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Soil Survey
of
Person County, North Carolina

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Bureau of Chemistry and Soils

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SOIL SURVEY OF PERSON COUNTY, NORTH CAROLINA

By R. C. JURNEY, U. S. Department of Agriculture, in Charge, and S. R. BACON and J. J. MORGAN, North Carolina Department of Agriculture and North Carolina Agricultural Experiment Station

COUNTY SURVEYED

Person County is in the north-central part of North Carolina, in the tier of counties adjoining the State of Virginia. (Fig. 1.) The southern boundary is about 15 miles north of Durham and about 40 miles northwest of Raleigh, the State capital. The county is almost square in outline, each side measuring about 20 miles, and it embraces an area of 401 square miles, or 256,640 acres.

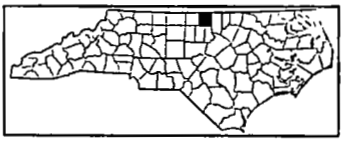

FIGURE 1.—Sketch map showing location of Person County, North Carolina

The general surface features of Person County are those of a comparatively high plateau which has been so dissected by the valleys of numerous streams that the resultant surface relief ranges from undulating, gently rolling, and rolling to strongly rolling, steep, and broken. The smoother areas, over which the relief ranges from undulating to rolling, occur mainly on the broader interstream ridges in the southwestern, central, and eastern parts of the county. A ridge of comparatively smooth configuration extends from Roxboro southwestward through Roseville and Bushy Fork to Gordonton, and other areas of similar relief in the southwestern part of the county are in the vicinity of Cates and to the southwest of Hurdle Mills. In the central part of the county northwest, north, and east of Roxboro, in the vicinity of Olive Hill School, Concord Church, Ceffo, and east of Jalong and Providence Church, the relief is similar. In the eastern and southeastern parts undulating, gently rolling, or rolling areas occur in the vicinity of Allensville, Dixons Store, Durgy Mine, Satterfield School, Glenns Store, and Moriah.

The areas of strongly rolling, steep, or broken relief occur on the slopes to and around the headwaters of many streams, particularly in the western and northern parts of the county; along the slopes of North Hyco and South Hyco Creeks, and along parts of Ghents, Storys, Marlowe, and Castle Creeks, and Hyco River. Hagers Mountain north of Jalong and Glenns Mountain in the southeastern part of the county consist of low isolated hills rising a few hundred feet above the upland plain of the county. The bottoms along the streams are almost level, and they range in width from a few feet to about one-fourth mile. With the exception of the steep and broken areas most of the land in the county lies favorably for agricultural purposes, and improved farm machinery can be used on practically all farms.

At Roxboro the elevation above sea level is 650 feet; at Helena, 553 feet; at Woodsdale, 467 feet; and at Rougemont near the county line in Durham County, 549 feet.[1] The general slope of the county is northeastward and southeastward, the dividing ridge beginning in the extreme southwestern corner, extending northeastward to Roxboro and thence eastward to the Granville County line.

On account of the comparatively high elevation of the county, the prevailingly rolling relief, and the completeness of the natural drainage system, surface drainage is good over the upland part of the county, and on many of the steeper slopes the run-off is excessive and causes serious erosion. Owing to the low position of some of the bottom lands and depressions, natural drainage is insufficient and ditches are necessary to insure adequate drainage.

The streams have cut their valleys from 50 to 100 or more feet below the general upland surface, and the width of the valleys ranges from one-half to nearly 3 miles. Most of the streams have strong currents, giving opportunity for the development of water power at several places along some of the larger ones, and additional development is possible at other places along many of the streams.

Person County was formed in 1792 from a part of Caswell County, but the country was settled several years prior to this. The early settlers were English and Scotch-Irish, and the present inhabitants are their descendants and others who have moved in from near-by counties and from Virginia. The colored population is comparatively small. A few Croatians have settled in the northeastern part of the county near the Virginia State line.

According to the 1930 census,[2] the population of Person County is 22,039, of which 83.4 per cent is classed as rural. The density of the rural population is 56.4 persons to the square mile, and it is fairly evenly distributed, but is slightly more dense in the central part of the county. Although nearly all sections of the county are settled, many more rural dwellers could be accomodated, as much forested and cut-over land is unoccupied and many abandoned farms could be reclaimed for cropping and for pasture land.

Roxboro, in the central part of the county, is the county seat and largest town. Cotton goods are manufactured in this town, and it is also an important trading center and tobacco market. The 1930 census gives Roxboro a population of 3,657. Jalong, about 1 mile north of Roxboro, is an important cotton-goods manufacturing town, and Picks, about 2 miles south of Roxboro, is also a small town in which cotton goods are manufactured. Helena, Woodsdale, and Cunningham are local trading places on the railroad, and Hurdle Mills, Moriah, and Allensville are local inland trading points.

Railroad facilities are ample for the present needs of the county. A line of the Norfolk & Western Railway from Lynchburg, Va., to Durham, N. C., crosses the central part from north to south, and the Southern Railway crosses the northwestern part and continues near the northern county line in the State of Virginia. No point in the county is more than 13 miles from a railroad station.

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[1] GANNETT, H. A DICTIONARY OF ALTITUDES IN THE UNITED STATES. (FOURTH EDITION.) U. S. Geol. Survey Bul. 274, 1,072 p. 1906.

[2] Soil survey reports are dated as of the year in which the field work was completed. Later census figures are given whenever possible.

State or county highways extend to nearly all sections of the county, and nearly every farm is within easy reach of an improved road. Four State highways lead from Roxboro to county seats in adjoining counties or to points in Virginia. The State highways from Roxboro to Durham, to Oxford, and to South Boston, Va., are hard surfaced, and the highway to Hillsboro and Graham is surfaced with gravel and sand-clay. County highways from Roxboro to Leasburg, to Danville, and to Virgilina are sand-clay roads. In addition to the main roads, numerous roads extending to different parts of the county are kept in a fair state of repair.

Rural mail routes serve all sections of the county, telephone service is available in some parts, and churches and schools are located at convenient places. Consolidated schools are at Olive Hill, Bushy Fork, Bethel Hill, Mount Tirzah, Hurdle Mills, and Helena, and near Allensville.

About two-thirds of the tobacco produced in the county is sold in Roxboro, the only tobacco market in the county. Durham and Mebane, N. C., and Danville and South Boston, Va., are outside markets for tobacco. Small amounts of corn and wheat are sold at the local mills, and milk, butter, poultry, eggs, melons, and vegetables are marketed in small quantities at Roxboro.

CLIMATE

The climate of Person County is continental, as the county is far enough inland to be out of reach of the tempering effects of the ocean. There is considerable difference in the mean temperatures of summer and winter. The mean temperature for the winter is 43.3° F. The winters are comparatively short and not extremely cold. The ground is sometimes frozen to a comparatively slight depth for a short period. Outdoor work can be performed most of the winter, and the temperature is sufficiently mild for growing cover crops. The summer mean temperature is 78.5° F. and the maximum is 103°. Ordinarily the summers are mild and pleasant, only a few days and nights being excessively warm.

The average date of the last killing frost is April 18 and of the earliest is October 27, giving an average frost-free season of 192 days, which is sufficient for the maturing of crops commonly grown in the county. Frost has occurred as late as April 27 and as early as October 11.

