

SOIL SURVEY OF GUILFORD COUNTY, NORTH CAROLINA.

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DESCRIPTION OF THE AREA.

Guilford County is situated in the north-central part of North Carolina, the northern boundary line being about 20 miles south of the Virginia State line. The county is bounded on the north by Rockingham County, on the east by Alamance County, on the south by Randolph County, and on the west by Davidson and Forsyth Counties. It is almost a square in outline, and contains an area of 650 square miles, or 416,000 acres.

The territory included in Guilford County consists of an elevated plateau dissected by the valleys of numerous streams. The topography varies from gently rolling to rolling, steep, and broken. The smoother areas are confined largely to the broader divides in the northern and central parts of the county. A ridge characterized by smooth to gently rolling topography extends from Winding Hill School, in the northwestern corner of the county, through Stokesdale and Ogburns Crossroads eastward along the northern county line. Another ridge of similar topography reaches from the western boundary near Oak Shade Church through Oak Ridge to Summerfield, where it divides, one branch extending north-eastward through Scalesville to the northern boundary and the other passing eastward through Hildsdale and Browns Summit to Osceola. Another important divide characterized by smooth to gently rolling topography extends from the western county line near Colfax eastward through Guilford College, Greensboro, McLeansville, and Gibsonville. There is also an interstream area of gently rolling topography in the southern part of the county between Vandalia and Climax. In the southeastern part, beginning at Climax and including Julian, Pleasant Church, Bennetts Store, and Lowes Church, is another area having a smooth to gently rolling surface. All of these smoother belts of country vary in width from one-half mile to 3 miles.

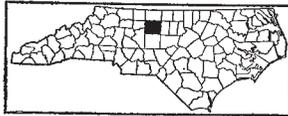


FIG. 6.—Sketch map showing location of the Guilford County area, North Carolina.

The rolling, strongly rolling, steep, or broken topography occurs along the slopes and around the heads of streams. The topography along the slopes of Haw River, Reedy Fork, North Buffalo, South Buffalo, Big Alamance, and Little Alamance Creeks is rolling to strongly rolling, becoming broken in the eastern part of the county near the county line. In the southwestern and southern parts of the county along Deep River, and Registers, Polecat, and Stink Quarter Creeks the topography is broken. The lowlands along the streams have a level surface. In general the slopes leading to the streams are smooth and gentle, but in a few places they are steep or blufflike.

The elevation of Guilford County ranges from about 700 feet to about 900 feet above sea level, the highest elevations occurring in the northwestern and southwestern parts and the lowest in the eastern and southern. The elevation above sea level at Stokesdale is 948 feet, Summerfield 881, Browns Summit 794, Friendship 885, Greensboro 843, McLeansville 744, Gibsonville 721, High Point 937, Jamestown 793, Pleasant Garden 836, and Climax 820 feet. The prevailing slope of the land is eastward.

The county is drained through the basins of Haw River, Reedy Fork, North Buffalo, South Buffalo, Big Alamance, and Little Alamance Creeks, and Deep River. There are no large streams in the county, as all of the drainage ways have their source in the county or in Forsyth County near the boundary line. Haw River crosses the northwestern and extreme northeastern corners of the county. Deep River rises near the Forsyth County line west of Colfax and flows southeast into Randolph County. The other important streams all flow northeast into Alamance County. Smaller creeks, branches, and intermittent drainage ways connect with the larger streams and give the county a comprehensive drainage system. The only poorly drained areas occur in the bottom land; the rest of the county is well drained.

The streams are nearly all sluggish, but by the construction of dams considerable power is developed for the running of roller mills or cotton mills. Hydroelectric power is developed in a small way. It is possible to obtain additional water power along many of the streams.

Guilford County was organized in 1770 from parts of Rowan and Orange Counties. The first permanent settlements were made about 1749. The early settlers were English, Scotch-Irish, and Germans. English Quakers settled first in the western part of the county, the Scotch-Irish located in the central part, and the Germans in the eastern part. The present population consists of descendants of the early settlers, together with later accessions from Virginia and nearby counties within the State. The rural population is fairly evenly

distributed over the county. The population of the county, according to the 1920 census, is 79,272, of which 56.9 per cent is classed as rural. The colored population is relatively small.

Greensboro, with a population of 19,861, is the county seat and largest town. It is situated nearly in the center of the county. Proximity, Revolution, and White Oak, near the city limits of Greensboro, are important centers for the manufacture of cotton goods. Pomona, about 2 miles west of Greensboro, is an important cotton-manufacturing town. Terra Cotta, adjacent to Pomona, is important in the manufacture of clay tile and piping. High Point, the second largest town in the county, with a population of 14,302, is situated in the southwestern part. It is the seat of a number of plants manufacturing furniture. Gibsonville, with a population of 1,302, is located in the eastern part on the Alamance County line, and is notable for the manufacture of cotton goods. Other small towns and villages are Stokesdale, Summerfield, Browns Summit, Guilford College, Oak Ridge, Jamestown, Pleasant Garden, Climax, Julian, and Kimesville. Most of these are located on railroads and are local trading places.

The railroad transportation facilities of the county are good. The main line of the Southern Railway crosses the county in a northeast-southwest direction, passing through Greensboro and High Point. Another line of the Southern Railway crosses the county east and west. The Atlantic & Yadkin Railway traverses the county in a northwest-southeast direction, passing through Greensboro, and two lines of this railroad extend from Stokesdale and Climax. A branch of the Southern Railway extends south from High Point, and the Carolina & Yadkin River Railway extends southwest from High Point.

The county roads of Guilford County are only fair. Many of them are ordinary dirt roads which are fairly good in summer and fall. There are several miles of sand-clay roads which are kept in good repair throughout the year. The macadam roads radiating from Greensboro in practically all directions were constructed several years ago and in places are considerably worn. Some of the old macadam bases have been surfaced either with tar and gravel or a sand-clay mixture. There are several improved asphalt roads; the most important one leads from Greensboro to High Point; another leads from Greensboro to Guilford, being a part of the Greensboro-Winston-Salem highway. An asphalt road from Greensboro to McLeansville is under construction. On December 14, 1920, the voters of the county authorized a \$2,000,000 bond issue for the purpose of building improved roads. The money thus raised will probably be spent largely for hard-surfaced highways and some of it for the improvement of lateral roads.

All sections of the county are served with rural mail routes, and telephone service is available in nearly all parts. Many schools and churches are located at convenient places throughout the county. Several schools of higher learning are located in the county. The North Carolina College for Women and the Greensboro College are located at Greensboro. Guilford College is 6 miles west of Greensboro. The Farm Life School is located at Jamestown. Preparatory schools are located at Oak Ridge, Lambeth, Pleasant Garden, and Whitsett. The Agricultural and Technical School for colored is situated at Greensboro.

Greensboro and High Point are the chief markets for the farm products of the county except tobacco. Tobacco is marketed at Winston-Salem, Reidsville, Danville, Burlington, and Greensboro.

CLIMATE.

The following table gives the normal monthly, seasonal, and annual temperature and precipitation at Greensboro:

Normal monthly, seasonal, and annual temperature and precipitation at Greensboro.

[Elevation, 843 feet.]

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute Minimum.	Mean.	Total amount for the driest year. (1898).	Total amount for the wettest year. (1893).	Snow, average depth.
	° F.	° F.	° F.	Inches.	Inches.	Inches.	Inches.
December.....	40.8	74	7	3.65	2.67	3.50	0.5
January.....	40.3	78	3	3.15	1.96	2.80	1.4
February.....	40.8	78	-3	4.05	.76	5.70	3.1
Winter.....	40.6	78	-3	10.85	5.39	12.00	5.0
March.....	50.1	93	14	4.52	4.42	1.60	1.4
April.....	58.0	92	26	3.28	2.68	2.80	.2
May.....	68.1	100	33	4.08	6.35	6.60	.0
Spring.....	58.7	100	14	11.88	13.45	11.00	1.6
June.....	75.0	104	45	5.09	2.94	4.92	.0
July.....	78.0	104	53	4.59	2.71	2.46	.0
August.....	76.5	101	52	5.43	3.30	10.75	.0
Summer.....	76.5	104	45	15.11	8.95	18.13	.0
September.....	70.9	101	40	3.17	2.30	6.55	.0
October.....	60.2	91	26	3.13	5.34	8.78	T.
November.....	48.6	82	12	2.64	2.45	1.55	.2
Fall.....	59.9	101	12	8.94	10.09	16.88	.2
Year.....	58.8	104	-3	46.78	37.88	58.01	6.8

According to the records of the Weather Bureau station at Greensboro, the mean annual rainfall in Guilford County is 46.78 inches, which is sufficient for the crops commonly grown. The heaviest rainfall occurs in the summer, with an average of 15.11 inches. The lightest rainfall comes in the fall, with an average of 8.94 inches. The average fall of snow for the year is 6.8 inches. Snowfalls are light and remain on the ground only a few days.

The mean annual temperature is 58.8° F., and the mean for the summer is 76.5° F. The earliest killing frost in the fall occurred on October 11, and the latest in the spring on April 26. The average date of the first killing frost in the fall is October 25 and the average date of the last killing frost in the spring is April 7. The average growing season is 201 days, which is sufficient for most crops.

Owing to the relatively high elevation and rolling topography, Guilford County has a healthful climate. Numerous deep wells and springs furnish an abundant supply of good drinking water.

AGRICULTURE.

