soil to a depth of 1 or 2 inches is gray sand, whereas in cultivated fields it is light-gray or almost white sand, owing to the leaching out of the organic matter. Even in its natural state this soil contains only a small percentage of organic matter. Owing to its loose structure it is easily cultivated with light teams and implements.

The deep phase of Norfolk sandy loam is fairly extensive and occurs in very close association with the typical soil. Its best development is reached in Jackson and Bailey Townships. It occurs on interstream ridges and on the slopes approaching stream courses.

It generally occupies slightly higher areas than the typical sandy loam. The surface is undulating or rolling, and drainage is excellent. Water percolates downward through the soil so readily that plowing may be safely done within a few hours after heavy rains. On fields that have been largely depleted of organic matter through careless farming methods most crops suffer during dry periods, but where a good supply of organic matter is maintained little damage results.

This soil is of greater extent and of more importance in the agriculture of Nash County than is typical Norfolk sandy loam. On account of its elevation and good drainage it is highly desirable for home sites. Probably three-fourths of it has at one time been cleared and cultivated. At present nearly 60 per cent is under cultivation. Forested areas support a fair growth of hardwoods and pines.

This soil is considered especially adapted to the production of bright-leaf tobacco, but practically the same crops are grown as on Norfolk sandy loam, and the management of the two soils is the same. Fertilization on the deep phase is somewhat heavier than on the typical soil. With the same fertilization crop yields are somewhat lower but, as the general practice is to use heavier applications on the phase, the yields are about equal. Norfolk sandy loam, deep phase, can be improved by the methods suggested for the improvement of Norfolk fine sandy loam.

#### NORFOLK FINE SANDY LOAM

Virgin Norfolk fine sandy loam has a surface covering, from 1 to 5 inches thick, of gray or dark-gray loamy fine sand or fine sandy loam, passing into grayish-yellow or pale-yellow light fine sandy loam or loamy fine sand which extends to a depth varying from 12 to 18 inches. The subsoil is light-yellow or yellow friable fine sandy clay to a depth ranging from 35 to 50 or more inches, where it grades into mottled or streaked yellow, light-red, and gray friable fine sandy clay material. In many places this is underlain, at a depth of 5 or more feet, by residual clays, and in some places the subsoil rests directly on this clay. In a few areas coarse sandy material or fine gravel occurs in the subsoil at a depth ranging from 32 to 40 inches. In long-cultivated areas the surface soil, to a depth ranging from 4 to 7 inches, is loamy fine sand of a light-gray or almost white color, owing to the small amount of organic matter present.

Norfolk fine sandy loam occurs throughout the coastal plain region of the county and in a few isolated areas in the piedmont plateau division. Its best development is reached in the eastern half of North Whitakers and in Jackson Townships. The soil generally occupies comparatively high interstream areas and the slopes approaching stream courses. The surface ranges from nearly level through undulating to rolling. The greater part is undulating or gently rolling. Natural drainage is well established.

Norfolk fine sandy loam is one of the most important agricultural soils in Nash County. About 60 per cent of it is now under cultiva-



tion. The remainder is forested with old-field pine, loblolly pine, longleaf pine, various oaks, and scattered hickory, maple, elm, birch, beech, gum, poplar, dogwood, holly, cedar, sourwood, and persimmon. The undergrowth consists of gallberry, huckleberry, and serviceberry bushes, and wire grass.

This soil is used for the production of all the crops common to the county. Cotton is the principal crop, but it is followed closely in importance and acreage by both tobacco and corn. In North Whitakers Township peanuts are the chief crop on many areas of this soil. The crops produced mainly for home use, and to a very small extent for sale, are potatoes, garden vegetables, melons, fruits, and sorgho for sirup. Rye, oats, clover, soybeans, cowpeas, and vetch are sometimes grown for soil improvement and for feed.

Cotton yields average three-fourths bale to the acre, but numbers of the better farmers obtain slightly more than 1 bale year after year. Tobacco yields from 500 to 1,000 pounds to the acre, corn from 15 to 60 bushels, and peanuts from 35 to 70 bushels.

The most highly developed farms in Nash County are located on Norfolk fine sandy loam, yet on the average farm on this soil little is done to build up and maintain the soil by systematic rotations and the incorporation of organic matter in the form of green-manure crops. Some farmers use tractors, plowing from 7 to 9 inches deep and carefully preparing the seed bed; but the average tenant generally has only light implements and work animals and does not plow deeply.

As a rule, all crops are heavily fertilized, except peanuts, which in the neighborhood of Whitakers are often alternated with cotton, a heavily fertilized crop. When fertilized, peanuts receive from 500 to 800 pounds to the acre of a 3-8-3 commercial fertilizer before planting. Lime is applied on practically all fields used for peanuts, at rates varying from 1,000 to 2,000 pounds to the acre before the soil is broken in the spring. Some farmers apply agricultural gypsum or land plaster at the rate of 300 to 600 pounds to the acre before planting; others apply gypsum only as a top-dressing at the rate of 200 pounds to the acre directly to the plants, when they are in flower. Cotton is generally fertilized with from 600 to 1,000 pounds to the acre of a 3-8-3 commercial fertilizer applied to the rows just before planting. A top-dressing of 75 or 100 pounds to the acre of nitrate of soda is applied when the plants are chopped out, and about mid-July, when the squares begin to form on the plants, another top-dressing of nitrate of soda at the rate of 100 or 125 pounds to the acre is made. Corn is usually given an acreage application of between 400 and 600 pounds of a 3-8-3 mixture, with a later top-dressing of 100 or 150 pounds of nitrate of soda about the time the plants tassel. Tobacco receives the heaviest fertilization, with applications of 800 or 1,000 pounds of a 3-8-3 mixture to the acre. A top-dressing is applied when the plants are from 15 to 18 inches high. For this top-dressing generally from 75 to 100 pounds to the acre of nitrate of soda is used. Sometimes 150 or 200 pounds to the acre of cottonseed meal is used as a top-dressing, and a few farmers use only a 10-0-4 fertilizer as a top-dressing, about 100 pounds to the acre being applied.