The rainfall is well distributed throughout the year and is sufficient for the successful growing of crops. The heaviest rainfall occurs in the spring and summer, and the lightest in the fall. The snows are usually light and remain on the ground for only a short time.

As there is no Weather Bureau station in Person County, the climatic data were compiled from records of the station at Rougemont, Durham County, and may be considered representative of conditions in Person County. Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation at Rougemont which is 549 feet above sea level and is situated about 1 mile from the southern boundary line of the county.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Rougemont, Durham County, N. C.*

[Elevation, 549 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1921)	Total amount for the wettest year (1924)	Snow, average depth
	°F.	°F.	°F.	Inches	Inches	Inches	Inches
December	43.5	76	5	2.87	1.95	3.90	2.8
January	42.7	75	10	3.44	2.80	3.15	1.6
February	43.8	77	4	3.14	3.12	2.85	1.1
Winter	43.3	77	4	9.45	7.87	9.90	5.5
March	53.8	81	12	3.46	2.65	2.45	.9
April	60.9	92	25	3.73	1.80	3.45	.0
May	70.8	98	34	4.12	4.15	10.15	.0
Spring	61.8	98	12	11.31	8.60	16.05	.9
June	76.8	100	46	3.83	1.40	2.90	.0
July	79.8	103	47	5.23	3.95	3.30	.0
August	78.9	99	50	3.53	.73	4.40	.0
Summer	78.5	103	46	12.59	6.08	10.60	.0
September	72.9	96	35	4.18	2.71	17.39	.0
October	62.3	96	25	2.56	1.87	1.31	.0
November	51.4	84	17	2.08	3.45	1.12	(1)
Fall	62.2	96	17	8.82	8.03	19.82	(1)
Year	61.4	103	4	42.17	30.58	56.37	6.4

[1] Trace.

AGRICULTURE

Agriculture in the territory now included in Person County began many years prior to the Revolutionary War. The first settlements were made in the vicinity of Paynes Tavern, and later others were started along South Hyco Creek, Hyco River, and in the southeastern part of the county. The early agriculture consisted in the production of corn, wheat, oats, tobacco, cotton, fruits, and vegetables, and the raising of cattle, hogs, and sheep. Nearly all of the supplies for the home were produced on the farm. Tobacco became an important cash crop immediately after the Civil War. Commercial fertilizers were introduced about the year 1870 and improved farm machinery about 1895. The lumber industry was important until about 1905 when the forest resources were about exhausted.

The Norfolk & Western Railway was completed across the county in 1890 and the Southern Railway in 1892. About this time tobacco warehouses were opened at Roxboro. The introduction of commercial fertilizer and improved farm machinery, together with the building of the railroads and opening of tobacco markets, contributed greatly to the agricultural progress of the county.

In 1879 the important crops grown were corn, oats, wheat, and tobacco. The census reports 19,372 acres in corn, 9,821 acres in oats, 8,974 acres in wheat, and 5,868 acres planted to tobacco in that year.

Table 2, compiled from reports of the United States census, shows the acreage and yields of the principal crops for the years 1889, 1899, 1909, 1919, and 1924.

TABLE 2.—*Acreage and yield of principal crops in Person County, N. C., in stated years*

Crop	1889		1899		1909		1919		1924	
	Acres	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*	*Acres*	*Bushels*
Corn	18,776	231,720	21,292	349,690	20,897	310,519	20,724	314,340	[1] 16,553	333,332
Wheat	10,370	74,980	9,545	48,330	5,421	47,376	7,744	53,511	3,498	29,054
Oats	7,346	50,578	4,959	34,780	1,265	12,519	726	6,796	316	2,724
		Pounds		*Pounds*		*Pounds*		*Pounds*		*Pounds*
Tobacco	7,100	2,327,201	9,256	5,123,760	11,858	6,904,306	17,861	6,822,168	14,700	7,496,466
		Tons		*Tons*		*Tons*		*Tons*		*Tons*
Hay	499	474	806	1,035	2,223	2,361	3,191	2,999	3,924	3,078

[1] In addition to this, 30 acres of corn were cut for silage, 76 acres hogged off, and 3,730 acres cut for fodder.

Table 2 indicates that there was a slight increase in the acreage of corn from the year 1889 to 1909, since which time the acreage has remained nearly stationary. The wheat acreage for the period 1889 to 1924 decreased about 66 per cent, and that of the oats harvested for grain dropped about 95 per cent. The tobacco acreage in this period more than doubled. Hay became an important crop between the years 1899 and 1909.

Agriculture in Person County consists mainly in the production of corn, tobacco, hay and forage crops, and wheat. Tobacco is the only strictly cash crop produced. Corn, wheat, hay, and forage constitute the important subsistence crops. A small quantity of wheat is sold locally.

Corn leads all other crops in acreage. In 1924, according to the census, 20,389 acres were planted to corn, of which 16,553 acres were harvested for grain, yielding a total of 333,332 bushels, or an average of 20.1 bushels an acre. The crop is produced in all parts of the county, and it is used mainly as feed for work animals and hogs. A small quantity is ground into meal for bread. It is stated that not enough corn is grown in the county for local needs.

Tobacco occupies the next largest acreage. In 1924 the 14,700 acres in this crop produced 7,496,466 pounds, or an average of 510 pounds an acre. The crop is grown in all sections of the county and is sold for cash on the open market. Most of the tobacco is bright yellow leaf, although some of it is dark grades. Most of it is used for the manufacture of cigarettes and smoking tobacco, but some is made into chewing tobacco. The tobacco is flue cured in especially constructed barns, and great care is exercised in obtaining the proper color.

Hay was grown on 3,924 acres in 1924, producing 3,078 tons. Hay is not produced on every farm, and the quantity made in the county is not enough for local demands. The 1925 census states that only 992 farms out of a total of 2,804 farms in the county reported the production of hay in 1924. The hay consists mainly of tame and cultivated grasses, timothy and clover mixed, clover alone, grains cut green, legumes cut for hay, Sudan grass, and cowpeas. In addition to hay, considerable corn fodder is harvested, and some corn is cut green or left in the field until spring and used as needed. A few farmers grow sorghum for feed.

Wheat was grown on 3,498 acres in 1924, yielding 29,054 bushels, or an average of 8.3 bushels an acre. The crop is not grown on all

farms, and more of it is produced in the southern half of the county than in the northern half. This crop is grown mainly to supply flour for bread, although some farmers sell a small quantity locally.

Oats occupy a comparatively small acreage. In 1924 only 316 acres were harvested for grain yielding 2,724 bushels, or an average of 8.6 bushels an acre. In addition, however, 1,955 acres were cut and fed unthreshed.

Small quantities of potatoes, sweetpotatoes, vegetables, sorgo cane, apples, peaches, pears, plums, cherries, and grapes are grown on nearly every farm for home consumption, and small surpluses are sold. In 1924 there were 155 acres in potatoes, yielding 8,038 bushels; 181 acres in sweetpotatoes, producing 13,320 bushels; 46 acres in sorgo cane; and 1,488 acres in cotton, yielding 668 bales. In the same year there were in the county 29,107 apple trees, 17,360 peach trees, 2,765 pear trees, 1,439 plum trees, 2,556 grapevines, and 105 pecan trees.