Agriculture in Guilford County began before the Revolutionary War. At first it was confined largely to the rich lowlands along the streams, and consisted of the production of wheat, corn, buckwheat, flax, and cotton, with fruit and live stock of minor importance. Fayetteville was the chief market in the earlier days, and the surplus products were exchanged at this place for sugar, coffee, molasses, and other necessaries. Just prior to the Civil War a railroad was built across the county, opening up markets both north and south.

Just after the Civil War larger plows and other improved farm implements were introduced. About 1872 a tobacco warehouse and a factory were opened at Winston, and about the same time the production of tobacco as a cash crop was begun in the county.

By 1879 the important crops of the county were corn, wheat, oats, hay, tobacco, and cotton. The census of 1880 shows that in 1879 there were 39,790 acres planted to corn, yielding 519,185 bushels; 27,743 acres in wheat, producing 127,214 bushels; 20,774 acres in oats, giving 129,723 bushels; 8,004 acres devoted to hay crops, producing 7,017 tons; 910 acres in tobacco, yielding 422,716 pounds; and 283 acres planted to cotton, producing 144 bales.

In 1889, according to the 1890 census, there were 34,598 acres in corn, producing 415,916 bushels; 28,183 acres in wheat, yielding 171,389 bushels; 14,969 acres in oats, yielding 112,155 bushels; 10,769 acres in hay crops, cutting 10,909 tons; 2,517 acres devoted to tobacco, yielding 918,723 pounds; and 428 acres planted to cotton, producing 135 bales.

In 1899 there were 43,728 acres planted to corn, producing 657,530 bushels; 28,086 acres in wheat, yielding 174,030 bushels; 9,431 acres in oats, producing 77,070 bushels; 8,079 acres in hay crops, yielding 9,009 tons; 982 acres of grain cut green, yielding 1,232 tons of hay; 5,095 acres planted to tobacco, producing 2,862,420 pounds; and 854 acres in cotton, yielding 320 bales. The notable change during the period between 1889 and 1899 was the increase in the acreage of tobacco, which nearly doubled.

In 1909, according to the 1910 census, 41,508 acres were planted to corn, producing 624,027 bushels; 22,556 acres were in wheat, yielding 198,938 bushels; 6,279 acres in oats, producing 81,685 bushels; 710 acres in rye, yielding 4,983 bushels; 7,145 acres devoted to tame and wild grasses, cutting 7,941 tons of hay; 5,179 acres in grain cut green, producing 4,873 tons; 5,052 acres planted to tobacco, giving 2,798,325 pounds; and 1,078 acres devoted to cotton, yielding 401 bales. A remarkable increase in grains cut green is shown by a comparison of this census with that of 10 years before. In other crops the differences are slight.

The agriculture of Guilford County at present consists in the production of corn and wheat as the important subsistence crops and tobacco as the strictly cash crop. Some of the wheat and corn is sold. Oats, rye, hay, and green grains are grown as feed for work stock and cattle. Cotton is produced in the extreme southeastern part of the county as a cash crop.

Corn is the most important crop in point of acreage, being grown on 37,740 acres in 1919, with a production of 582,029 bushels. It is grown in all sections of the county. Most of the crop is used on the farm; the rest is sold at the local mills. On many of the farms, especially where tobacco is grown, corn is not produced in sufficient quantities to supply home needs.

Wheat is the second crop of importance in respect to acreage. In 1919 it occupied 23,614 acres, with a yield of 205,893 bushels. It is grown generally over the county. The crop is grown mainly for home consumption, but part of it is sold in the local markets.

Hay is an important crop in this county and is produced on nearly all farms. Both wild and tame grasses are cut. The tame grasses consist largely of clover, but orchard grass, tall oat grass, and herd's grass are mixed with red clover to some extent. Wild grasses are cut mainly on poorly drained bottom lands. Considerable pea-vine and soy-bean hay is cut, and much grain is cut green for feed. The hay production, together with fodder, silage, and oats, is reliably stated to be practically sufficient for the needs of the county, and it is not necessary to import much of such feeds from outside sources.

Tobacco is the main cash crop. It is grown in nearly all sections of the county. In 1919 it was grown on 9,129 acres, almost twice

the acreage 10 years earlier. The crop is sold at Winston-Salem, Reidsville, Danville (Va.), Burlington, and Greensboro. Cotton is the minor cash crop of the county. Most of it is ginned and shipped at Climax.

Practically every farm produces garden vegetables, Irish potatoes, sweet potatoes, saccharine sorghum, and small quantities of apples, peaches, pears, cherries, grapes, and plums. These are produced chiefly for home use, but small quantities of them are sold in local markets. There are a few commercial peach orchards in the county. Nurseries are located in the vicinity of Greensboro for the production of fruit-tree stock, shrubbery, and flowers.

Hogs and cattle are well distributed over the county. Each farm has from 2 to 10 hogs and from 2 to 6 milk cows, which supply pork, milk, and butter for home use and for sale in small quantities in the local markets. A creamery and pasteurizing station at Greensboro utilizes large quantities of milk produced on the farms. Ice-cream factories at Greensboro and High Point also use large quantities of milk from farms and dairies. Considerable dairying is carried on in the vicinity of Greensboro and High Point. The fodder, silage, and a large part of the grain produced on the farms are used for feeding the dairy cattle during the winter, while the lowlands along many of the streams furnish summer pasturage. There is not enough dairying to supply local demands, and large quantities of butter and condensed milk are brought in. The feeding of cattle is practiced to a small extent, and beef is sold in the local markets. Large quantities of beef and pork are obtained from outside sources. There are three or four herds of purebred cattle in the county, and occasionally a purebred sire is introduced. On a few farms from 20 to 50 hogs are raised and sold as breeding stock. The hogs are of the Duroc-Jersey or Berkshire breeds.

Chickens are kept on every farm, and large quantities of eggs and poultry are sold on the local markets, but the supply is not sufficient to meet the local demand.

The farmers of Guilford County recognize that the Cecil sandy loam, Appling sandy loam, Durham fine sandy loam, and Wilkes sandy loam, smooth phase, are best suited to tobacco, and the Davidson clay loam, Cecil clay loam, and Mecklenburg loam are better adapted to wheat, corn, and clover. The Cecil sandy loam and Appling sandy loam are also considered good corn soils. The Wilkes sandy loam, Iredell loam, and Iredell fine sandy loam are recognized as inferior soils.

Corn land is broken in the late fall, or in the spring, if the crop is to follow a winter cover crop. The seed is planted in April, and the crop is given 2 to 5 flat cultivations. The corn is cut and shocked in the field, and at convenient times is shucked or shredded.

Some farmers pull the fodder and cut the tops, later hauling the corn to the barnyard to be husked.

Wheat land is broken in August and is later prepared for seeding. The grain is usually sown by the 10th of October. Sometimes clover is sown with the wheat, or wheat is sown on clover sod. The crop is harvested in June and shocked in the field or stored in buildings, and is threshed later.

Tobacco land is broken either in the fall or spring, depending upon whether or not there is a cover crop. Tobacco is sown in January in carefully prepared beds. The plants are transplanted between April 15 and May 15, on ground prepared by harrowing or by breaking the crust with hand hoes. The plants are cultivated 2 to 5 times, and suckers are carefully removed. Especial care is taken to keep the fields free from grass and weeds. The tobacco usually begins to ripen the latter part of July. It is either cut and cured or primed as it ripens and cured. The latter method is more common, as better cures are obtained. Specially constructed barns are used for curing. After the tobacco is cured, it is usually graded and bundled for marketing. Considerable skill and experience are required to grow tobacco successfully and to get the best returns in marketing the crop.

The farm houses are usually large and substantial. The tenant houses are small. The barns are large enough to house the crops that require storage. Generally there are several outbuildings for storage or shelter. Corncribs are usually built separately near the barns. Some farms have large improved barns with sufficient room for all the farm products, stock, and implements.

Pastures are usually fenced with barbed wire and hog lots with woven wire. Most of the cultivated fields are not fenced. The farm machinery generally consists of 2-horse to 4-horse turning and disk plows, disk or straight-toothed harrows, riding or walking cultivators, rollers, mowing machines, hayrakes, stalk cutters, reapers, and binders. A number of farmers have tractors for breaking and cultivating. Threshing machines operate in various communities when the wheat is harvested. The work stock consists of horses and mules in about equal numbers.

No general system of crop rotation is in common use. On the heavy soils some of the farmers sow red clover in the wheat in the spring. The clover stands two years, and is followed by corn or wheat, and then red clover. On the lighter or sandy soils tobacco and rye are alternated. Sometimes tobacco and crimson clover are grown in alternate years. A common rotation for the sandy soils is corn one year, followed by wheat, then cowpeas or soy beans, and the following year tobacco or corn. Many of the farmers plant wheat or corn on clover sod, and others broadcast cowpeas in the corn at the last cultivation.

Commercial or mixed fertilizers are used generally over the county. The amount spent in 1919 for fertilizer was \$243,879. Most of the fertilizer is used for corn, wheat, and tobacco. Corn is generally fertilized with 200 to 500 pounds per acre of acid phosphate and cottonseed meal, or an 8-4-0¹ or 12-4-0 fertilizer mixed with cottonseed meal. Some farmers apply 200 to 500 pounds per acre of 8-2-2 fertilizer to corn. Wheat following clover is usually given an application of 200 to 300 pounds of acid phosphate. Some farmers apply 200 to 400 pounds per acre of an 8-2-2 or other low-grade fertilizer to wheat land. For corn and wheat land many farmers apply about 100 pounds of nitrate of soda per acre. Tobacco land is given an acreage application of 500 to 1,000 pounds of various grades of fertilizer, and some farmers supplement the complete fertilizer with 200 to 300 pounds per acre of cottonseed meal. Cotton land receives about 300 pounds per acre of 8-3-3 fertilizer. Lime is being introduced for wheat, corn, and clover lands. The applications range from 1 to 2 tons per acre. Stable manure is applied to the land when available, and green-manuring crops are plowed under by many of the farmers.