Home-mixed fertilizers are used by a few farmers. Superphosphate, cottonseed meal, or nitrate of soda, and kainit or sulphate of potash are the ingredients commonly used. The resultant mixtures have analyses equivalent to 6-7-5, 4-12-4, 4-10-4, or 6-10-6 commercial grades. Correspondingly smaller amounts of these mixtures are applied than of the 3-8-3 grades, but the same later top-dressings of nitrate of soda or cottonseed meal are made.

Norfolk fine sandy loam commands from \$40 to \$200 or more an acre, depending more on the location with respect to the larger towns and paved roads than on the state of improvement. The average price asked for farm lands largely of this soil located on county roads is about \$100 an acre.

Norfolk fine sandy loam is one of the most desirable agricultural soils in Nash County. It is well drained, mellow, easily tilled, and capable of being maintained in a highly productive condition. It is deficient in organic matter which can be supplied by growing and turning under green-manure crops. The soil is well suited to the production of bright tobacco, cotton, corn, peanuts, potatoes, melons, and truck crops. The results of experiments and analyses on Norfolk fine sandy loam on several test farms conducted by the North Carolina Agricultural Experiment Station show that this soil is decidedly poor in nitrogen and lime and that potash and phosphoric acid are less limiting factors in the production of the average farm crops. Nitrogen may be more profitably supplied in the form of legumes, green-manure crops, and stable manure than commercial fertilizer. Where needed, lime should be applied in liberal amounts. Potash and phosphoric acid, although apparently less important than nitrogen at present, must be supplied for best results.

A 4-year rotation and fertilizer treatment recommended by the experiment station for building up and maintaining Norfolk fine sandy loam in a highly productive state is as follows: First year, cotton with rye sown after first picking, to be turned under the following spring. At planting, from 200 to 400 pounds to the acre of superphosphate, from 300 to 500 pounds of cottonseed meal, and from 150 to 300 pounds of kainit to be applied. Two top-dressings of 75 or 100 pounds each of nitrate of soda should be made later. Second year, peanuts with rye sown in the fall, after hogs have harvested the waste peanuts, to be turned under in the spring. From 1,000 to 2,000 pounds to the acre of lime to be applied before planting peanuts and from 150 to 300 pounds of gypsum when plants are in blossom. Third year, tobacco, with crimson clover sown after the crop is removed. The clover is to be turned under the following spring after the first cutting. From 200 to 300 pounds to the acre of superphosphate, from 150 to 300 pounds of cottonseed meal, and from 300 to 400 pounds of kainit to be used, with a later top-dressing of 75 pounds of nitrate of soda. Fourth year, corn with which cowpeas or soybeans are planted. All roughage is to be turned under. From 100 to 200 pounds to the acre of superphosphate and from 50 to 100 pounds of kainit to be applied, with a later top-dressing of 50 or 75 pounds of nitrate of soda. All available stable manure should be applied to the land each year.

A recommended 3-year rotation is as follows: First year, tobacco, followed by crimson clover in early fall, the clover to be turned



under the following spring after the first cutting. From 200 to 300 pounds to the acre of superphosphate, from 200 to 300 pounds cottonseed meal, and from 400 to 500 pounds kainit to be applied before plants are set. A later top-dressing should consist of 100 pounds nitrate of soda. Second year, cotton with rye sown in early fall and turned under the following spring. At planting, from 150 to 250 pounds to the acre of superphosphate, from 150 to 300 pounds cottonseed meal, and from 75 to 150 pounds kainit to be applied. Two top-dressings of 75 or 100 pounds to the acre of nitrate of soda to be made later. Third year, corn, with soybeans or cowpeas sown in July and all roughage turned under in the fall. From 100 to 125 pounds to the acre of superphosphate, from 100 to 125 pounds cottonseed meal, and 50 pounds kainit to be applied, with a later top-dressing of 50 pounds nitrate of soda. From 1,000 to 2,000 pounds to the acre of ground limestone should be used once in the rotation.

*Norfolk fine sandy loam, deep phase.*—The deep phase of Norfolk fine sandy loam is separated from the typical soil on account of its deeper surface soil and somewhat lower productiveness. In wooded areas the surface soil, to a depth ranging from 1 to 3 inches, is gray fine sand which is underlain by grayish-yellow or pale-yellow loamy fine sand continuous to a depth between 18 and 24 inches. The third layer, consisting of pale-yellow fine sandy loam, is found at a depth varying from 20 to 32 inches. The typical subsoil is light-yellow or yellow friable fine sandy clay which continues to a depth of 50 or more inches. The underlying material is similar to that of typical Norfolk fine sandy loam but generally occurs at a somewhat greater depth. In cultivated fields the surface soil, to a depth ranging from 5 to 7 inches, is light-gray or almost white owing to the leaching out of the organic matter. Even in its natural state this phase of soil contains only a small percentage of vegetable matter. Owing to its loose structure it is easily cultivated with light teams and implements.

Although the deep phase of Norfolk fine sandy loam is not so extensive in Nash County as the typical soil, it is important agriculturally. It occurs in close association with Norfolk fine sandy loam, occupying interstream ridges and slopes approaching streams. In general it lies slightly higher than the typical fine sandy loam. The surface is undulating or rolling, and drainage is excellent.