Cattle raising is not an important industry in Person County. According to the 1925 census there were 4,014 milk cows, 158 sheep, 12 goats, and 5,730 hogs. Cattle and hogs are well distributed over the county, although some tenant farmers do not keep any. Most farmers keep from 1 to 5 cows and about the same number of hogs, and a few farmers have from 18 to 40 hogs. Most of the cattle are grade Jersey, Holstein, and Guernsey, with Jersey predominating. There are at present 21 registered Jersey bulls and 35 registered Jersey heifers in the county, and an effort is being made to increase the number of purebred cattle. Three dairies are in the county, milk from which is sold at Roxboro. One dairy has a registered herd of about 25 dairy cows, consisting of Jerseys and Guernseys. The value of dairy products, excluding those used at home, was $131,615 in 1924. The hogs are grade Poland China, Berkshire, Duroc-Jersey, and Chester White, and crosses of these breeds. At present about 75 farmers of the county are using self-feeders for hogs and are finding them profitable.

Chickens are kept on nearly every farm, and some of the farmers raise turkeys. The 1925 census reports 184,272 chickens in the county. The value of poultry and eggs in 1924 was $183,088.

The few permanent pastures in the county range in size from 2 to about 4 acres. The grass mixture in some of the pastures is composed of Dallis grass, redtop, orchard grass, white clover, bluegrass, and Lespedeza. Another mixture which is used on land that erodes easily consists of Lespedeza, Bermuda grass, and white clover, and a few summer pastures consist of Lespedeza alone.

The adaptation of soils to certain crops is recognized by many farmers of the county. The light sandy and silt soils, such as the Appling, Durham, Helena, Wilkes, and Alamance soils, are considered well suited to the production of bright-leaf tobacco. These soils are also recognized as being adapted to crimson clover, cowpeas, soybeans, and sweetpotatoes. The red soils, such as Cecil clay loam, Davidson clay loam, and Georgeville silty clay loam, are considered suited to darker grades of tobacco and are also adapted to wheat, corn, clover, and alfalfa. Congaree loam is considered a good corn and hay soil.

Winter legumes, such as red clover, sweetclover, and Lespedeza, are sown with wheat in the spring and remain on the land for two

years. Crimson clover is sown during the first part of September. Cowpeas are broadcast in cornfields at the last cultivation of corn or are sown separately in fields from June 15 to July 1, after wheat is harvested. Soybeans are planted mostly in rows between corn rows. Wheatland is broken in the early fall, and the grain is sown about the middle of October. In the large fields harvesters are used, but in many of the small fields the grain is cut with cradles. As a rule, oats are sown in the spring, and most of the fields are small.

Rotation of crops is practiced by some farmers. On the heavier red soils, not well adapted to tobacco, the following rotation is used by a few: First year, corn, followed in the fall by wheat; second year, clover in the spring, with the wheat; third year, clover, one cutting taken for hay and the second growth plowed under, to be followed by corn. On the light sandy soils a rotation without corn is as follows: First year, tobacco; second year, wheat or oats; third year and sometimes fourth year, redtop or grass mixtures. A tobacco and corn rotation practiced by a few is the following: First year, tobacco, followed by crimson clover; second year, corn; third year, wheat or oats; fourth and sometimes fifth year, grass mixtures. A short rotation for tobacco and small grain is: First year, tobacco; second year, wheat or oats, followed by weeds in the stubble, the weeds being plowed under as green manure for a succeeding crop of tobacco. A more generally used rotation with tobacco is as follows: First year, corn; second year, wheat or oats, followed by weeds in the stubble; third year, tobacco.

Commercial fertilizers are used on nearly every farm. In 1924, 2,687 farms of a total of 2,804 farms in the county reported the use of fertilizer, at a total cost of $246,232, or an average of $91.64 a farm. Most of the fertilizer is applied to tobacco land and a smaller part to wheat and corn. On some farms wheat and corn are not fertilized. The fertilizer for tobacco is mostly a 3–8–3 [8] mixture, which is applied at a rate ranging from 800 to 1,000 pounds an acre. Many farmers use a 2–8–2 mixture, supplemented by a side application of from 60 to 75 pounds an acre of nitrate of soda. A few farmers apply higher-grade mixtures, such as 3–8–5, 4–8–6, or 3–10–5. When the higher-grade mixtures are used, the land is usually treated with an acreage application of about 1 ton of dolomitic limestone. Stable manure is applied to the "gall spots" and thin areas of tobacco land in such quantities as are available. Cornland is fertilized by some farmers with from 200 to 300 pounds an acre of 2–8–2 or 3–8–3 mixtures, and many farmers give a side application of nitrate of soda, about 100 pounds an acre. A few farmers apply stable manure to cornland. Wheatland is given an acreage application ranging from 300 to 500 pounds of 2–8–2, 2–12–2, 3–8–3, 4–9–4, or 0–10–4 mixtures. Some farmers apply a top-dressing of nitrate of soda in March at the rate of about 100 pounds an acre, and others sow wheat following a legume. Oats are fertilized by some farmers with a small amount of nitrate of soda. Lime is applied to clover land by some at the rate of about 1 ton an acre. Sweetpotatoes receive about the same fertilizer treatment as tobacco.

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

Terracing the land to prevent serious erosion was begun in 1927 by some farmers. The Mangum terrace is used. This is a broad-based, graded terrace. On steep hills a narrow terrace or ditch is used. The ditch follows the contour of the land and has a fall of 10 or 12 inches for every 100 feet in length.

Most of the farm homes are large and substantial, many of them being of modern architecture. A large number of the tenant houses are small, although on some farms tenants are living in houses formerly occupied by the owners. The barns are large enough to house work animals and crops, and most farms have several outbuildings for storage purposes. Some farms have large improved barns with sufficient room for all the farm products, work animals, and machinery.

Improved farm machinery is in use on many farms, the equipment consisting of tobacco plows, 1-horse and 2-horse turn plows, disk harrows, smoothing harrows, grain drills, mowing machines, hayrakes, riding or walking cultivators, and hand-drawn or horse-drawn tobacco planters. Some of the farms have lime and manure spreaders, tractors, and tractor equipment, grain harvesters, corn huskers, corn shredders, and silage cutters. There are a few silos in the county. Threshing machines travel from place to place to thresh wheat. The pastures are fenced, mainly with barbed wire, and the hog lots are fenced with woven wire.

The work animals are horses and mules, with mules predominating. The 1925 census reports 2,076 horses and 2,399 mules in the county in that year.

Because of competition in other lines of work, farm labor is scarce, and the price paid is considered high. Both white and colored help is employed. According to the 1925 census, 289 farms reported expense for labor in 1924, the total outlay being $22,228, or an average of $76.91 a farm.

The 1930 census reports 2,996 farms in the county. The average size in 1925 was 76.1 acres, of which 33.9 acres is classed as improved land. The range in size of farms is from about 3 to 999 acres, but the greater number are between 20 and 175 acres.

The 1925 census reports 38.3 per cent of the farms operated by owners, 61.4 per cent by tenants, and 0.3 per cent by managers. The percentage of tenants and owners has practically reversed since 1880, when owners operated 62.2 per cent of the farms and tenants, 37.8 per cent.

Two systems of share cropping are in use, one being known as the one-fourth system and the other, the one-half system. Under the one-fourth system the landowner furnishes the land and one-fourth the fertilizer and receives one-fourth the crop, and under the one-half system the landowner furnishes the land, work animals, tools, feed, and one-half the fertilizer and seed and receives one-half the crop.