Most of the farm labor in the county is white, although a small proportion is colored. Farm labor is scarce, and in some sections is not available at all. The price paid for farm help is \$30 to \$50 a month and the use of a house, or \$1.50 to \$2 a day and board. Women and children help harvest the tobacco crop. Many of the farmers exchange labor. In 1919 the outlay for farm labor in the county was \$183,036. Only 497 farms, or about 12 per cent of the total number, reported an expenditure for labor.

Farms in Guilford County range in size from 25 to 200 acres. The average size is about 100 acres. Some individual holdings contain 1,000 to 3,000 acres or more, but most of this land is uncultivated. A large acreage in the southern half of the county is leased by northern hunters as game preserves, but the land thus leased can be farmed.

In 1919 there were 4,021 farms² in the county, according to the census. Of this number 74 per cent were operated by the owners, 25.1 per cent by tenants, and 0.9 per cent by managers. Under the share system the tenant furnishes everything except one-fourth of the fertilizer, and receives three-fourths of the farm products. When the landlord furnishes everything except one-half of the fertilizer, the tenant receives one-half of the farm products.

Farm lands in Guilford County sell for \$40 to \$200 an acre, averaging about \$100 an acre. Land values depend upon soil adaptation, state of improvement, and location with reference to good roads, railroads, markets, schools, and churches.

¹ Percentages of phosphoric acid, nitrogen, and potash.

² In the census each tenancy is enumerated as a farm.

SOILS.³

Guilford County lies within the Piedmont Plateau section of the State, and all of the upland soils are derived from the underlying rock formations. These formations vary in their chemical and physical properties, and the resultant soils also vary greatly in their characteristics.

The soils of this county are prevailingly light in color, ranging from light gray or yellowish gray to red. The soils are dominantly low in organic matter. Conditions have not favored accumulation of vegetable matter, as the region had been forested for a long time prior to clearing, and the character of farming has not tended to increase the supply of this soil constituent. In the forested area there is a normally noticeable amount of organic matter in the first inch or two of the soil, but little is incorporated in the soil below this shallow upper layer. This is a general characteristic of forested soils.

Another common feature of the soils in this part of the country is the absence of free carbonates. In the soil-forming processes the lime and other carbonates have not accumulated in the soil, although the rocks from which these soils are derived contained lime. The absence of accumulations of carbonates is due to the climate, particularly the heavy rainfall, combined with good drainage, conditions that promote leaching. The soils are not decidedly acid in character, but they respond to liberal applications of lime. The Iredell and the Mecklenburg soils show a high percentage of lime, but it is probably locked up in the form of silicates and is not readily available for plant use. In this county the soils vary greatly in texture; that is, there are extensive areas of light sandy surface soils, areas of sandy loams, and large areas of red clay land. These differences are readily recognized.

The soils of this county differ not only in color, texture, and structure, but also in their chemical composition. The chemical analyses of similar soils in Mecklenburg and Union Counties, as published by the North Carolina Department of Agriculture in a report on the Piedmont soils of the State, show that the various types of soil contain widely different amounts of the elements of plant food. All of the soils in Guilford County are low in nitrogen and phosphoric acid, regardless of color or texture of the soil. The Cecil types are

³ Guilford County joins Alamance County on the east, and the soils do not join because Alamance County was surveyed in 1901 and the classification of soils has been considerably changed since then. The Wilkes sandy loam is mapped against the Durham sandy loam of Randolph County and also against the Durham sandy loam of Davidson County; and the Applying sandy loam is mapped against the Cecil fine sandy loam in Randolph County. These differences are due to a better understanding of the soils of the State.

high in potash and low in lime. Some of these soils have a potash content of 1 to almost 3 per cent. The Iredell and Mecklenburg soils have a rather low potash content, but a lime content of 2 to 4 per cent. The Davidson clay loam, somewhat similar in general appearance to the Cecil clay loam, has less of potash than the Cecil, but a higher lime content. The Georgeville soils have a fairly high potash content and a low percentage of lime. The Durham and Appling soils show a slightly lower percentage of potash than the Cecil and a slightly higher lime content. The Congaree silt loam, the first-bottom soil of the county, has a fairly high content of phosphoric acid, about 1 per cent of potash, and 1 to 2 per cent of lime.

A study of the above analyses shows that nitrogen and phosphoric acid are the two essential elements needed by all of the soil of Guilford County. The high potash content of the Cecil soils enables them to produce good crops without the addition of any or very little potash, except, of course, for special crops like tobacco or Irish potatoes. Some of the field experiments carried on by the North Carolina Department of Agriculture show that a complete fertilizer applied in ordinary quantities on Cecil soils does not give a noticeable increase in yields over the application of nitrogen and phosphoric acid. This will also apply to the Georgeville and Appling soils. For the Iredell and Mecklenburg soils, which the analyses show to be deficient in potash, kainit is highly recommended. It has a tendency to prevent the "frenching" of corn and the "rusting" of cotton. The Davidson clay loam will probably respond to the addition of potash. The Congaree silt loam is a good, well-balanced soil, which will produce good yields without the use of fertilizers.

On the basis of mode of formation the soils of the county are divided into two general groups: (1) Residual soils, or those derived directly from the underlying rock formations, and (2) alluvial soils, or those laid down by overflow waters along stream courses. The alluvial soils occupy only a small part of the total area of the county.

The rocks are arranged in four groups: (1) Granite, gneiss, and granite schist. These are acidic rocks, and the mineral components are quartz, feldspar, hornblende, and mica. The rocks are light in color and weight, and the textures range from coarse to fine grained. (2) Diorite, diabase, and gabbro. These are basic rocks and are composed of labradorite, biotite, olivine, and augite. The rocks are dark in color and heavy, and the textures are medium to fine grained. (3) Pegmatite granite and gneiss. The rocks composing this group are either medium to coarse grained granite or light-colored gneiss cut by dikes of diorite or dark olivine rock. The dikes vary in width from 1 to 6 feet and cut the granite at intervals of 6 to 10 feet. In

places where the formation is exposed the rock appears to be stratified. (4) Slate of the Carolina Slate belt. This is a light-colored, fine-grained rock composed of feldspar, hornblende, mica, and quartz.

The granite and gneiss formations underlie most of the northern half of the county. The southern limit of the granite and gneiss belt extends from the western county line near the Davidson-Forsyth corner northeastward to Friendship and Kirkmans Store, then eastward past Mount Pisgah Church and Glenwood School to the eastern boundary near Shepherd School. The rocks of the diorite, diabase, and gabbro group occur as dikes and intrusions in the southern half of the county and to a minor extent in the northeastern part. The pegmatite granite and gneiss group is confined largely to the southern half of the county. Rocks of the slate group are found immediately south of High Point in small areas along the southern boundary and between Mount Hope Church and the eastern boundary. In general the rock formations in the northern part of the county are uniform and in the southern part are considerably mixed.

Through the process of weathering the various rocks have been changed into soils. Upon the basis of differences in color and structure the soils have been grouped into series. The series are divided into soil types on the basis of differences in texture. The soils of the county derived from granite and gneiss have been classed in the Cecil, Durham, and Appling series. The soils derived from diorite, diabase, or gabbro are classed with the Davidson, Mecklenburg, and Iredell series. Soils formed from pegmatite granite and gneiss are classed in the Wilkes series, and those from slates in the Georgeville series. The alluvial soils along the streams are included in the Congaree series and Meadow.

The surface soils of the sandy types of the Cecil series are gray to brownish. The surface soils of the heavier types are brown to red, and are locally called "red clay land." The subsoil is a light-red clay of a hard, rather compact, but brittle structure when dry. A characteristic feature of the subsoil is the presence of white, sharp quartz particles, and occasional veins of quartz and mica flakes also are commonly present. The series is represented in Guilford County by three types—the sandy loam, the loam, and the clay loam.

The types of the Durham series are characterized by the gray or yellowish-gray to whitish color of the surface soils, and a yellow sub-surface layer. The subsoil is a compact but friable clay, carrying a noticeable amount of angular quartz sand. Mica scales are normally present, but not in sufficient quantities to affect the structure of the subsoil. The soils are derived from light-colored and usually rather coarse-grained granite and gneiss, consisting principally of quartz

and feldspar with some mica, and generally having a lower percentage of the iron-bearing minerals than the rocks giving rise to the Cecil series. Two types of the Durham series are mapped in the county, the coarse sandy loam and the fine sandy loam.

The types of the Appling series have gray or grayish-brown to yellow surface soils and a mottled or streaked yellow and red, yellowish-red, reddish-yellow, or yellowish-brown subsoil of moderately compact but usually friable structure. In places the upper part of the subsoil has a deep-yellow or salmon-red color and a friable structure. Grayish or bluish colors mark the subsoil here and there. In respect to color of the subsoil the series is intermediate between the Durham and the Cecil series. Three types of the Appling series are mapped in this county—the coarse sandy loam, sandy loam, and fine sandy loam.

The surface soils of types of the Davidson series are reddish brown, dark red, or chocolate colored. The subsoil is dark red or maroon red, has a characteristically friable structure and smooth and slightly greasy feel, and is free from quartz sand. The Davidson soils are closely associated with types of the Mecklenburg and Iredell series, but represent material that has reached a more advanced stage of weathering. The clay loam of the Davidson series is mapped in the county.