This was among the first soils in the county to be cleared and brought under cultivation. At present nearly 60 per cent of it is tilled. Forested areas support a fair or good growth of various hardwoods and pines. In general, more tobacco and less cotton are grown than on the typical soil, but the two are handled in the same way. Fertilization is somewhat heavier than on the typical soil. Crop yields are normally slightly lower, but as the general practice is to use more fertilizer on the phase the yields are about equal. This is a very desirable soil for the production of bright-leaf tobacco, peanuts, corn, and forage crops. Cotton, even with greater fertilization, does not produce so well as on the typical soil. In coastal plain counties in southwestern North Carolina the deep phase of Norfolk fine sandy loam is considered one of the best soils for early truck crops. This deep soil can be improved by the methods suggested for the improvement of the typical soil.

Table 5 gives the results of mechanical analyses of samples of the surface soil, subsurface soil, and two layers of the subsoil of typical Norfolk fine sandy loam.

TABLE 5.—*Mechanical analysis of Norfolk 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>
237046	Surface soil, 0 to 5 inches.....	0.8	3.4	1.8	15.8	44.2	26.0	7.7
237047	Subsurface soil, 5 to 16 inches..	.8	2.8	1.4	12.1	49.8	22.8	9.6
237048	Subsoil, 16 to 40 inches.....	.4	2.4	1.2	11.2	39.6	17.7	27.3
237049	Subsoil, 40 to 60 inches.....	.4	3.4	1.6	12.8	37.6	13.1	30.8

#### RUSTON SANDY LOAM

Ruston sandy loam in wooded areas has a gray or dark-gray sandy loam surface soil from 2 to 4 inches thick. This is underlain by pale-yellow loamy sand or loose sandy loam continuous to a depth varying from 12 to 20 inches. The subsoil of yellowish-brown, brownish-red, or yellowish-red friable sandy clay or fine sandy clay continues to a depth ranging from 35 to 45 or more inches. The underlying material is mottled red and light-gray, friable yet somewhat stiff and slightly sticky fine sandy clay. This is in places underlain by gray, coarse sandy material, mottled or streaked with red. In many places, however, the subsoil rests almost directly on the residual clays. In cultivated fields the surface soil, to a depth of 5 or 7 inches, is loose loamy sand of light-gray or brownish-gray color, depending on the quantity and character of the organic matter present.

This soil occurs in small areas throughout the eastern part of the coastal plain region of Nash County. The surface is gently rolling or rolling, becoming rather strongly rolling as stream courses are approached. Generally this soil occupies a somewhat higher position than the surrounding soils. Owing to its relief, loose consistence, and porous structure, drainage is very good.

About 65 per cent of the Ruston sandy loam is under cultivation. It is considered a desirable soil for all the crops grown in the county. Forested areas support a growth of various pines and oaks and scattered hickory, maple, beech, gum, and dogwood. The principal crops are cotton and corn. Tobacco is less extensively planted than on the Norfolk soils. Cotton yields from one-half to 1½ bales to the acre, corn from 15 to 40 bushels, and tobacco about 700 pounds. Some peanuts are grown, and the yields range from 35 to 65 bushels. Cotton generally receives about 800 pounds to the acre of a 3-8-3 or 4-9-4 fertilizer and top-dressings ranging from 150 to 300 pounds of cottonseed meal or from 100 to 125 pounds of nitrate of soda. Tobacco is somewhat more heavily fertilized than cotton, whereas corn receives about half the amount of fertilizer that is applied to cotton.

Most of this soil is decidedly deficient in organic matter. Crop rotations including legumes, and the turning under of green-manure crops will correct this deficiency.



*Ruston sandy loam, deep phase.*—The deep phase of Ruston sandy loam is mapped in order to separate the typical soil from those areas having a much deeper mantle of sandy material over the subsoil. The deep phase has a surface soil, from 20 to 30 inches thick, of grayish-yellow, gray, or brownish-gray loamy sand or sandy loam. In wooded areas, the surface soil to a depth ranging from 1 to 3 inches is gray loose sand. The subsoil is yellowish-brown, reddish-yellow, or brownish-red friable sandy clay to a depth of 40 or 50 inches. The underlying material is similar to that under typical Ruston sandy loam but is generally found at a somewhat greater depth.

This deep soil generally occupies somewhat less rolling areas than the typical soil, but it has excellent surface and internal drainage. In places some water-rounded quartz gravel, varying from the size of a small pea to 2 or 3 inches in diameter, occur on the surface and throughout the soil. These areas are shown on the soil map by gravel symbols.

Considerably more than half of this deep soil is under cultivation. Wooded areas support a fair or good growth of pines, oaks, dogwood, and other hardwoods. Abandoned fields are growing up in old-field pine and sassafras bushes. Cotton, tobacco, and corn are the principal crops. Yields are somewhat less than those obtained on the typical soil. This phase of soil is handled much as is the deep phase of Norfolk sandy loam. Its greatest need is the incorporation of organic matter.

#### RUSTON FINE SANDY LOAM

In wooded areas, the surface soil of Ruston fine sandy loam, to a depth ranging from 2 to 5 inches, consists of gray or dark-gray loamy fine sand or mellow fine sandy loam. The subsurface soil, to a depth ranging from 12 to 18 inches, is pale-yellow or brownish-yellow light fine sandy loam or loamy fine sand. The typical subsoil is brownish-yellow fine sandy clay which grades, at a depth between 15 and 25 inches, into reddish-yellow or brownish-red friable crumbly sandy clay continuous to a depth varying from 35 to 50 or more inches. This is underlain by mottled red, light-yellow, and gray friable somewhat sticky clay. In places the subsoil rests directly on the residual clay. In cultivated fields the surface soil is grayish brown, gray, or light gray, depending on the amount and character of the organic matter present.