The 1925 census reports the average assessed value of land as $28.78 an acre. The value of good farm land ranges from $50 to $150 an acre, depending on the state of improvement and location with respect to good roads, railroads, markets, schools, and churches. Rough or broken land brings from $10 to $20 an acre and cut-over land from $10 to $25.

Table 3, compiled from the November, 1927, Agronomy Information Circular No. 2, published by the North Carolina Experiment Station and the North Carolina State College of Agriculture and Engineering gives the fertilizer mixtures recommended for the important crops on several soils in the piedmont plateau. The formulas are based mainly on carefully planned and conducted field experiments with different crops on several soil types.

TABLE 3.—*Recommended fertilizer treatment for various crops on several soils in North Carolina*

Soil type and crops	Pounds per acre	Analyses of fertilizers
Cecil sandy loam:		
Corn	400–500	5–10–3.
Small grain	400–500	4–10–0, 5–10–0, 5–10–3.
Legumes	[1] 400–500	2–10–4.
Tobacco	1,000	4–10–6, 3–8–5, 4–8–6.
Cecil clay loam:		
Corn	400–500	5–10–3.
Small grain	400–500	5–10–3.
Legumes	[1] 400–500	2–10–4.
Georgeville silt loam:		
Corn	400–500	5–10–3.
Small grain	400–500	5–10–3.
Legumes	[1] 400–500	2–10–4.
Durham fine sandy loam:		
Corn	400–500	4–10–4.
Small grain	400–500	4–10–4.
Legumes	[1] 400–500	2–10–4.
Tobacco	1,000	4–8–6, 3–8–5.
Alamance silt loam:		
Corn	400–500	4–10–4.
Small grain	400–500	4–10–4.
Legumes	[1] 400–500	2–10–4, 2–10–6.
Appling sandy loam:		
Corn	400–500	4–10–4.
Wilkes sandy loam:		
Corn	400–500	4–10–4.
Iredell fine sandy loam:		
Corn	400–500	4–10–4.

[1] With an additional quantity of lime.

SOIL SERIES AND TYPES

The soils of Person County are divided into soil series, and the soil series are further divided into soil types. A soil series is a group of soils having similar profile characteristics, that is, they resemble each other in color, structure, and chemical composition, and in sequence, number, and degree of development of the soil layers, or horizons. The soils of a series occur under similar conditions of relief and drainage and generally have the same or similar origin and mode of formation. A soil type is a member of a soil series separated from other types of the same series on the basis of difference in texture of the surface soil or of the proportions of the different-sized soil particles of which it is composed.

In the following pages of this report the soils of Person County are described in detail and their agricultural relationships are discussed; their distribution is shown on the accompanying soil map; and Table 4 gives their acreage and proportionate extent.

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

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Appling sandy loam	25,152	9.8	Helena fine sandy loam	3,648	1.4
Appling fine sandy loam	15,360	6.0	Helena very coarse sandy loam	6,016	2.4
Appling very coarse sandy loam	3,584	1.4	Iredell fine sandy loam	12,160	4.7
Cecil fine sandy loam	7,872	3.1	Wilkes sandy loam	36,672	14.3
Cecil clay loam	6,592	2.6	Durham fine sandy loam	2,624	1.0
Cecil very coarse sandy loam	1,024	.4	Orange silt loam	12,928	9.3
Georgeville silty clay loam	41,088	16.0	Gravelly phase	11,072	
Georgeville silt loam	11,840	5.7	Davidson clay loam	3,264	1.3
Gravelly phase	2,752		Mecklenburg loam	832	.3
Georgeville very fine sandy loam	1,088	.4	Congaree loam	2,816	1.1
Alamance silt loam	17,536	6.8	Meadow	3,840	1.5
Alamance gravelly silt loam	10,624	4.1			
Alamance very fine sandy loam	1,472	.6	Total	256,640	------
Helena sandy loam	14,784	5.8			

APPLING SANDY LOAM

In wooded areas the surface soil of Appling sandy loam, locally called "gray land," consists of a 1 or 2 inch layer of gray light sandy loam or loamy sand, containing a small amount of leaf mold, underlain by grayish-yellow light sandy loam which, at a depth of about 10 inches, is in turn underlain by yellow friable sandy clay extending to a depth of about 15 inches. The underlying subsoil is yellowish-red or brownish-yellow stiff but brittle clay which passes, at a depth of 24 or more inches, into mottled or streaked yellow and red stiff but brittle clay which is more friable than the overlying layer. At a depth of 32 or more inches the underlying material is reddish-yellow, mingled with light yellow and light red, soft decomposed rock.

In cultivated fields the surface soil when moist is light brown and when dry is light gray or pale yellow. In some fields small areas of reddish-yellow soil are exposed through erosion of part of the surface layers. The subsoil is not everywhere reddish yellow in color but in places may be mottled red and yellow immediately below the surface soil. Bedrock is exposed or is near the surface in places. In some places large granite bowlders from 4 to 6 feet in diameter occur on the surface, and such areas are shown on the map by rock-outcrop symbols. In some fields the bowlders obstruct cultivation to some extent.

Appling sandy loam is developed mainly in large continuous areas in the central part of the county. Smaller areas are in the southwestern part and elsewhere, except in the northeastern, eastern, and southeastern parts. The principal areas of this soil are in the vicinity of Roxboro, Olive Hill School, Concord Church, near and east of Providence Church, south of Roseville, west of Push, and southwest of Hurdle Mills near the Orange County line.

Appling sandy loam occurs on smooth interstream ridges and on gentle slopes leading to streams. The surface relief is undulating, gently rolling, or rolling, the more rolling areas occurring near the streams. Owing to the favorable relief and the open porous character of the sandy soil, both surface drainage and underdrainage are good. In some places at the sources of small streams and on some of the steeper slopes the soil is eroded and gullied. On account of the light

sandy loam surface soil, the land can be cultivated sooner after rains than the heavier clay loam and silty clay loam soils in the county. Nearly all the land lies well for tillage operations.

Appling sandy loam is an important soil in the agriculture of Person County. About 70 per cent of it is under cultivation, a small part is used for pasture, and the remainder is forested, the tree growth consisting of white, red, and post oaks, shortleaf pine, and a few hickory, dogwood, cedar, sourwood, and persimmon.

The principal crops are tobacco and corn, and some cowpeas, soybeans, and wheat are grown. Sweetpotatoes, garden vegetables, watermelons, cantaloupes, fruits, sorgo cane, and potatoes are grown mainly for home use but some farmers have small quantities for sale. Tobacco is strictly a cash crop. It yields from 500 to 1,000 pounds an acre of bright-leaf tobacco; corn yields from 15 to 35 bushels an acre, although as high as 80 bushels an acre have been obtained through better fertilization and cultivation; cowpeas yield from 5 to 10 bushels of seed an acre, but about 80 per cent of the crop is cut for hay; sweetpotatoes yield from 60 to 150 bushels an acre, averaging about 80 bushels; and garden vegetables, watermelons, cantaloupes, and sorgo cane return good yields.

Appling sandy loam is one of the best tobacco soils in the county and is well suited to the production of bright-leaf tobacco. The soil is also well adapted to the production of corn, clover, cowpeas, soybeans, sweetpotatoes, watermelons, cantaloupes, and vegetables. This soil is deficient in organic matter which can be supplied by plowing under such green-manure crops as rye, red clover, or cowpeas. The land is subject to erosion in places, but this can be remedied by growing cover crops or by proper terracing.