The surface soils of types of the Mecklenburg series are brown or grayish brown to dull reddish brown. The subsoil consists of yellowish-brown, light-red, or ochreous, sticky, smooth clay, which usually passes into the disintegrated greenish-yellow diorite rock within the 3-foot section. The soils of this series occupy an intermediate position with respect to color and stage of weathering between the Davidson and Iredell series. The Mecklenburg series is represented in this county by one type, the loam.

The surface soils of types of the Iredell series are brown, grayish brown, or dark brown, and carry iron concretions in places. The subsoil is a brownish-yellow to greenish-yellow, waxy, impervious clay, which passes into greenish-yellow disintegrated rock within the 3-foot section. Upon exposure to the atmosphere the subsoil assumes a rusty-brown color, cracks, and becomes quite hard. The Iredell soils are locally called "blackjack-oak land," "beeswax land," or "pipe-clay land." The Iredell series is represented in the county by three types—the sandy loam, fine sandy loam, and loam.

The Wilkes series is composed of types with brownish-gray to yellowish-gray surface soils. The subsoil consists of yellowish to brownish-yellow or mottled red and yellow sandy clay in the upper part and a plastic, sticky clay of brownish-yellow or olive-green color

in the lower part. In many places the upper subsoil resembles the subsoil of the Appling or Durham series, and the lower part resembles the Iredell subsoil. The Wilkes soils occur in close association with the Appling, Durham, and Iredell soils, but are generally less productive. The Wilkes sandy loam, with a smooth phase, is mapped in Guilford County.

The surface soils of types of the Georgeville series are red to grayish, and the subsoil is a red, moderately friable, but brittle silty clay. The soils are derived from slates of the Carolina Slate belt. Two types of the Georgeville series are mapped, the silt loam and silty clay loam.

The types of the Congaree series are characterized by the brown to reddish-brown color of the soil and subsoil, there being comparatively little change in the texture, color, and structure from the surface downward. Mica flakes are quite noticeable throughout the 3-foot section. In places the lower subsoil is grayish or bluish, or is mottled gray, brown, or yellow. The material is washed from the soils of those regions where the parent rocks are principally granite, gneiss, schist, diabase, diorite, or slate. The land is subject to overflow. Only one type of this series is mapped in the county, the silt loam.

Meadow (Congaree material) is a first-bottom soil which is so variable in color and texture that it can not be separated as a definite soil type. The topography is level to gently undulating, and the drainage is poor. The soil is subject to frequent overflows.

Seventeen soil types and Meadow and Rock outcrop are recognized in Guilford County. Their extent and distribution are shown on the accompanying soil map, and descriptions of the several types are given in the following pages of this report. The table below gives the actual and relative extent of the soils of the county:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Wilkes sandy loam.....	53,312	} 25.2	Congaree silt loam.....	9,664	2.3
Smooth phase.....	51,392		Iredell sandy loam.....	6,080	1.5
Cecil clay loam.....	80,832	19.3	Meadow (Congaree material)...	5,952	1.4
Appling sandy loam.....	68,992	16.6	Appling coarse sandy loam.....	4,864	1.2
Davidson clay loam.....	28,416	6.8	Durham fine sandy loam.....	4,864	1.2
Cecil sandy loam.....	23,552	5.7	Appling fine sandy loam.....	4,224	1.0
Mecklenburg loam.....	20,096	4.9	Durham coarse sandy loam.....	2,944	.7
Iredell fine sandy loam.....	13,824	3.3	Georgeville silt loam.....	1,984	.5
Iredell loam.....	12,864	3.1			
Georgeville silty clay loam.....	11,264	2.7			
Cecil loam.....	10,880	2.6	Total.....	416,000

CECIL SANDY LOAM.

In virgin areas the surface soil of the Cecil sandy loam, to a depth of 1 or 2 inches, is a gray sandy loam, which passes into a brown or brownish-yellow sandy loam extending to a depth of 8 or 10 inches. The subsoil is a bright-red, stiff, brittle, friable clay, which extends to a depth of 3 feet or more. The surface soil in plowed fields frequently has a light-brown, reddish-yellow, or reddish-brown color, which results from the mixing of some of the red subsoil with the surface material. In a few places white quartz stones or fragments of granite appear on the surface, but not in quantities sufficient to interfere with cultivation. Some areas of Cecil clay loam and coarse sandy loam, and of Appling sandy loam, too small to show on the map, are included.

The Cecil sandy loam is most largely developed in the western and northern parts of the county. Some smaller areas lie in the southern part. The largest bodies are located along the Forsyth County line, near Alba School and Long View School, in the vicinity of Hildsdale, Gethsemane Church, Pray School, and Mount Vernon School. The type occupies positions on the ridges or on gentle slopes toward streams.

The topography of the Cecil sandy loam is gently rolling to rolling, except near some of the streams, where it is strongly rolling. Owing to the porous surface soil and rolling topography, the land is well drained. On some of the steeper slopes the surface is eroded.

Although relatively small in extent, the Cecil sandy loam is an important agricultural soil. About one-half of it is under cultivation and the rest is forested with oak, hickory, dogwood, pine, and some cedar and persimmon. The soil is used mainly for the production of corn, wheat, clover, and tobacco. Saccharine sorghum, Irish and sweet potatoes, garden vegetables, and fruits are grown on most of the farms for home use and in small quantities for market. Corn yields 20 to 35 bushels per acre; wheat, 10 to 15 bushels; clover, about 1 ton of hay; and tobacco, 600 to 1,000 pounds of dark or red type. Sorghum, potatoes, and vegetables give good yields.

Corn is usually fertilized with 200 to 500 pounds of acid phosphate and cottonseed meal mixed, or about the same quantity of an 8-4-0 or 12-4-0 mixture. Some corn is planted on clover land and is not fertilized. A top dressing of 100 pounds of nitrate of soda is sometimes given corn about tasseling time. Wheat receives 200 to 300 pounds per acre of 8-2-2 fertilizer, or, if planted on clover land, about 200 pounds per acre of acid phosphate. Tobacco land is given an application of 400 to 600 pounds of 8-3-3 fertilizer. Soy beans and clover are grown on this type by many farmers to increase the fertility of the soil.

Farm land of the Cecil sandy loam sells for \$30 to \$100 an acre, the price depending largely upon state of improvement and distance from markets.

The Cecil sandy loam is a good strong type and easy to work. It needs organic matter, which can be supplied by turning under green-manuring crops. Liming would probably be beneficial to clover land. Winter cover crops should be planted and terracing practiced to prevent further erosion and gulying on the more rolling areas.

CECIL LOAM.

The surface soil of the Cecil loam in the wooded areas is a gray loam 1 to 2 inches deep, passing into a brownish-yellow or light-brown loam or heavy fine sandy loam extending to depths of 6 to 10 inches. The subsoil is a bright-red friable clay, normally containing some fine mica scales, extending to depths of 36 inches or more. In places the surface soil dries out to light gray or nearly white, and in plowed fields the surface is frequently reddish yellow. In places angular quartz gravel and stones are scattered over the surface in small quantities. Owing to the rather heavy texture of the surface material, the soil tends to bake and clod. Included in this type are a few areas of Cecil fine sandy loam; the more important of these occur in the northwestern corner of the county at the western boundary and 1 mile east of Climax along the southern boundary.

The Cecil loam is derived from a fine grained granite schist. The largest areas are in the vicinity of Mount Pisgah Church, Osceola, and Shepherd School. Smaller areas are mapped in other parts of the county. The type occurs mostly on ridges. The topography is gently rolling to rolling, and the drainage is good.

The Cecil loam, on account of its small extent, is not an important agricultural soil. Approximately half of it is cultivated, and the rest is in forest or pasture. The forest consists of oak, hickory, pine, dogwood, and some cedar. Corn, wheat, and tobacco are the leading crops. Some clover is produced, and garden vegetables are grown for home use. Corn yields 10 to 25 bushels per acre; wheat, 10 to 15 bushels; and tobacco, 500 to 800 pounds. The fertilizer treatment for the Cecil loam is about the same as for the sandy loam.

Land of this type sells at \$40 to \$100 an acre, the price depending mainly on the state of improvements and nearness to markets.

The Cecil loam, like the sandy loam, is deficient in organic matter. The suggestions for improving the Cecil sandy loam will apply also to the loam type.

CECIL CLAY LOAM.

The surface soil of the Cecil clay loam, locally called "red-clay land," is a reddish-brown or brown heavy clay loam 6 to 8 inches deep. The subsoil is a red, heavy, stiff clay, which extends to a depth of 36 inches or more. In many places mica flakes and angular quartz sand occur in the subsoil. In a few areas a thin coating of brown sand lies at the surface.

The Cecil clay loam occurs throughout the northern half of the county, and also to a small extent in the southern half. The largest areas are on the slopes leading to Haw River, Mears Fork, Reedy Fork, Richland and North Buffalo Creeks, and around the headwaters of Deep River. The type generally occupies positions on slopes and around heads of small streams.

The topography is prevailingly gently rolling to rolling, but is strongly rolling near the streams. This gives the soil good, and on some of the steeper slopes excessive, drainage.

The Cecil clay loam is an important agricultural soil. Probably 60 per cent of it is cultivated, and the rest is in pasture or forest. The timber growth consists mainly of oak, hickory, and pine, with some dogwood, sourwood, cedar, persimmon, and walnut.

The important crops on this type are corn, wheat, clover, and tobacco. Vegetables, Irish potatoes, sorghum, and fruits are grown for home use and to some extent for sale in local markets. Corn ordinarily yields 15 to 40 bushels; wheat, 10 to 20 bushels; clover, about 1 ton of hay; and tobacco, of dark heavy type, 600 to 800 pounds per acre.