Included within this soil in mapping are four small areas having a much deeper mantle of surface material than typical. These areas represent the deep phase of Ruston fine sandy loam, but on account of their very small extent they are not separated in mapping.

Ruston fine sandy loam occurs in small areas throughout the coastal plain region of the county. The largest areas are in South Whitakers Township between Battleboro and Gold Rock. The soil occupies comparatively high interstream areas and the slopes leading to the stream courses. The surface is undulating or rolling and strongly rolling. Drainage is well established.

On account of its very small extent, Ruston fine sandy loam is not important agriculturally in Nash County. Approximately 60 per

cent of it is under cultivation. The remainder is forested with pine, oak, and various hardwoods. Cotton and corn are the principal crops, but tobacco and all the crops common to the county are produced to some extent.

Cotton yields from one-half to 1½ bales to the acre, corn from 18 to 35 bushels, tobacco from 600 to 900 pounds, and peanuts from 40 to 70 bushels. These crops receive about the same fertilization as those grown on Ruston sandy loam or Norfolk fine sandy loam.

Ruston fine sandy loam is an easily tilled soil and is capable of being kept in a highly productive state. It is one of the strongest soils in the county. Rotations suggested for Norfolk fine sandy loam may be used on this soil.

Table 6 shows the results of mechanical analyses of samples of the surface soil, subsurface soil, and several layers of the subsoil of Ruston fine sandy loam.

TABLE 6.—Mechanical analysis 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>
237050	Surface soil, 0 to 3 inches-----	2.4	12.4	12.4	49.3	18.4	3.3	2.1
237051	Subsurface soil, 3 to 12 inches--	1.6	12.2	11.6	39.4	16.2	15.2	4.4
237052	Subsoil, 12 to 20 inches-----	1.4	9.0	7.8	23.0	9.2	14.4	35.9
237053	Subsoil, 20 to 50 inches-----	.8	7.8	4.4	22.1	10.4	13.6	41.2
237054	Subsoil, 50+ inches-----	.8	2.4	1.2	5.8	9.2	33.3	47.3

#### CUTHBERT FINE SANDY LOAM

In virgin areas the surface soil of Cuthbert fine sandy loam consists of gray or light-gray fine sandy loam, generally less than 2 inches thick, which is underlain by pale-yellow or grayish-yellow fine sandy loam continuous to a depth between 5 and 10 inches. The upper part of the subsoil is tough, heavy, compact, yellowish-brown clay mottled faintly with light red and yellow. This layer passes, at a depth ranging from 28 to 35 inches, into light-yellow, friable, crumbly fine sandy clay mottled with whitish and purplish red. This grades, at a depth varying from 32 to 45 inches, into streaked or splotched purplish-red, light-gray, and yellow heavy clay. In many places there is no friable crumbly layer under the upper part of the subsoil, but heavy, tough, compact, reddish-yellow clay is present.

In most cultivated fields part of the surface soil has been washed off, leaving a soil condition resembling fine sandy clay or in places clay loam. In numerous galled spots the red or yellowish-red subsoil is exposed. In plowing some of the upper part of the subsoil generally becomes mixed with the surface soil, giving the soil a grayish-yellow or yellow, or, in places, a reddish-yellow color. Abandoned areas which have largely grown up in old-field pine have a yellowish or reddish-yellow surface soil. A few areas have a medium sandy loam surface soil.

Cuthbert fine sandy loam occurs almost entirely in the eastern half of South Whitakers Township. Four small areas are mapped in the northeastern corner of Stony Creek Township, and a few areas are



in North Whitakers Township just north of Swift Creek. The soil occurs largely on the slopes to stream courses and on comparatively high ridges between the streams. The relief ranges from gently to strongly rolling. Natural surface drainage is good or excessive.

Cuthbert fine sandy loam is a comparatively unimportant farming soil in Nash County because of its small extent and local development. Somewhat less than half of it is under cultivation, the rest being forested with pine, oak, dogwood, maple, gum, holly, and other hardwoods. Old-field pine and some sassafras bushes grow on abandoned fields.

Cotton and corn are the principal crops. Some tobacco and peanuts are grown, but generally only on the less rolling areas which have a deeper mantle of fine sandy loam. Some small grain, clover, soybeans, and cowpeas are also grown. Potatoes, fruits, and vegetables are grown for home consumption. Cotton yields from one-third to 1 bale to the acre, corn from 12 to 30 bushels, tobacco about 500 pounds, and peanuts from 20 to 40 bushels. Cotton and tobacco are heavily fertilized, whereas corn and peanuts receive lighter applications.

Cuthbert fine sandy loam is a good strong soil and is capable of being maintained in a highly productive state by very careful management. Deep plowing, proper preparation of the seed bed, and the incorporation of organic matter are recommended. The growing of winter cover crops is essential on the more rolling areas to prevent erosion. Terracing is also necessary over a large part of the soil. Heavy work animals and implements are generally necessary. Plowing and cultivation can be done only under a rather narrow range of moisture conditions. Rotations including winter cover crops to be turned under in the spring are suggested.

#### DUNBAR SANDY LOAM

The surface soil of Dunbar sandy loam is gray or dark-gray sandy loam and is underlain, at a depth between 2 and 4 inches, by light grayish-yellow or pale-yellow sandy loam or heavy sandy loam, which continues to a depth ranging from 8 to 12 inches. The upper layer of the subsoil is yellow, friable, crumbly clay and is underlain, at a depth varying from 20 to 30 inches, by mottled yellow and light-gray, heavy, rather tough clay faintly streaked with red. The parent material, below a depth ranging from 35 to 45 or more inches, is light-gray clay or heavy very fine sandy clay material mottled with brownish yellow and light red. In the lower areas the surface soil is very dark gray or almost black when moist. In cultivated fields the surface soil, to a depth of 5 or 7 inches, is light-gray or grayish-yellow sandy loam, depending on the amount and character of the organic matter present and the depth of plowing.