Chemical analyses of Appling sandy loam in other counties of the State show that the soil is low in nitrogen and phosphoric acid. The soil is slightly acid and will be benefited by lime.

Table 5 gives the results of mechanical analyses of samples of the surface soil, the subsurface soil, and several layers of the subsoil of Appling sandy loam.

TABLE 5.—*Mechanical analyses of Appling sandy loam*

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
238001	Surface soil, 0 to ½ inch	13.0	19.0	13.7	16.9	8.2	22.1	7.0
238002	Subsurface soil, ½ to 2 inches	17.6	18.6	12.7	15.6	9.9	17.1	8.4
238003	Subsoil, 2 to 10 inches	7.2	14.4	11.2	18.2	13.4	24.5	11.0
238004	Subsoil, 10 to 15 inches	9.8	12.2	7.9	14.8	11.7	23.7	19.7
238005	Subsoil, 15 to 24 inches	5.5	6.6	4.9	19.0	.0	20.9	43.1
238006	Subsoil, 24 to 36 inches	6.2	8.6	5.7	8.4	6.1	20.7	44.2
238007	Subsoil, 36 to 50 inches	8.3	7.0	5.8	15.4	12.7	24.8	26.0
238008	Subsoil, 50+ inches	9.3	15.4	9.1	13.6	9.3	23.1	20.1

APPLING FINE SANDY LOAM

Appling fine sandy loam is similar in every respect to the sandy loam previously described except that it is finer in texture. In other words, it contains a higher percentage of fine sand and a little more silt.

In cultivated fields the surface soil when moist is light brown, but when dry it is grayish yellow or pale yellow. Broken quartz

gravel and stones are on the surface in places but not in sufficient amounts to interfere with cultivation. Areas in which large granite bowlders occur on the surface are indicated on the map by stone symbols.

Appling fine sandy loam, covering a total area of 24 square miles, is developed chiefly in the central part of the county closely associated with Appling sandy loam. Large areas are east of Roxboro, south of Brooklyn Church, south of Picks, north of Roseville, in the southwestern part of the county southwest of Hurdle Mills, and in the southeastern part near Moriah.

This soil is developed on broad interstream ridges and on slopes approaching streams. The surface relief is undulating, gently rolling, or rolling, and natural drainage is well established. On account of its sandy mellow surface soil, the land is easily tilled, and it can be plowed soon after rains. Erosion is active in places near the sources of streams and on the steeper slopes.

Appling fine sandy loam is important in the agriculture of the county, and about 75 per cent of the land is used for crops. The rest supports a forest growth similar to that on Appling sandy loam.

The crops grown, yields obtained, except a slightly lower yield of tobacco, and the kinds and amounts of fertilizer applied are about the same as on Appling sandy loam. Some farmers do not use commercial fertilizer for corn but improve the land by growing cowpeas or other legumes. Suggestions for the improvement of Appling sandy loam will also apply to Appling fine sandy loam.

The fertilizer most commonly used for tobacco is a 3–8–3 mixture which is applied to the land at a rate ranging from 800 to 1,000 pounds an acre. A 2–8–2 mixture is used by some farmers, but this is usually supplemented by a side dressing of nitrate of soda at the rate of 60 or 75 pounds an acre. Some farmers use higher-grade mixtures, such as 3–8–5 or 4–8–6, on land treated with dolomitic limestone, and it is stated that this fertilizer treatment not only increases the yield of the crop but also improves the quality of the tobacco. Commercial fertilizers are not used on cornland by all farmers, but many fertilize the land with an acreage application of about 200 pounds of a 2–8–2 mixture, and the corn is given a side application of nitrate of soda or sulphate of ammonia when it is about ready to tassel. Some farmers improve the cornland by growing cowpeas on it. Sweetpotatoes are fertilized with 2–8–2 or 3–8–3 mixtures.

APPLING VERY COARSE SANDY LOAM

The surface layer of Appling very coarse sandy loam in wooded areas is gray porous very coarse sandy loam from 1 to 3 inches deep. It passes into pale-yellow or grayish-yellow very coarse sandy loam extending to a depth of 8 or 10 inches, at which depth it is underlain by yellow friable sandy clay continuing to a depth of about 15 inches. The upper subsoil layer is reddish-yellow or yellowish-red friable clay containing some quartz sand. The lower subsoil layer in most places is mottled or streaked with red and yellow and is more friable than the upper subsoil layer. Below the subsoil is the decomposed soft red, gray, and yellow rock material.

In plowed fields, where rains have beaten the surface soil, the very coarse sand grains are conspicuous on the surface. If the coarse particles are segregated the remaining material is sandy loam or fine sandy loam. In cultivated fields the surface soil when dry is grayish yellow or dull yellow, but when wet it assumes a brown hue. In some places the underlying rock is near the surface.

This soil is not extensively developed in Person County, the total area being only 5.6 square miles. It occurs in the western and southwestern parts of the county, the largest areas being northeast of Bushy Fork, north of Salem Church, and near and south of Concord Church.

The soil occurs on smooth ridges and slopes to streams, and the relief ranges from undulating to rolling. Owing to the open porous character of the soil and the favorable surface features, the land is naturally well drained, and in some of the steeper places erosion is active. The soil is easy to till, and most of it lies well for the use of improved farm machinery.

About 50 per cent of Appling very coarse sandy loam is in cultivation, some of it is in old fields, and the remainder is forested with white, red, and post oaks, and a few hickory, dogwood, cedar, sourwood, and persimmon. The fertilizer treatment, crops, and yields are similar to those on Appling sandy loam.

CECIL FINE SANDY LOAM

In forested areas the surface soil of Cecil fine sandy loam to a depth of about 1 inch is gray fine sandy loam containing a small amount of organic matter. In most places a thin coat of leaf mold or moss covers the surface. Below the gray layer the surface soil is light-yellow or light-brown mellow friable fine sandy loam to a depth of 10 or 12 inches. The subsoil begins as yellowish-red or reddish-yellow friable fine sandy clay, but at a depth of 15 or 18 inches passes into red stiff brittle clay which continues to a depth ranging from 4 to 5 feet, where it grades into lighter-red, streaked with yellow and purple, friable clay. The subsoil is underlain by purplish-red friable decomposed schist containing yellow and white spots.

The surface soil in cultivated fields when dry is yellow, reddish yellow, or grayish yellow, and when moist is light brown or yellowish brown. Spots or streaks of yellowish red occur at the surface in some places where the sandy covering has been removed by erosion or the subsoil material has been brought up by the plow. A few broken angular quartz gravel and stones are scattered over the surface in places, but such areas are not large enough to separate on the map.

Cecil fine sandy loam is developed mainly in the northwestern and southwestern parts of the county, in areas ranging from a few acres to nearly 3 square miles. Rather large bodies are near Cunningham, Chestnut Grove Church, and in the southwestern part near Roseville, south of Mount Zion Church, and east of Wheeleys Church. Smaller areas occur elsewhere. The total area of this soil is 12.3 square miles. The soil occupies smooth ridges and slopes, where the surface relief ranges from undulating and gently rolling to rolling and natural drainage is well established. On some of the steeper slopes and near the heads of streams the surface soil has been eroded.