Fertilizers are used by nearly all the farmers on the Cecil clay loam. Corn is fertilized with 150 to 250 pounds of 9-4-0 mixture and cottonseed meal, or acid phosphate and cottonseed meal. Wheat receives 300 to 400 pounds of 8-2-2 fertilizer, or, if planted on clover land, 300 to 400 pounds of acid phosphate. Tobacco land is treated with 600 to 800 pounds per acre of 8-2-3, 8-3-3, or 9-2-3 fertilizer. Wheat is sometimes given a top dressing in the spring of 100 pounds of nitrate of soda per acre, and the same quantity is sometimes applied to corn at the last cultivation. Many farmers plant corn on clover land and use no fertilizer. Increased yields have been reported for corn and wheat grown on clover land. Cowpeas, vetch, and soy beans are grown to some extent to improve the soil. Lime at the rate of 1 to 2 tons per acre is applied to the land by some of the farmers, and good results are reported.

Land of this type sells for \$50 to \$150 an acre, the price depending upon the state of improvement and nearness to markets.

The Cecil clay loam is capable of being built up and maintained in a high state of productiveness. It is well suited to the production of corn, wheat, clover, grasses, and cowpeas. Deeper plowing would

benefit this soil. The plowing should be for a time a little deeper each year and thereafter should be varied in depth to prevent the formation of a plow sole. Winter cover crops would help to prevent erosion and also improve the physical condition of the soil. Liming is beneficial in obtaining good yields of clover and improving the structure of the soil. Large areas of this soil that could well be brought under cultivation are now idle. A rotation of crops recommended for the Cecil clay loam and other heavy types consists of red clover sown in the fall with wheat, the red clover to remain two seasons, followed by corn.

DURHAM COARSE SANDY LOAM.

The surface soil of the Durham coarse sandy loam is a light-gray coarse loamy sand, passing at about 6 inches into a yellow coarse sandy loam which extends to a depth of 10 to 15 inches. The subsoil is a pale-yellow friable clay containing considerable coarse quartz sand and fine gravel. In some places the lower subsoil is mottled or streaked yellow and red, and here and there the disintegrated parent rock is encountered at depths of 30 to 36 inches. In the forested areas the first inch or two of the surface soil is gray, owing to the admixture of dark-colored organic matter.

The Durham coarse sandy loam is confined to one large area in the southeastern corner of the county northeast of Julian. The topography is gently rolling to rolling, and the surface and internal drainage are good.

On account of its small extent the Durham coarse sandy loam is agriculturally unimportant. Nearly all of the type is cultivated. A few small areas are in pasture, or in forest consisting of post oak, white oak, pine, and some cedar and persimmon. Corn, cotton, and wheat are the main crops. Bright tobacco is grown in a small way. Sweet potatoes, vegetables, and fruit are grown for home consumption. Corn yields 10 to 25 bushels; wheat, 5 to 15 bushels; cotton averages about one-half bale; and tobacco yields 600 to 1,000 pounds per acre. Wheat and corn receive about 200 pounds per acre of an 8-2-2 fertilizer, and tobacco receives 400 to 800 pounds of an 8-2-2 or 8-3-3 fertilizer.

The Durham coarse sandy loam is decidedly deficient in organic matter. This can be supplied by growing and turning under such crops as rye, clover, or vetch.

DURHAM FINE SANDY LOAM.

The surface soil of the Durham fine sandy loam consists of 5 to 7 inches of light-gray or almost white loamy fine sand to fine sandy loam passing downward into a pale-yellow light fine sandy loam, which extends to a depth of 10 to 15 inches. The subsoil is a pale-

yellow to bright-yellow, friable, crumbly clay or fine sandy clay. In wooded areas a surface layer, 1 to 2 inches thick, contains enough organic matter to give it a gray color.

The Durham fine sandy loam is developed in comparatively small areas in nearly all parts of the county. The largest area is just east of Browns Summit. Smaller areas lie near Oak Shade Church, Rehoboth Church, and south of Cobles School. The type occurs mainly on interstream ridges. The topography is gently rolling to rolling, and surface drainage is well established.

The Durham fine sandy loam is of minor agricultural importance because of its small extent in the county. About 60 per cent of it is under cultivation; the rest supports a growth of white oak, post oak, pine, cedar, and persimmon. The leading crops grown are tobacco, corn, and wheat. Rye is grown to some extent as a cover crop. Garden vegetables, sweet and Irish potatoes, saccharine sorghum, and fruits are produced mainly for home use. Tobacco yields 600 to 1,000 pounds per acre. It is given 400 to 600 pounds of an 8-2-2, 8-3-3, or 9-2-3 fertilizer per acre, which is sometimes supplemented with 100 to 200 pounds of cottonseed meal. Rye is grown to some extent as a winter cover crop on tobacco land. Corn yields 20 to 35 bushels per acre and wheat 5 to 15 bushels. Soy beans and clover are grown by some farmers with good results.

The Durham fine sandy loam sells for \$50 to \$100 an acre, depending upon the state of improvements.

This type is specially adapted to the production of bright tobacco. It is also well adapted to sweet potatoes, muskmelons, peanuts, and garden vegetables. The soil as a whole is deficient in organic matter.

APPLING COARSE SANDY LOAM.

The surface soil of the Appling coarse sandy loam, in wooded areas, consists of an upper layer, 1 to 3 inches thick, of gray, porous, coarse, sandy loam; below this is a yellow or pale-yellow coarse sandy loam extending to a depth of 10 or 12 inches. The subsoil is a yellowish-red or reddish-yellow friable clay, which contains an appreciable quantity of coarse, angular quartz particles and in places mica scales. The lower subsoil is commonly mottled or streaked with red and yellow. Decomposed granite rock is reached at 30 to 36 inches. A few bowlders or angular fragments of granite lie on the surface in places. The surface soil in the cultivated fields has a light-gray or yellowish-gray color to a depth of 5 to 6 inches.

The Appling coarse sandy loam is a relatively small type. The largest and most important areas occur 1 mile north of McLeansville, along the southern slope of North Buffalo Creek, and in the southeastern part of the county in the vicinity of Staley School, Pleasant

Church, and Smithwood Church. Small areas are mapped elsewhere in the county. The surface is gently rolling to rolling. Owing to the topography and the porous nature of both surface soil and subsoil the type is well drained.

About 50 per cent of the type is cultivated, and the rest is forested with white oak, post oak, pine, and some cedar and persimmon. A small part is used for pasture. The chief crops are corn, tobacco, and wheat. Some cotton is produced in the southeastern part of the county. Rye is grown as a cover crop, and clover is produced in a small way. Sweet potatoes, Irish potatoes, and garden vegetables are raised, mostly for home use. Corn yields 10 to 25 bushels per acre; tobacco, 600 to 800 pounds; and wheat, 5 to 15 bushels. The tobacco produced is of the bright-leaf type. About the same kinds and quantities of fertilizers are used on this type as on the smooth phase of the Wilkes sandy loam.

The Appling coarse sandy loam is well adapted to the production of bright tobacco. The soil is deficient in humus, which can be supplied either by the application of stable manure or by turning under green-manuring crops, such as rye, clover, or cowpea vines. Rye is probably the best green-manure crop for tobacco land.

APPLING SANDY LOAM.

In virgin areas the surface soil of the Appling sandy loam, locally called "gray land" or "tobacco land," for 1 or 2 inches is a gray light sandy loam; below this it is a yellow or brownish-yellow sandy loam to a depth of 8 to 10 inches. The subsoil is a pale-red or yellowish-red friable clay, with mottlings of red and yellow in the lower part of the 3-foot section. The subsoil in places contains considerable quantities of quartz sand and fine mica flakes. The surface soil in cultivated areas when moist is light brown and when dry is light gray to pale yellow. Fragments of the underlying rock are found on the surface here and there. Included in this type are some areas of Cecil sandy loam and Cecil clay loam which were too small to show on the map.

The Appling sandy loam is confined largely to the northern half of the county, where it is closely associated with the Cecil sandy loam and the Cecil clay loam. The soil is formed principally from granite and gneiss. Important areas of this soil are located in the vicinity of Sandy Ridge Church, Colfax, Friendship, Alba School, Durhams Store, Oak Ridge, Kings Crossroads, Stokesdale, Summerfield, Hildsdale, Pine Grove School, and Browns Summit, between McLeansville and Gibsonville, and in the southeastern part of the county east of Monnett School and Holts Store. Smaller areas are mapped in practically all sections of the county.

The Appling sandy loam occurs mainly on the smooth inter-stream ridges and on gentle slopes approaching stream courses. The topography varies from almost level to undulating and rolling. Both surface and internal drainage are well established. In places around sources of small streams and on the steeper slopes the soil is considerably eroded and gullied.

The Appling sandy loam is one of the important soil types of the county. Approximately 60 per cent of it is under cultivation. The rest is forested with red oak, white oak, post oak, pine, and some dogwood, sourwood, cedar, and persimmon. Some smaller areas are used for pasture.

The principal crops are corn, wheat, clover, and tobacco. Some cotton is produced in the southeastern corner of the county. Soy beans, cowpeas, and rye are minor crops. Garden vegetables, saccharine sorghum, sweet and Irish potatoes, peaches, apples, and pears are produced for home consumption and for sale in the local markets.