Dunbar sandy loam occurs in small areas throughout the coastal plain region of Nash County. The only area of any extent is in the vicinity of New Hope Church in South Whitakers Township. The soil occupies level positions on the broad interstream areas and small flats around the heads of streams, and in places occurs at the base of slopes. The relief varies from flat to undulating. Surface drainage is poor on the flatter and only fair on the more undulating areas.

Internal drainage is poor, owing to the compactness and comparative imperviousness of the lower part of the subsoil. Ditching is required over all the soil to obtain drainage adequate for cultivation.

Although this soil is widely distributed, it is not important agriculturally. Only a few comparatively small areas have been brought under cultivation. The greater part of the soil is covered with a good growth of various pines and oaks, sweetgum, and some hickory, maple, beech, birch, holly, hornbeam, elm, and poplar. The undergrowth, which is dense in places, consists of gall-berry, serviceberry, and huckleberry bushes, brambles, and an occasional baybush. Coarse grasses and ferns thickly cover some of the burned-over areas.

On the cultivated areas of Dunbar sandy loam corn is the principal crop, only a little cotton being planted. Yields average lower than on Norfolk sandy loam. Fertilizer treatment and methods of handling are similar to those on the surrounding soil, as the areas of Dunbar sandy loam under cultivation are generally parts of fields composed largely of well-drained soils. This soil, where adequately drained and limed, produces good yields of corn, cotton, oats, and grasses, and good pasturage.

#### DUNBAR FINE SANDY LOAM

The surface soil of Dunbar fine sandy loam is gray or dark-gray fine sandy loam to a depth of 2 or 4 inches, where it passes into grayish-yellow, yellowish-gray, or pale-yellow heavy fine sandy loam or fine sandy clay 8 or 10 inches thick. The subsoil consists of two layers, an upper layer of yellow, friable, crumbly clay continuing to a depth of 15 or 18 inches, and a lower layer of mottled yellowish and light-gray, heavy but fairly brittle clay. In places the lower part of the subsoil is mottled light yellow, gray, and red. The parent material, which occurs at a depth varying from 28 to 40 or more inches, is light-gray, slightly plastic and somewhat tough clay mottled with brownish yellow and light red. There is considerable variation locally in the parent material, but generally it is slightly heavier in texture than the lower part of the subsoil. In heavily wooded areas, where there is a noticeable accumulation of vegetable mold, the immediate surface soil may be almost black. In cultivated fields the surface soil to a depth ranging from 5 to 8 inches is light-gray or grayish-yellow fine sandy loam, depending on the quantity and character of the organic matter present and on the depth of plowing. In the southeastern part of the county, chiefly in Rocky Mount and Jackson Townships, several spots of Dunbar very fine sandy loam and Dunbar silt loam are included with this soil in mapping.

Dunbar fine sandy loam is widely distributed and occurs in areas ranging from a very few acres to almost 2 square miles in extent. The greatest development is reached in North Whitakers Township, and comparatively large areas are mapped in Rocky Mount and Jackson Townships. The surface ranges from nearly level to undulating and, in a few places, to very gently rolling. The soil occurs on level interstream areas, on gentle slopes adjacent to drainage ways, at the base of slopes, and in depressions around the sources of small streams. Drainage is retarded by the lack of surface relief



and by the compact lower subsoil layer. Only a very few areas of this soil are cultivated. Ditches are necessary to establish adequate drainage in cultivated fields. The timber has been removed from some areas, but the greater part of the soil is covered with a good growth of pine, and scattered oak, hickory, sweetgum, maple, beech, and hornbeam, with an undergrowth of gall-berry bushes and an occasional baybush. Coarse grasses and ferns grow on the cut-over areas.

Most of the cultivated areas of this soil form parts of fields comprising higher well-drained soils. Nearly all the cultivated fields wholly of this soil are in the vicinity of Whitakers, Battleboro, and Sharpsburg. Corn, cotton, potatoes, and garden vegetables are produced. Yields are generally somewhat lower than on the better-drained soils. Peanuts are grown to a small extent near Whitakers.

Drainage of this soil is feasible, but extensive ditches would have to be dug and carefully maintained. The soil warms up slowly in the spring and can be handled only under a rather narrow range of moisture conditions on account of its tendency to clod when plowed too wet and to bake after summer rains if not tilled soon enough.

In lower-lying coastal-plain counties in North Carolina this is a fairly important farming soil, but in Nash County it is considered comparatively unimportant on account of its poor drainage. It is best adapted to use as forest lands. Cut-over areas furnish some grazing.

#### PORTSMOUTH SANDY LOAM

The surface soil of Portsmouth sandy loam is dark-gray or almost black sandy loam which passes, at a depth between 6 and 10 inches, into a light-gray heavy sandy loam subsurface layer. The subsoil proper is mottled or streaked light-gray and brownish-yellow sandy clay or fine sandy clay which is slightly sticky but friable. The subsoil is somewhat variable from place to place, and locally the gray may predominate and the yellowish mottles be almost indistinguishable. Included within this soil in mapping are a few areas of Portsmouth fine sandy loam too small to be shown separately on the soil map.

Portsmouth sandy loam occurs only in the central part of the county, chiefly in Red Oak Township. There are no very large areas. The soil occupies flats and slight depressions on interstream areas and small baylike areas around the sources of streams and at the base of slopes. The surface is almost level. Drainage has not been fully established, and the soil is wet during the greater part of the year. With the exception of Portsmouth fine sandy loam, this is the most poorly drained soil in the county.