The soil is mellow and friable and easy to till, and most of the land lies favorably for the use of improved machinery.

Cecil fine sandy loam, on account of its comparatively small extent, is not one of the agriculturally important soils of the county. About 40 per cent of the land is in cultivation, and the remainder is in forest, consisting of white, post, and red oaks, shortleaf pine, and a few hickory, poplar, dogwood, sourwood, and cedar.

Corn and tobacco are the main crops produced on this soil. Wheat is grown on a small acreage, and some cowpeas, soybeans, and clover are grown. Garden vegetables, sweetpotatoes, potatoes, sorgo cane, and fruit are grown chiefly for home use.

Corn yields from 15 to 35 bushels an acre and tobacco from 800 to 1,000 pounds. The tobacco grown on this soil is of a heavier grade and a darker type than that grown on the Appling soils. Wheat yields from 8 to 12 bushels an acre, and cowpeas, soybeans, clover, and vegetables give good returns.

Cecil fine sandy loam is a good strong soil and is capable of being kept in a good state of productiveness. It is deficient in organic matter which can be supplied by growing and turning under green-manure crops. Liming would probably be helpful to the land. Winter cover crops or terracing would aid in checking further erosion of the soil.

Chemical analyses of the Cecil soils in other parts of the State show that they are high in potash content but low in lime, nitrogen, and phosphoric acid.

CECIL CLAY LOAM

In wooded areas the 1 or 2 inch surface layer of Cecil clay loam, locally called "red clay land," has a quantity of gray or brown leaf mold mixed with the soil, beneath which the soil is brown or reddish-brown clay loam to a depth of 6 or 7 inches. In plowed fields the surface soil is reddish-brown or almost red friable rather heavy clay loam. The subsoil is much heavier than the surface soil and consists of red stiff but brittle clay which, at a depth ranging from 2 to 3 feet, passes into lighter red and more friable crumbly clay, in many places containing finely divided mica flakes. At a depth between 4 and 5 feet the subsoil is underlain by soft decomposed rock having a mixed gray, yellow, and brownish-red color.

The clay subsoil in places contains small pieces of sharp quartz rock or angular quartz sand, and the surface soil in places has a thin coating of fine sand. A few small areas of Cecil fine sandy loam have been included with this soil as mapped. At the sources of small streams and on some of the steeper slopes the surface covering has been eroded, leaving spots of clay exposed.

Cecil clay loam is developed mainly in the western half of the county where it occurs in comparatively small scattered areas. Some of the larger bodies are in the northwestern and western parts near Chestnut Grove Church, near Cunningham, and north of Oak View School, and other areas are near Oak Grove Church and Roseville. The total area of this soil in the county is 10.3 square miles.

The soil occurs mainly on slopes and around sources of small streams, but some areas occupy smoother land. The surface relief is gently rolling or rolling, and natural drainage is good. Erosion is active in some places on the steeper slopes. Owing to the heavy

character of the clay loam surface soil, this soil can not be plowed so soon after rains as the lighter sandy soils. It is much harder to till than Cecil sandy loam, requiring stronger work animals and heavier implements in order to obtain the best results.

Approximately 35 per cent of Cecil clay loam is in cultivation, and the remainder is in forest consisting of white, post, and red oaks, shortleaf pine, old-field pine, and a few hickory, dogwood, cedar, persimmon, and sourwood. A small part of the land is used for pasture.

Corn is the main crop, tobacco and wheat are grown to some extent, and cowpeas and clover are minor crops. Garden vegetables, sorghum cane, fruits, potatoes, and sweetpotatoes are grown for home consumption.

Corn yields from 15 to 35 bushels, wheat from 10 to 15 bushels, and tobacco from 800 to 1,200 pounds an acre. The tobacco grown on this soil is of a darker grade than that grown on the gray sandy lands. The other crops grown give good yields.

Cecil clay loam can be built up and kept in a high state of productiveness. The soil is well adapted to the production of wheat, corn, oats, clover, soybeans, grasses, and cowpeas. Deeper plowing and the turning under of green-manure crops would be beneficial, and liming would also be helpful in improving the physical condition of the land. The growing of winter cover crops or terracing on the steeper slopes would help prevent soil erosion.

CECIL VERY COARSE SANDY LOAM

In wooded areas the surface soil of Cecil very coarse sandy loam is gray porous very coarse sandy loam 1 or 2 inches deep, below which the soil material is pale-yellow, grayish-yellow and, in places, slightly reddish-yellow very coarse sandy loam to a depth ranging from 5 to 7 inches. The subsoil is red friable brittle clay, which at a depth ranging from 30 to 36 inches grades into lighter-red and more friable clay. The subsoil is underlain at a depth of 4 or 5 feet by mingled yellow, brownish-red, and gray soft decayed rock. In cleared fields where the soil has lain idle for some time the coarse sand particles are very noticeable on the surface.

This soil occurs only in the southwestern part of the county near Bushy Fork and Salem Church, and includes a total area of 1.6 square miles. It occurs mainly on the smooth ridges, and the surface relief is undulating or gently rolling. Both surface drainage and underdrainage are good. Because of the open porous surface soil, it is easy to till, and practically all the land lies favorably for cultivation. About 35 per cent of it is used for crops, and the remainder supports a forest growth similar to that on Cecil fine sandy loam.

Corn is the leading crop, and some wheat and tobacco are grown. Corn yields from 15 to 25 bushels an acre, wheat from 8 to 12 bushels, and tobacco from 800 to 1,000 pounds.

GEORGEVILLE SILTY CLAY LOAM

In forested areas the upper layer of the surface soil of Georgeville silty clay loam, locally known as "red clay land," is light-brown heavy silt loam 2 or 3 inches deep, with a thin film of brown leaf mold on the surface. The lower part of the surface soil is yellowish-red

heavy silty clay loam extending to a depth of 6 or 8 inches. The subsoil is red friable stiff smooth silty clay which extends to a depth ranging from 30 to 40 inches where it passes into light-red friable silt loam. The subsoil is underlain by purple, yellow, and almost white soft smooth decomposed slate. In cultivated fields the surface soil is reddish-brown or red silty clay loam, and in places where the surface soil has been removed by erosion the soil is red silty clay. A few broken or smooth slate gravel occur on the surface in places. The depth of the subsoil is variable, ranging from about 2 feet to 5 feet, but in places the underlying slate rock comes within a few inches of the surface. Included with this soil are small areas of Georgeville silt loam too small to show on a small-scale map.

Georgeville silty clay loam is derived from slates of the Carolina slate belt, which formation underlies a large part of the eastern half of the county, where this soil is mainly developed. Large areas occur in the northeastern part near Bethel Hill, Dixons Store, Mill Creek Church, north of Jalong, and north and southwest of Allensville; in the southeastern part, northeast of Center Grove School, south of Oakleys Store, and north and south of Helena; and in the southern part, southeast of Hurdle Mills and Timberlakes Store. The total extent of the soil in the county is 64.2 square miles.

This soil occurs principally on slopes to drainage ways. The surface relief is, in general, gently rolling or rolling, but it becomes strongly rolling near some of the streams, although some areas are nearly level. Owing to the favorable surface relief the soil is well drained, and on some of the steeper slopes drainage is excessive. Most of the land lies favorably for farming operations. Because of the rather heavy character of the surface soil, this soil can not be plowed so soon after rains as the lighter sandy soils of the county.