Corn yields 15 to 35 bushels per acre; wheat, 10 to 20 bushels; clover, about 1 ton of hay; and tobacco, 600 to 1,000 pounds. These crops are generally fertilized. Some farmers do not use fertilizer on corn land, and others do not fertilize wheat or corn, but plant these crops on land that has been in clover, soy beans, or cowpeas. Corn as a rule receives 200 to 300 pounds per acre of 8-2-2 fertilizer or acid phosphate. Sometimes it is also given a top dressing of 100 pounds per acre of sodium nitrate at the last cultivation. Wheat land usually receives 200 to 300 pounds per acre of 8-2-2 fertilizer or acid phosphate. Occasionally wheat is given a top dressing of about 100 pounds per acre of nitrate of soda in the spring. Tobacco is fertilized with 300 to 1,000 pounds per acre of 8-2-3, 8-3-3, 9-2-3, or 9-3-3 fertilizer. These fertilizers are sometimes supplemented with cottonseed meal. Lime is being introduced and is applied to wheat, corn, and clover land at the rate of 1,000 to 2,000 pounds per acre. Those who have tried lime report satisfactory results in increased yields.

The Appling sandy loam, and the Cecil sandy loam, which is closely associated with it, are plowed rather deeply in August or early September for wheat. The grain is sown by October 10, if possible. Clover is sometimes sown with the wheat and is followed by corn or wheat. Corn land without a cover crop is plowed in the late fall and again in the spring. If the land has a cover crop it is plowed in the spring just before planting the corn. Tobacco land is plowed either in the late fall or in the spring. The plowing is done with 2-horse plows and in some instances with tractors. Walking or riding cultivators are used in cultivating corn and tobacco. The crusts around the tobacco stalks are broken with hand hoes.

Land of this type sells at \$40 to \$150 an acre, depending upon the state of improvement, value of timber, and nearness to markets.

The Appling sandy loam is one of the important tobacco soils of the county. The tobacco is said to be slightly heavier and darker than that grown on the Durham soils. The soil is also well adapted to corn, clover, sweet potatoes, vegetables, and muskmelons. The soil needs more organic matter, which can be supplied by plowing under such crops as rye, red clover, or cowpeas. Deeper plowing would also be beneficial. Erosion is active in many places, but can be controlled by growing cover crops and by proper terracing. A suggested rotation of crops for the Appling sandy loam is a winter cover crop of rye followed by tobacco, then by cowpeas, and the next year by corn.

APPLING FINE SANDY LOAM.

In wooded areas the surface soil of the Appling fine sandy loam consists of two layers, an upper one, 1 to 2 inches thick, of gray or light-gray fine sandy loam, and a lower one of yellow or yellowish-brown heavy fine sandy loam, which extends to depths of 8 to 10 inches. The subsoil is a yellowish-red friable clay, which becomes mottled or streaked yellow and red at depths of 24 to 36 inches. In cultivated areas the surface soil is light brown when moist and light gray or pale yellow when dry. Mica flakes and quartz sand are usually present in small quantities. White quartz gravel and stones are on the surface in places, but not in sufficient quantities to interfere with cultivation.

The Appling fine sandy loam is inextensive. The largest areas occur in the northern half of the county, in the vicinity of Lees Chapel and Brightwood School, northeast of Merry Oaks School, and east of Osceola. Smaller areas occur in the southern part of the county. The surface is gently rolling to rolling, and the drainage is good.

Approximately one-half of the type is cultivated; the rest supports a forest growth of white oak, post oak, and pine, with some dogwood, sourwood, and cedar. A few areas are used for pasture. The important crops produced are tobacco, corn, wheat, and clover. Garden vegetables, sweet and Irish potatoes, and fruits are grown for home use and to a small extent for sale in the local markets. Tobacco yields 600 to 800 pounds per acre; corn, 15 to 30 bushels; and wheat, 5 to 10 bushels. Clover does well. Crops on this type are fertilized about as on the Appling sandy loam.

Land of this type sells at \$40 to \$100 an acre, depending upon improvements and distance to markets.

The suggestions for the improvement of the Appling sandy loam will apply to this type also.

DAVIDSON CLAY LOAM.

The surface soil of the Davidson clay loam, locally called "red land" or "grain land," is a brown to reddish-brown heavy clay loam, 6 to 8 inches deep. The subsoil is a deep-red or maroon-red, friable, smooth clay, free from quartz sand, which extends to a depth of 3 feet or more. The soil is derived from dark-colored diorite and diabase. In a few places there are some boulders of the parent rock on the surface. Included within this type are a few small areas of Davidson clay and Cecil clay loam which were too small to show on the soil map.

The Davidson clay loam is found in practically all parts of the county except the northwestern. The areas range in size from a few acres to 4 square miles or more. The larger and more important areas are developed around Guilford College, north of Friendship, west, north and northeast of Greensboro, around Hardys Mill, in the northeastern corner of the county in the vicinity of Troxlers Mill, at and south of Gibsonville, and in the southeastern part of the county near Climax and around Pinedale School and Bennetts Store.

The type occurs principally on smooth ridges, although some of it is found on slopes leading to creeks. The topography is gently rolling to rolling and in a few places strongly rolling. Most of the type lies well for farming, and improved machinery can be used over the greater part of it. The surface and internal drainage are good, but on some of the steeper slopes the run-off is excessive and erosion is active.

The Davidson clay loam is one of the important agricultural soils of the county. Approximately 60 per cent of it is cultivated. The rest is in pasture and forest, the timber growth consisting of red oak, white oak, pine, cedar, hickory, and some dogwood, walnut, and persimmon. Sassafras bushes grow along roads and edges of cultivated fields.

The principal crops are corn, wheat, and clover. Some soy beans, cowpeas, sweet clover, orchard grass, tall oat grass, and herd's grass are produced. The grasses are usually sown with red clover. Alfalfa is grown in a small way. Irish and sweet potatoes, saccharine sorghum, garden vegetables, peaches, apples, and Kieffer pears are produced for home consumption and for sale in the local markets. Corn yields 25 to 60 bushels per acre, and some farmers report as high as 75 bushels. Wheat produces 15 to 40 bushels per acre. Clover alone or clover with grasses yields 1 to 1½ tons per acre. Cowpeas, sweet clover, and soy beans give excellent returns.

Corn and wheat usually follow a leguminous crop, such as clover or cowpeas. In addition the crops are given an application of 200 to 300 pounds per acre of acid phosphate. Lime is used by a few

farmers, and good results are reported. Many of the farmers plow this soil deep with heavy draft horses or tractors and give the seed bed a thorough preparation. The wheat bed is usually made firm by rolling. Corn is cultivated with walking or riding cultivators.

Land of this type sells at \$75 to \$200 an acre, depending upon the state of improvements and nearness to the markets.

The Davidson clay loam is probably the strongest soil in the county. It is well suited to wheat, corn, clover, alfalfa, sweet clover, and grasses. Deep plowing, thorough preparation of the seed bed, and the addition of organic matter will aid greatly in building up the soil and maintaining it in a high state of productiveness. Winter cover crops should be planted on the steeper slopes to prevent erosion.

MECKLENBURG LOAM.

The surface soil of the Mecklenburg loam is a brown, reddish-brown, or grayish-brown loam 6 to 8 inches deep. The subsoil is a reddish-yellow or yellowish-brown, sticky, smooth clay, which passes at 30 to 36 inches into greenish disintegrated diorite rock. Fragments of the parent rock or of quartz occur on the surface in places, but not in sufficient quantities to interfere with cultivation. A few small areas of Mecklenburg clay loam and sandy loam are included in this type.

The Mecklenburg loam is not extensive in the county. The largest areas lie near Guilford College, south of Greensboro, near Friedens Church, in the vicinity of Whitsett, and east of Pleasant Garden. Smaller areas are mapped in the southern and eastern parts of the county. The type occurs mostly on stream slopes, although some areas occupy positions on the smoother ridges. The topography is gently rolling to rolling and strongly rolling. The surface drainage is good, but owing to the impervious nature of the subsoil the internal drainage is slow.

The type is not important agriculturally because of its relatively small extent. About 40 per cent of it is cultivated, and the rest is in forest, consisting of oak, hickory, pine, and some dogwood, cedar, persimmon, and walnut. The main crops produced on this soil are corn and wheat. Clover and tobacco are grown to a small extent. Vegetables, sweet and Irish potatoes, and fruits are produced mainly for home use. Corn yields 20 to 35 bushels per acre and wheat 10 to 20 bushels. Clover produces about 1 ton of hay. Good yields of home tobacco are obtained.

Corn is fertilized with 50 to 150 pounds per acre of acid phosphate and cottonseed meal mixed. Wheat is given 200 to 300 pounds of acid phosphate and cottonseed meal mixed, or about the same quantity of a 9-4-0 or 8-2-2 fertilizer. Some of the farmers plant corn on clover land and use no fertilizer. Some of the better farmers prac-

tice deep plowing and thorough preparation of the seed bed. Lime is used by a few. Land of this type sells for \$50 to \$100 an acre, depending on its location and improvements.

Suggestions for improving the Davidson clay loam apply to this type.

IREDELL SANDY LOAM.

The surface soil of the Iredell sandy loam is a gray to brownish-gray light sandy loam, 8 to 12 inches deep. The subsoil is a brownish-yellow, plastic, impervious clay, which passes at about 30 inches into greenish weathered diorite rock. The subsoil upon exposure to the atmosphere turns brown, cracks, and becomes very hard. This soil is locally called "pipe-clay land."

The Iredell sandy loam is confined almost entirely to small areas in the south-central part of the county. The topography varies from gently rolling to strongly rolling. The surface drainage is good, but the internal drainage is poor on account of the impervious nature of the subsoil.