On account of the poor drainage conditions, practically none of the Portsmouth sandy loam is cultivated. It supports a forest growth consisting largely of pine, with some scattered gum. The undergrowth, which is rather dense in places, consists of gall-berry bushes, baybushes, and briers. A characteristic growth on this soil is small reeds and a few rushlike plants. A few very small fields are planted to corn. Crop yields are low. The soil in its present condition is not suitable for farming, and drainage would be difficult on account of the low position of the areas. The value of the soil is governed largely by the value of the timber it supports.

#### PORTSMOUTH FINE SANDY LOAM

The surface soil of Portsmouth fine sandy loam, to a depth ranging from 8 to 12 inches, is dark-gray or almost black fine sandy loam rather high in organic matter. This layer grades into light-gray heavy fine sandy loam, which is underlain, at a depth of 15 or 18 inches, by mottled light-gray and brownish-yellow, slightly sticky but friable fine sandy clay. In places the subsoil is light gray and does not show distinctly the yellowish streaks or mottles.

Included with this soil in mapping are a few areas of Portsmouth very fine sandy loam and Portsmouth loam in the southern part of the county and in Rocky Mount and Jackson Townships, and four small areas of Coxville very fine sandy loam. These areas occur in very close association with Portsmouth fine sandy loam and are so small that they can not be separated.

This soil occurs mainly in the southeastern part of the county, chiefly in Rocky Mount, Jackson, and Coopers Townships. There are no very large areas.

Portsmouth fine sandy loam occupies small pocosinlike patches in the more level interstream areas and flats, or slight depressions around the heads of small streams and at the base of gentle slopes. The surface is level. Drainage has not been well established, and the soil remains wet throughout the year. In wet seasons it is largely covered with water.

On account of its poor drainage Portsmouth fine sandy loam is not farmed. In lower-lying counties in eastern North Carolina this soil is planted to corn, grasses, oats, and sometimes cotton, but occurring as it does in flats and depressions it is unimportant agriculturally in Nash County. It is best suited to use as woodland. Some of the original forest of pines and gums remains. There is a rather dense undergrowth of baybushes, gall-berry bushes, briers, and reeds.

#### PLUMMER FINE SANDY LOAM

The surface soil of Plummer fine sandy loam is gray or light-gray fine sandy loam from 6 to 10 inches thick. It passes into mottled light-gray and yellow, friable, crumbly fine sandy clay or loamy fine sand which extends to a depth varying from 32 to 50 or more inches. The underlying material is slightly sticky sand streaked and mottled with gray, rust brown, yellow, and white.

This soil, locally, is probably the most variable in the county. In general it is fine sandy loam as described, but locally it may be sand, sandy loam, fine sand, or very fine sandy loam. In a few places a slight hardpan occurs at a depth of 20 or 30 inches. In many places the subsoil is gray, rather loose fine sand, which when wet is almost like quicksand. As these variations occur in very small areas it was not practical to show them separately on the soil map.

Plummer fine sandy loam occurs throughout the coastal plain region of the county in areas varying in size from about 3 to about 300 acres. It occurs in low flats or depressions around the heads of streams and at the base of slopes. The surface is practically level. Natural drainage is everywhere poor, and the surface water from higher-lying soils keeps the soil in a more or less saturated condition



throughout the year. Owing to its position and to the character of the subsoil, it is very difficult to drain this soil adequately.

Plummer fine sandy loam, as mapped in Nash County, is of little agricultural value. Only very narrow strips along the edges of fields of higher soils are cultivated, and these strips give very low yields. The soil in places supports a rather scattered growth of pine and some sweetgum, scrub oak, baybush, and gall berry. Coarse grasses growing on some of the nearly treeless areas supply some grazing for cattle or sheep. A characteristic growth is the pitcher plant. Crawfish chimneys are common. The soil can best be utilized as woodland or pasture.

#### WICKHAM FINE SANDY LOAM

The surface soil of Wickham fine sandy loam in untilled areas is brown mellow fine sandy loam to a depth of 2 or 3 inches, where it passes into light-brown fine sandy loam which continues to a depth ranging from 8 to 12 inches. The subsoil of reddish-yellow or reddish-brown friable clay is underlain, at a depth varying from 30 to 50 or more inches, by yellow or slightly reddish-yellow friable crumbly fine sandy clay. Both layers of the subsoil contain varying quantities of finely divided mica particles. In many areas there is only one layer in the surface soil, and this consists of light-brown fine sandy loam from 7 to 12 inches thick. In cultivated fields the surface soil, to a depth of 5 or 7 inches, is reddish or brownish yellow, with spots of gray, the color depending on the depth of plowing and the quantity of organic matter present in the soil. This is not a uniform soil. It includes a number of very small areas of Wickham loamy sand, Wickham loam, Wickham very fine sandy loam, and Altavista fine sandy loam.

Wickham fine sandy loam occurs only on the second-bottom terrace areas along some of the larger streams of the county. It occupies comparatively small, narrow strips along Tar River and Swift Creek. The only area of any extent is just north of Rocky Mount where Tar River leaves the county. The surface is prevailingly level or gently undulating. Drainage is good, and the soil lies above normal overflow.

Only a few areas of this soil are under cultivation. Corn, the chief crop, yields from 15 to 25 bushels to the acre. Cotton, which is grown to some extent, yields about two-thirds bale to the acre. On account of its small extent and occurrence in narrow strips, this is not an important soil in the agriculture of the county.