Georgeville silty clay loam is an important soil in the agriculture of the county. Approximately 35 per cent of it is used for crops, and the remainder supports a forest growth consisting of white, post, and red oaks, shortleaf pine, old-field pine, and a few hickory, poplar, dogwood, cedar, and persimmon.

Corn and wheat are the leading crops, tobacco is grown to a very small extent, and clover is one of the principal legume crops. Garden vegetables, sweetpotatoes, potatoes, sorgo cane, and fruits are produced on nearly all farms for home use. Corn yields from 15 to 40 bushels an acre, wheat from 10 to 30 bushels, tobacco from 800 to 1,000 pounds of a darker grade than on the light sandy soils, and clover gives good returns.

Commercial fertilizers are not used by all the farmers on cornland, as some of them use stable manure and others plant corn following clover. The farmers who use commercial fertilizer on cornland make applications of 2–8–2, 3–8–3, 2–9–2, or 2–12–2 mixtures at the rate of 200 to 300 pounds an acre. Some farmers give a side application of nitrate of soda at the rate of 100 or 125 pounds an acre when the corn is about ready to tassel. Wheatland receives from 300 to 500 pounds an acre of 0–10–6, 0–10–4, 3–8–3, or 4–9–4 fertilizer, and some farmers apply a top-dressing of nitrate of soda in the spring.

Georgeville silty clay loam is a good heavy type of soil, and it can be kept in a good state of productiveness. It is well adapted to corn, wheat, and clover. Deeper plowing, thorough pulverization

of the soil, and the incorporation of more organic matter would be beneficial to the land. On the steeper areas cover crops or terraces would help prevent soil erosion. More of the soil could be cleared for the production of crops or for grazing land.

GEORGEVILLE SILT LOAM

In wooded areas the upper layer of the surface soil of Georgeville silt loam, locally called "floury land," to a depth of about 2 inches is gray silt loam containing a small amount of organic matter. Below this layer the surface soil is pale-yellow or brownish-yellow smooth silt loam, having a flourlike feel, underlain at a depth of 8 or 10 inches by yellowish-red friable crumbly silty clay loam which continues to a depth ranging from 12 to 15 inches. The subsoil is bright-red or dark-red friable silty clay which at a depth ranging from 30 to 40 inches passes into light-red soft crumbly friable silt loam or silty clay loam. Below the subsoil the material is pink, purple, dark-red, or yellow soft decomposed slate. The surface soil in cultivated fields is grayish yellow or light brown, and in places where the red subsoil material has been mixed with it the color is reddish yellow. In places the surface soil has been removed by erosion and the red silty clay or silty clay loam is exposed. A few broken quartz gravel occur on the surface in some places.

Georgeville silt loam occurs in the southern, eastern, and northeastern parts of the county and is closely associated with Georgeville silty clay loam. The largest areas are southeast of Bushy Fork, north and south of Paynes Tavern, southwest of Helena, near Allensville and Dennys Store, north and south of Surl, south of Satterfield School, and near Moores Mill. The total area is 18.5 square miles.

The soil occurs on smooth ridges, undulating areas, and on gentle slopes to drainage ways. Natural drainage is well established, and erosion is noticeable in places near the heads of small streams and on some of the steeper slopes. The surface soil becomes somewhat hard after it dries, and it is then difficult to plow. Most of the land lies favorably for agriculture.

Approximately 65 per cent of Georgeville silt loam is cultivated, and the remainder is forested to hardwoods and old-field pine. Many old fields support a second growth of pine. Much of the forested area has been cut over, and the remaining trees are small.

Corn, tobacco, and wheat are the principal crops, and some clover and oats are grown. Garden vegetables, sorgo cane, sweetpotatoes, and fruits are produced for home consumption.

Corn yields from 15 to 25 bushels an acre, tobacco from 600 to 800 pounds, wheat from 8 to 15 bushels, and oats from 25 to 40 bushels. Clover, garden vegetables, sweetpotatoes, and sorgo cane yield well. The tobacco produced is heavier and darker than on the light sandy soils. Some farmers do not apply commercial fertilizer to corn but plant the crop following clover. Tobacco and wheat receive the usual fertilizer applications, and oats are given an application of nitrate of soda as a top-dressing.

Georgeville silt loam is a good agricultural soil, and it can be kept in a high state of productiveness. The land is deficient in

organic matter, and this can be supplied by turning under green-manure crops. The soil erodes easily, but winter cover crops or proper terracing would help prevent it from washing. The land is well suited to corn, wheat, oats, clover, and grasses, and more of it could be used for cultivated crops or for pasture.

Georgeville silt loam, gravelly phase—Georgeville silt loam, gravelly phase, is similar to the typical soil except that a large quantity of gravel is scattered over the surface and mixed with the surface soil, the proportion of gravel ranging from 25 to 40 per cent of the soil mass. The gravel consists mainly of broken or platy slate fragments or brown somewhat subangular and smooth slate particles, and in some places the gravel are angular pieces of white quartz.

This gravelly soil covers 4.3 square miles in the eastern and southeastern parts of the county where it occurs in comparatively small scattered areas. The largest areas are north and south of Durgy Mine, near Dennys Store, west of Center Grove School, north of Moriah, and east of Moores Mill.

The surface relief ranges from undulating to gently rolling and rolling, and natural drainage is good. About 50 per cent of the land is farmed, and the rest is forested. The crops grown, the yields obtained, and the forest growth are similar to those on typical Georgeville silt loam.

GEORGEVILLE VERY FINE SANDY LOAM

To a depth of 1 or 2 inches, the surface soil of Georgeville very fine sandy loam in forested areas is gray very fine sandy loam which carries a small amount of organic matter. Beneath the gray layer the soil material is yellow or brownish-yellow very fine sandy loam to a depth of 8 or 10 inches, underlain by a yellowish-red layer, 4 or 5 inches thick, of friable crumbly very fine sandy clay. The subsoil is red friable silty clay which grades at a depth ranging from 30 to 36 inches into light-red more friable silty clay. At a depth between 4 and 5 feet the subsoil passes into dark-red, purple, or yellow soft decomposed slate rock. The surface soil when plowed is grayish yellow, light brown, or reddish yellow. Eroded spots of red silty clay occur in places, and in other places broken quartz gravel or stones are found on the surface.

This soil occurs mainly in a few scattered areas in the southeastern part of the county. The bodies range in size from a few acres to about one-half square mile, and the total area is 1.7 square miles. The largest areas are near Bartons Mill, east and northeast of Surl, northeast of Glenns Store, and northeast of Helena.

The soil is developed on smooth ridges and gentle slopes, and the surface relief ranges from undulating to rolling. Drainage is everywhere good. The land lies well and most of it can be used for farming. About 65 per cent of it is cultivated, and the remainder supports a forest growth similar to that on Georgeville silt loam.

Corn, tobacco, and wheat are the main crops, and some clover and oats are produced. Vegetables, sorgo cane, and sweetpotatoes are grown for home consumption. Crop yields are about the same as those on Georgeville silt loam, and the fertilizer treatment is similar.