About 50 per cent of the type is under cultivation and the rest is forested with post oak, blackjack oak, and a few pine and cedar. Some areas are in pasture. The principal crops are corn, wheat, and tobacco. Corn yields 15 to 25 bushels; wheat, 8 to 15 bushels; and tobacco, 600 to 800 pounds per acre. Corn is given 200 to 300 pounds per acre of cottonseed meal or of an 8-2-2 fertilizer mixture. Wheat is fertilized with 150 to 300 pounds of acid phosphate and cottonseed meal mixed or 200 to 300 pounds of an 8-2-2 or 9-4-0 fertilizer. Tobacco is given 400 to 600 pounds of an 8-4-4 fertilizer per acre. Land of this type sells at \$50 to \$100 an acre.

IREDELL FINE SANDY LOAM.

The surface soil of the Iredell fine sandy loam is a gray fine sandy loam 8 to 10 inches deep. The subsoil is a brownish-yellow or greenish-yellow, heavy, plastic, waxy clay, which grades into the underlying greenish diorite rock at depths of 24 to 30 inches. On the surface in places there are a few rounded iron concretions.

The Iredell fine sandy loam is not extensive in the county. The largest areas are in the southwestern part, in the vicinity of Red Hill Church, around High Point, and south of Friendship. The topography of most of the type is gently rolling to rolling, but near the streams it is strongly rolling. The surface drainage is good, but the underdrainage is somewhat retarded by the tough subsoil.

About 20 per cent of the Iredell fine sandy loam is in cultivation and about 10 per cent is in pasture. The rest supports a growth of post oak, blackjack oak, and some pine, cedar, and persimmon.

Corn and wheat are the principal crops, and tobacco and clover are grown to a small extent. Garden vegetables, sweet and Irish potatoes, and fruits are produced for home use and for sale locally. Corn yields 15 to 30 bushels per acre; wheat, 10 to 15 bushels; and tobacco, 600 to 800 pounds. Clover produces well. The fertilizer treatment for corn and wheat is about the same as on the Iredell loam. Tobacco land is fertilized with about 600 pounds per acre of complete fertilizer analyzing 8-3-3 or 8-4-4.

Land of this type sells for \$40 to \$100 an acre, the price varying with the character of improvements and with the location of the particular tract with respect to shipping points and markets.

The Iredell fine sandy loam is well suited to wheat, corn, clover, grasses, and oats. The soil would be greatly benefited by deep plowing and thorough preparation of the seed bed. The growing and turning under of such crops as clover, cowpeas, or rye would be beneficial. Considerable areas of land of this type await development.

IREDELL LOAM.

The surface soil of the Iredell loam, locally called "pipe-clay land," is a dark-gray to brown loam, 6 to 10 inches deep. The subsoil is a dingy-yellow or brownish-yellow, sticky, impervious clay, which usually grades at depths of 24 to 30 inches into greenish-yellow material representing the partly decayed diorite rock. In places large quantities of small iron concretions are scattered over the surface and embedded in the soil, and here and there a few boulders and fragments of the parent rock appear at the surface. When exposed to the air the subsoil becomes dingy brown and cracks when dry.

The Iredell loam is of comparatively small extent. The largest areas lie near the eastern boundary 1 mile northwest of Shepherd School, in the vicinity of Gibsonville and Whitsett, and around Lowes Church. Other rather large areas lie east of Greensboro and northeast of White Oak, and numerous smaller areas occur elsewhere in the county.

The type is developed mainly on interstream ridges, but some of it occurs on the slopes near streams. The topography is almost level to gently rolling and rolling. In the rolling areas the surface drainage is good, but the underdrainage is insufficient because of the impervious character of the subsoil. Both surface and internal drainage are poor in the more level areas.

The Iredell loam is not an important agricultural soil. About 15 per cent of it is used for farming, a small part is in pasture, and the rest is forested with white oak, post oak, blackjack oak, and scattered cedar, pine, and persimmon. The principal crops are corn and wheat.

Clover and cowpeas are minor crops. Corn yields 15 to 35 bushels per acre, and wheat 10 to 20 bushels. Corn is fertilized with 200 to 300 pounds of a mixture of acid phosphate and cottonseed meal. Wheat is fertilized with 300 pounds per acre of low-grade (8-2-2) fertilizer or when sown on clover sod about the same amount of acid phosphate. Land of this type sells for \$30 to \$100 an acre.

The soil is well suited to the production of wheat, oats, clover, and grasses. More of the type could be used for agriculture or for grazing than at present.

WILKES SANDY LOAM.

The surface soil of the Wilkes sandy loam is a sandy loam of a gray, light-brown, or yellow color, with a depth of about 6 to 8 inches. The upper subsoil is a yellow, brownish-yellow, or mottled yellow and red sandy clay, which passes at an average depth of 18 inches into a brownish-yellow or mottled brown, yellow, and gray, plastic, sticky clay. The upper subsoil is similar to the subsoil of the Durham or Appling series, and the lower subsoil resembles in many respects the Iredell subsoil. The soil is derived from beds of granite and gneiss that have been cut by dikes of pegmatite or diorite or other dark rocks. On account of the mixed nature of the parent rock the soil represents a condition rather than a definite type. The decomposed bedrock is usually encountered at a depth of 30 to 36 inches.

The Wilkes sandy loam is confined almost entirely to the southern half of the county. The larger developments are along the slopes of Deep River, and Twomile, Bull Run, Registers, Polecat, Stink Quarter, Little Alamance, Big Alamance, and South Buffalo Creeks. Smaller bodies occur upon other stream slopes. The topography is rolling, strongly rolling, or broken. The surface drainage is good to excessive, but the internal drainage is checked somewhat by the heavy lower subsoil.

The Wilkes sandy loam is extensive, but on account of its broken topography it is not adapted to agriculture. The type includes the roughest parts of the county. Most of it supports a growth of post oak, scrub oak, blackjack oak, pine, dogwood, and cedar. A large part of the land is leased for game preserves by northern hunters, a small part is in pasture, and only about 10 per cent of it is farmed.

The main crops grown are corn, wheat, and tobacco, with rye, cowpeas, and clover as minor crops. Garden vegetables, sweet and Irish potatoes, peaches, and pears are grown, chiefly for home use. Corn yields 10 to 20 bushels per acre, wheat 5 to 10 bushels, and tobacco 500 to 600 pounds. The crops are fertilized about the same as on the smooth phase of this type. The Wilkes sandy loam is usually sold in conjunction with the adjoining soils. This type probably

should be left in forest or sown to grass for pasture, as the topography is so rolling that the soil is subject to serious erosion.

Wilkes sandy loam, smooth phase.—The Wilkes sandy loam, smooth phase, represents the smoother areas of the Wilkes sandy loam. In wooded areas the surface soil for 1 or 2 inches is a gray sandy loam, which passes into a pale-yellow or light-brown sandy loam 8 to 10 inches deep. The subsoil is a yellow or yellow mottled slightly with red, friable sandy clay to a depth of 18 to 24 inches, where it passes into a mottled yellow and red, or mottled yellow, brown, and gray, plastic, sticky clay. In places the lower subsoil is a mottled white and blue, heavy, sticky clay. The surface soil in plowed areas has a brownish cast when moist. A few small areas of fine sandy loam and coarse sandy loam are included in this type.

The smooth phase, which is rather extensive, is confined mainly to the southern half of the county. The largest areas are around and northeast of Greensboro. Other large bodies occur in the vicinity of Crossroads School, south and west of Holts Store, south of Bennetts Store, north of Tabernacle Church, around Groomtown, east of Black Jack School, along the southern county line at Fairfield Church, northwest of High Point, and in the vicinity of Deep River Church.

The type occupies smooth interstream ridges. The topography ranges from almost level to gently rolling and rolling. The surface drainage is good because the surface soil is porous, but owing to the impervious character of the lower subsoil the internal drainage is poor. During periods of heavy rainfall crops are damaged or "drowned out," the underdrainage being so poor that the surface soil becomes saturated.

The Wilkes sandy loam, smooth phase, is one of the important farming soils of the county. Approximately 60 per cent of it is under cultivation and the rest is forested with white oak, post oak, blackjack oak, pine, and some dogwood and cedar. The important crops are corn, wheat, and tobacco. Rye and clover are grown to some extent. Garden vegetables, sweet and Irish potatoes, peaches, apples, cherries, and pears are produced for home consumption and for sale in the local markets.

Corn yields 10 to 25 bushels per acre; wheat 5 to 15 bushels; and tobacco, 600 to 800 pounds. Corn is given 200 to 300 pounds per acre of 9-4-0 or 8-2-2 fertilizer, or about the same amount of acid phosphate and cottonseed meal mixed. Wheat is fertilized about the same as corn. Tobacco is fertilized with 500 to 600 pounds of the 8-2-2 or 8-4-4 mixture. The tobacco is of the bright-leaf type. Many farmers grow a winter cover crop of rye on tobacco land. Corn or wheat sometimes follows a crop of soy beans or cowpeas; tobacco is rotated with wheat or corn; and many farmers alternate wheat and corn.

Land of this phase sells at \$50 to \$200 an acre, the higher prices being paid for well-improved farms situated near markets and shipping points.

The Wilkes sandy loam, smooth phase, is in need of organic matter, which under present conditions can best be supplied by growing and turning under green-manuring crops. More systematic crop rotations would also help increase crop yields.

The following table gives the results of mechanical analyses of samples of the soil, subsurface, and subsoil of the typical Wilkes sandy loam :

Mechanical analyses of Wilkes sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
235027.....	Soil.....	2.0	13.0	13.4	36.9	14.2	15.9	4.5
235028.....	Subsurface.....	2.6	13.3	10.1	25.8	12.3	20.4	15.4
235029.....	Subsoil.....	.8	7.4	7.5	25.7	10.8	22.8	25.0

GEORGEVILLE SILT LOAM.