#### ALTAVISTA FINE SANDY LOAM

The surface soil of Altavista fine sandy loam is gray fine sandy loam to a depth of 1 or 2 inches. The next lower material, which extends to a depth of between 6 and 9 inches, is light grayish-yellow heavy fine sandy loam or very fine sandy loam. The upper part of the subsoil is yellow, heavy, firm but moderately friable clay or silty clay containing a small quantity of finely divided mica particles. This grades, at a depth ranging from 18 to 30 inches, into yellow or ochreous-yellow, heavy, sticky very fine sandy clay mottled with light gray and faint streaks of red. In cultivated areas the surface soil is very light-gray fine sandy loam to a depth between 5 and 8 inches.

A few small areas of Altavista silt loam, Altavista very fine sandy loam, Wickham fine sandy loam, and Roanoke silt loam are included in mapping.

Altavista fine sandy loam occurs in rather narrow strips along the larger streams of the county. It occupies terrace or second-bottom areas, most of which are flat or gently undulating. Owing to the lack of surface relief and to the rather heavy texture of the subsoil, natural drainage is only fair.

On account of its comparatively small development, this is not an important agricultural soil in the county. Only a very small proportion of it is under cultivation. Cotton and corn are planted on about equal acreages. Timber growth consists of pine, oak, sweetgum, hickory, elm, beech, and holly. A large part of the soil is cut-over land. Some cleared areas are utilized as pasture.

#### ROANOKE SILT LOAM

Roanoke silt loam, to a depth ranging from 1 to 3 inches, consists of gray or dark-gray silt loam. This is underlain, to a depth between 10 and 14 inches, by gray or light-gray heavy silt loam faintly mottled with yellow or brownish yellow. The subsoil, between depths of about 12 and 45 inches, generally consists of two layers, an upper layer, from 15 to 20 inches thick, of gray or almost dark-gray, heavy, tough, plastic silty clay mottled with yellow and faint streaks of red and a lower layer of mottled gray and yellowish-brown, rather friable clay. Underlying the subsoil is variable material, which generally is mottled drab-gray and rust-brown, heavy, compact silty clay or clayey material which is somewhat crumbly when dry.

Roanoke silt loam occurs only in small areas along Tar River and some of the larger streams of the county. The only areas of any extent are mapped west and north of Rocky Mount. The soil occupies low, flat, or very slightly undulating depressions in terraces and generally lies adjacent to the upland. Owing to the flatness of the surface and the imperviousness of the subsoil, this is one of the most poorly drained soils in the county. Water remains on the surface for some time after rains.

Practically none of the Roanoke silt loam is under cultivation, except small areas near Rocky Mount. Some small areas of cleared land are utilized as pasture. The greater part of the soil is cut-over land. Forested areas support a good growth of various oaks and scattered hardwoods of various species. The agricultural value of the soil is low.

#### WEHADKEE SILT LOAM

The surface soil of Wehadkee silt loam consists of a brown, dark-gray, or grayish-brown silt loam layer generally less than 2 inches thick, underlain by light-gray, mottled with brownish-yellow, heavy silt loam, which extends to a depth between 6 and 9 inches. The subsoil is mottled light-gray and yellowish-brown silty clay loam to a depth of 35 or 40 inches. The underlying material is highly variable in texture, color, and structure, but is generally much lighter in texture than the subsoil and is mottled or streaked gray, rust brown, and in places almost black in color. In many places, however,



the subsoil is streaked with dull-brown or black material with a high organic-matter content. Some areas lying slightly higher than the typical soil have a dark-gray surface layer of silt loam, underlain at a depth of 8 or 10 inches by a heavy, compact, yellow silty clay loam subsoil which passes into mottled yellow and gray, tough, compact silty clay or clay. Small patches of fine sandy loam having an almost black surface were seen. These variations were of such small extent that it was not practical to show them separately on the soil map.

Wehadkee silt loam is a first-bottom alluvial soil and occurs along practically all the streams of the county. It is by far the most extensive bottom-land soil in the county. The largest areas are along Swift Creek northwest of Battleboro, along Sapony Creek, and along Stony and Pig Basket Creeks just north of Nashville. The surface in general is characteristically flat with a very slight slope toward the stream in the direction of flow. Locally there are swales and other slightly depressed areas and very slight ridges. The soil lies only a few feet above the normal water level. Throughout winter and spring, and in wet years throughout the summer also, water stands over a large part of it. The drainage is very poor on account of the low position and the flat or depressed surface, as well as because of the heavy, almost impervious subsoil.

None of the Wehadkee silt loam is cultivated at present, but a few small areas are utilized as pastures. A large part of the timber has recently been cut, but virgin areas support a good growth of water, willow, and white oaks; tupelo and black gums; sweetgum, poplar, ash, hornbeam, holly, elm, beech, birch, pine, and a few cypress trees. A heavy undergrowth is generally present.

The value of this soil depends on the character and stand of the timber it supports. Smaller areas are generally sold with the upland part of the farm as a whole. The soil is naturally fertile, but the cost of clearing and maintaining drainage ditches would probably prove excessive. Areas are better adapted to utilization as forest lands. Cleared or burned-over areas furnish good grazing.

#### CONGAREE SILT LOAM

The surface soil of Congaree silt loam to a depth ranging from 8 to 12 inches is brownish, yellowish-brown, or reddish-brown silt loam. This is underlain to a depth of 40 or more inches by light-brownish or yellowish-brown fine sandy clay or heavy very fine sandy loam. Both surface soil and subsoil contain a noticeable amount of finely divided mica particles. Included with this soil in mapping are three small areas of Congaree fine sandy loam.

Congaree silt loam is a first-bottom alluvial soil occurring in a few small areas, chiefly along Fishing Creek, Red Bud Swamp, and Tar River. The only areas of any appreciable extent are along Fishing Creek near the Edgecombe County line and on Red Bud Swamp. The surface of the soil is almost level, with a gradual slope to the stream courses. Surface and internal drainage are poor. The greater part of this soil lies within a very few feet of normal water level of the streams and is subject to frequent overflow. None of the soil is cleared, and in its present condition it is not adapted to any

form of agriculture other than forestry or pasture. When drained and reclaimed it will produce large yields of corn and furnish excellent pasturage for cattle.

#### MEADOW

Meadow represents a classification of material which is so variable in texture, structure, and color that no definite type distinction can be made. The material ranges in texture from sand to fine sandy loam, clay, and silt, and in color from black to brown and light gray. Narrow strips of this material occur on some of the smaller streams throughout the county, on low, flat, or depressed first-bottom areas subject to overflow with the slightest rise above normal water. None of the soil is cultivated, and only a few small cleared areas are utilized as pasture. The greater part is covered with water, willow, white, and red oaks; black and tupelo gums; poplar, holly, hornbeam, sweetgum, and a thick undergrowth of various bushes, brambles, and reeds. Meadow has no agricultural value and is best utilized as forest lands or for summer pasture for cattle.

#### SUMMARY

Nash County is in the northeastern part of North Carolina. Nashville, the county seat, is about 35 miles northeast of Raleigh. The relief ranges from rolling and strongly rolling in the western half to undulating and gently rolling in the eastern part. Drainage is good throughout the greater part of the county.

Railway facilities are fair. The State and principal county highways are excellent, and the average county roads are generally good. Although the county is well settled throughout, no large towns are wholly within it.

Cotton and tobacco are the principal cash crops, and corn is the subsistence crop. Corn and cotton are produced on practically every farm in the county and tobacco on more than half the farms. Only a very small quantity of hay and other feed crops is produced. Rocky Mount and Wilson, Wilson County, are the tobacco markets, and some cotton is marketed in these towns and the rest is sold to local buyers.

There are many soil types in the county owing to the differences in relief. These soils range from the residual clays of the piedmont plateau through the friable fine sandy loams of the higher coastal plain to the somewhat heavier soils of the poorly drained lower coastal plain. The principal agricultural soils are Cecil fine sandy clay loam, Bradley sandy loam, Chesterfield sandy loam, Norfolk sandy loam, and Norfolk fine sandy loam.

Practically all the soils of the county are deficient in nitrogen and organic matter. Potash and phosphoric acid, although less essential than nitrogen, must also be supplied. Organic matter can best be added by growing and turning under green-manure crops, especially legumes.



[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."

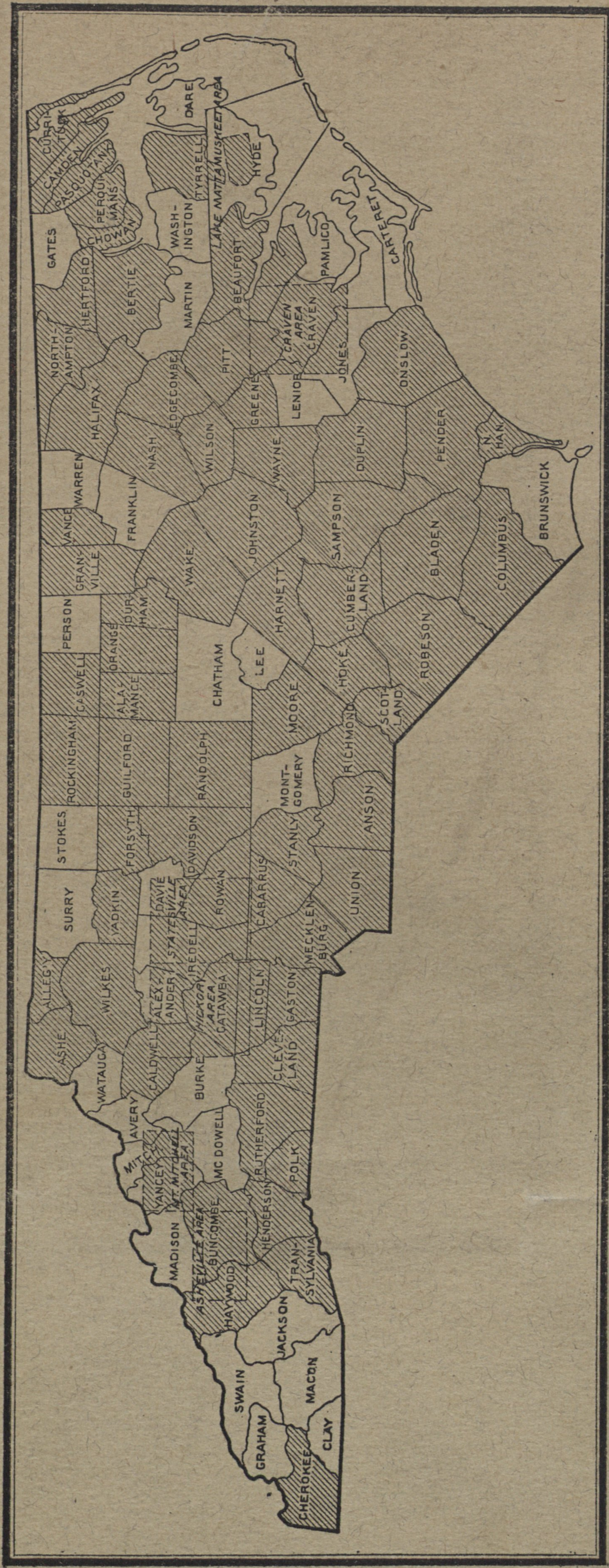
*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause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





Areas surveyed in North Carolina, shown by shading

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