The surface soil of the Georgeville silt loam is a pale-red, light-brown, or yellowish-brown silt loam, 8 to 10 inches deep. The subsoil is a red, friable, crumbly, silty clay, which extends to depths of 3 feet or more. A few quartz stones and gravel lie on the surface in places.

The Georgeville silt loam is not extensive. It is developed in a few scattering small areas along the southern boundary and in the southeastern corner, and in larger areas southwest of High Point, 2 miles south of Pine Grove School, and near Cobles School, Pinedale School, and Brick Church. The type is derived from isolated areas of the Carolina slates. The topography is gently rolling to rolling, and the drainage is well established.

About 25 per cent of the type is farmed, and the rest is forested with oak, hickory, and dogwood, and some pine, cedar, and sourwood. Corn and wheat are the principal crops. Corn yields 15 to 30 bushels per acre and wheat 8 to 15 bushels. This soil is usually sold in connection with the adjoining soils, or its price is dependent upon the value of the timber growth.

GEORGEVILLE SILTY CLAY LOAM.

The surface soil of the Georgeville silty clay loam is a red to reddish-brown silty clay loam, 6 to 8 inches deep. The subsoil is a light-red, friable, crumbly, silty clay, which extends to a depth of 3 feet or more. On the slopes near Big Alamance Creek the parent slate rock is frequently encountered at 30 to 36 inches.

The Georgeville silty clay loam is confined to the southern border and southeastern part of the county. The soil is derived from slates of the Carolina Slate belt, a rock formation which has a large distribution in Davidson and Randolph Counties. The largest areas of this type lie just south of High Point, near Climax, and east of Mount Hope Church to the eastern county line.

The topography varies from almost level to rolling and strongly rolling, the most rolling areas occurring on the slopes of Big Alamanee Creek. The greater part of the type lies favorable for farming. Both the surface and internal drainage are good, although the compact subsoil retards the downward movement of water to some extent.

The Georgeville silty clay loam is not important agriculturally because of its small extent. Approximately 40 per cent of it is cultivated; the rest is in forest consisting of oak, hickory, dogwood, and some pine and cedar. The principal crops are corn and wheat. Clover is grown to some extent, with good yields. Cotton is produced in a small way in the southeastern part of the county. Corn yields 10 to 35 bushels per acre; wheat, 10 to 20 bushels; and cotton, one-half to 1 bale. Vegetables, sweet and Irish potatoes, and fruits are grown, for home use mainly, and the yields are good.

Corn land receives 200 to 400 pounds per acre of acid phosphate and cottonseed meal mixed or about the same amount of a fertilizer mixture analyzing 8-4-0 or 12-4-0. If wheat follows clover, it receives an application of 300 pounds of acid phosphate only, otherwise it receives 300 pounds of an 8-2-2 fertilizer. Cotton is fertilized with 300 pounds per acre of an 8-3-3 fertilizer. Some farmers do not use fertilizer on corn, but plant the crop on land that has been in cowpeas or clover.

Land of this type sells at \$40 to \$150 an acre, the lower prices being asked for poorly improved farms remote from market towns.

The Georgeville silty clay loam is a good type of red-clay land. It is well suited to wheat, corn, and clover. It is greatly benefited by deep plowing, thorough pulverization, and the incorporation of organic matter. The more strongly rolling areas should be terraced or planted to cover crops to prevent erosion. More of this type could be profitably used for cultivated crops or pasture.

CONGAREE SILT LOAM.

The surface soil of the Congaree silt loam is a reddish-brown, brown, or chocolate-brown silt loam, 8 to 10 inches deep. The subsoil is a reddish-brown to brown silt loam or silty clay loam extending to 30 or 36 inches below the surface. Small scales of mica are present in both surface soil and subsoil. The lower part of the subsoil in places is mottled yellow and brown or gray and yellow. In

other places a bluish-gray, plastic silty clay is encountered at depths of 30 to 36 inches. Included in this type are narrow bands and ridges of Congaree fine sand and fine sandy loam too small to show on the soil map.

The Congaree silt loam is a first-bottom alluvial soil developed along many of the larger creeks of the county. The bottom lands range in width from a few yards to one-fourth mile or more. The wider areas are formed along Mears Fork, Reedy Fork, Moores, Brush, Horsepen, Richland, South Buffalo, and Twomile Creeks. The surface of the type is almost level, with a gradual slope toward the streams and in the direction of their flow. Surface and internal drainage of the type as a whole are poor. The stream currents are rather sluggish, and the type lies only a few feet above the normal water level and is subject to frequent overflows.

The Congaree silt loam, on account of poor drainage, is not used much for farming. Considerable grass is cut for hay, and part of the type is in pasture. A large part of it supports a growth of willow and alder and an undergrowth of water-loving plants. Some of the higher and better drained areas are used for corn, which here yields 25 to 50 bushels per acre without fertilizing.

Land of this type is usually sold in connection with the adjoining uplands. The Congaree silt loam is one of the best corn soils in the State. It is also well suited to the production of oats and hay. In Guilford County, however, the type is more poorly drained than in many other counties. This condition may be due in part to the many dams constructed along the creeks, causing much backwater during rainy seasons. In order that this type be profitably farmed, it should be thoroughly ditched.

MEADOW (CONGAREE MATERIAL).

Meadow (Congaree material) includes mixed material so varied in texture and structure that it can not be classed as a definite soil type. It is composed mainly of alluvial material deposited along some of the streams, but it has been modified considerably by colluvial wash from the adjoining slopes. The soil texture ranges from coarse sand to fine sand and silt. In places the material is deposited in alternating layers throughout the 3-foot section. The color of the material ranges from light brown to brown and reddish brown. In some areas the subsoil is similar to that of the Congaree silt loam. The surface is marked by many sand bars and hummocks.

Meadow occurs in narrow strips in the first bottoms of many of the creeks of the county. The surface is only a few feet above the normal water level, and the type is subject to frequent overflows. A large part of it remains in a saturated condition throughout the year.

The greater part of Meadow is uncleared and supports a growth of alder, willow, and elm and an undergrowth of water-loving plants. Some of the type is used for summer pasture. A few small areas are used for the production of corn and hay. Meadow, if cleared and properly drained, would make good pasture and produce fair crops of hay and corn.

ROCK OUTCROP.

Rock outcrop, shown on the soil map by symbols, represents bare exposures of rock. Near Flat Rock Church the rock is granite; at other points in the county the rock consists of boulders of diorite or large stones of quartz.

SUMMARY.

Guilford County lies in the north-central part of North Carolina. It comprises an area of 650 square miles, or 416,000 acres. The topography varies from almost level to gently rolling, rolling, and broken. The elevation above sea level ranges from about 700 to 900 feet. Drainage is effected through creeks and small rivers which have their origin in the county or near the county line. The county is thoroughly drained.

Guilford County was organized in 1770. It has a population of 79,272. Greensboro, with a population of 19,861, is the largest town and county seat. High Point, with 14,302 inhabitants, is the next largest town. The railroad facilities are good. The public country roads are only fair. School facilities are good. The important markets are Greensboro, High Point, Winston-Salem, Reidsville, Danville (Va.), and Burlington.

The mean annual rainfall is 46.78 inches, and the mean annual temperature is 58.8° F. The average growing season is 201 days.

Agriculture at present consists in the production of corn, wheat, tobacco, and clover. Cotton is grown in a small way in the southern part of the county. Garden vegetables, sweet and Irish potatoes, and fruits are grown for home use and for sale in the local markets. Tobacco is the important cash crop. Dairying is carried on to some extent, but the production of dairy products is insufficient to supply the local needs. Some hogs are raised and sold as breeding stock. There are a few herds of purebred cattle.

The Cecil sandy loam, Appling sandy loam, Durham fine sandy loam, and Wilkes sandy loam, smooth phase, are considered the best tobacco soils. The Davidson clay loam, Cecil clay loam, and Mecklenburg loam are considered better adapted to wheat, corn, or clover. Improved farm machinery is used on most of the farms. There is no commonly accepted system of crop rotation. Commercial or mixed fertilizers are used generally over the county. Farm labor

is mostly white and is scarce. Most farms range in size from 25 to 200 acres, averaging about 100 acres. Farm lands range in value from \$40 to \$200 an acre.

Guilford County lies entirely within the Piedmont Plateau region. The soils are residual and alluvial, the alluvial soils occupying only a small proportion of the county. The residual soils are derived directly from the underlying rocks, which are mainly granite, gneiss, diorite, diabase, gabbro, pegmatite granite and gneiss, and slate of the Carolina Slate belt.

The residual soils are grouped into the Cecil, Durham, Appling, Davidson, Mecklenburg, Iredell, Wilkes, and Georgeville series, and the alluvial soils are classed in the Congaree series and Meadow. The soil series are represented in the county by 18 soil types, including Meadow.

The Cecil sandy loam, Cecil clay loam, Durham fine sandy loam, Appling sandy loam, Davidson clay loam, Mecklenburg loam, and Wilkes sandy loam, smooth phase, are the important agricultural soils.

The Wilkes sandy loam occupies the most rolling and broken parts of the county. The Cecil loam, Durham coarse sandy loam, Appling coarse sandy loam, Appling fine sandy loam, and Georgeville silty clay loam are farmed to some extent, but they have only a relatively small representation in the county. The Iredell loam and fine sandy loam are farmed to a small extent. The Congaree silt loam is used for the production of corn and hay to some extent, but the type as a whole needs draining. Meadow, which is poorly drained, is used in only a small way for corn and hay.

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