ALAMANCE SILT LOAM

In forested areas the surface soil of Alamance silt loam consists of light-gray silt loam, which extends to a depth of about 2 inches, underlain by pale-yellow friable silt loam having a smooth floury feel. The surface is covered by a thin layer of leaf mold. The subsoil, which begins at a depth of about 8 or 10 inches, is yellow friable silty clay, passing into mottled brown and gray soft rock material at a depth ranging from 24 to 30 inches. Below this depth the material is soft gray and yellow decomposed slate. In cultivated fields the surface soil is grayish yellow or light gray when wet and almost white when dry. In some places near the associated Georgeville soils the lower part of the subsoil is reddish yellow. A few slate fragments and gravel occur on the surface in places.

Alamance silt loam occurs in the northeastern, eastern, southeastern, and southern parts of the county, in areas ranging in size from a few acres to about 3 square miles. The total area of this soil in the county is 27.4 square miles. The largest areas are north and northeast of Dixons Store, east and southeast of Durgy Mine, southeast of Allensville, west of Surl, northeast and south of Helena, and north and northeast of Moriah.

The soil occupies positions mainly on the broad interstream divides, although some of it occurs on the gradual slopes. The surface relief ranges from nearly level to undulating and gently rolling. Drainage is not so well established as on the associated Georgeville soils. The undulating or more rolling areas have fair or good drainage, but in the flatter places both surface and internal drainage are not thorough. On account of the favorable surface features the land lies well for farming.

The soil when dry, owing to the fine silty texture, is sometimes hard to till, and if plowed too soon after rains it has a tendency to clod or run together.

Alamance silt loam is an important agricultural soil and approximately 35 per cent of it is used for crops. Some abandoned fields support a growth of old-field pine and broom sedge, and the forest growth on the remainder consists of white, post, and some red oaks, shortleaf pine, and a few hickory, dogwood, sourwood, maple, sweetgum, poplar, willow, oak, cedar, and persimmon. A few small areas are used for pasture.

Corn and tobacco are the main crops, and some wheat, clover, and oats are grown. Garden vegetables, sweetpotatoes, sorgo cane, and fruits are grown for home supply. Corn yields from 15 to 25 bushels an acre, tobacco from 600 to 800 pounds, and wheat from 8 to 12 bushels. Clover gives good yields but is not grown on all farms.

Cornland is fertilized by many farmers with about 200 pounds an acre of 2–8–2 fertilizer, and other farmers do not use fertilizer but plant the crop on clover land. Tobacco receives from 800 to 1,000 pounds an acre of 2–8–2 or 3–8–3, and wheat from 200 to 300 pounds an acre of 2–8–2 fertilizer.

Alamance silt loam is deficient in organic matter which can be supplied by turning under cover crops of rye, clover, or cowpeas. Lime would also be beneficial as it would improve the working qualities of the land. More of the land could be used for general farming or for grazing cattle.

ALAMANCE GRAVELLY SILT LOAM

Alamance gravelly silt loam, locally called "brown gravelly land," is the same in texture, color, and structure as Alamance silt loam. Scattered over the surface and embedded in the soil are small broken platy slate particles or brown somewhat rounded smooth slate gravel which compose from 20 to 40 per cent of the soil mass. In open fields the gravel is very noticeable on the land, but only locally do the gravel interfere with cultivation. In some places slate fragments from 4 to 6 inches in diameter occur on the surface, and such areas are indicated on the map by stone symbols.

Alamance gravelly silt loam occurs largely in the southeastern part of the county, but a few small areas are in the northeastern part. A large area is south of Mount Tirzah School and northwest of Moriah, and a smaller area is near Mountain School.

This soil is developed on broad interstream ridges and on gentle slopes to streams. The total area is 16.6 square miles. The surface relief is undulating or gently rolling but becomes more rolling near some of the streams. Near Mountain School the soil occurs on a low mountain, and here the slopes are steep in many places.

Owing to the surface relief and the gravelly texture of the surface soil natural drainage is good, although in a few flat areas drainage is not well established. A large part of the soil lies favorably for farming. Approximately 35 per cent of it is under cultivation, the remainder being forested. The forest growth, crops grown, yields obtained, fertilizers applied, and suggestions for the improvement of this soil are practically the same as for Alamance silt loam.

ALAMANCE VERY FINE SANDY LOAM

The surface soil of Alamance very fine sandy loam in wooded areas is light-gray very fine sandy loam, containing a small amount of organic matter, underlain by yellow or pale-yellow friable very fine sandy loam to a depth of 8 or 10 inches. The subsoil is yellow friable silty clay extending to a depth ranging from 28 to 36 inches, where it is underlain by mottled yellow, gray, and brown soft decomposed slate. In cultivated fields the surface soil when wet is light gray but when dry it is grayish yellow or dull yellow.

Alamance very fine sandy loam occurs chiefly in the eastern part of the county, the largest areas being near Five Fork School, Burma Church, and Dennys Store, and south of Allensville. The total area is 2.3 square miles.

The surface relief ranges from undulating to gently rolling, and drainage is good.

About 65 per cent of the soil is used for crops, and the remainder is forested with post, white, and red oaks, shortleaf pine, and a few hickory, dogwood, cedar, sourwood, and persimmon.

Corn and tobacco are the main crops grown, and the yields and fertilizer treatment are practically the same as on Alamance silt loam. This soil is easier to till than the silt loam, owing to the large content of very fine sand.

HELENA SANDY LOAM

In wooded areas a thin coating of leaf mold or moss covers the surface of Helena sandy loam. The surface soil consists of a 2-inch

layer of light-gray loamy sand which is underlain by grayish-yellow light sandy loam to a depth of 8 or 10 inches, at which depth the material passes into pale-yellow, with spots of light gray and brownish yellow, heavy sandy loam extending to a depth ranging from 15 to 18 inches. The subsoil is mottled light-gray or steel-gray, yellow, and brownish-yellow heavy tough silty clay to a depth of about 30 inches, and passes into light-gray or almost white silty clay with brownish-yellow mottlings. Beneath the subsoil the material is decomposed aplitic granite and quartz diorite, with slate in some places. The surface soil in plowed fields is grayish yellow or dull yellow when dry and light gray or brownish yellow when moist. In some areas the subsoil is brownish-yellow or yellowish-brown heavy plastic clay similar to the subsoil of the Iredell soils. In places the subsoil is mottled yellow, red, and light gray.

Helena sandy loam is comparatively extensive, the total area being 23.1 square miles. It occurs in areas ranging in size from a few acres to large continuous bodies of about 2 square miles, chiefly in the northwestern, western, and southwestern parts of the county. The largest bodies are east of McGehees Mill and Ephesus Church, south of Cunningham, northwest of Dunnaways Bridge, near Ceffo and Leas Chapel, and in the vicinities of Gordonton and Cates.

The soil occupies positions mainly on interstream ridges, but some of it is on gradual slopes to drainage ways. The surface relief ranges from almost level, undulating, and gently rolling to rolling. Most of the land is favorably situated for farming, and improved machinery can be used on nearly all of it.

Surface drainage is good because the surface soil is sandy and porous, but on account of the rather impervious character of the subsoil, internal drainage is somewhat retarded. Because of the light sandy surface soil, the land is easy to till.

Helena sandy loam is an important agricultural soil, and about 60 per cent of it is in cultivation. The remainder is in forest consisting of post, white, and red oaks, shortleaf pine, and a few sweetgum, dogwood, and cedar.

The principal crops are corn and tobacco, a considerable acreage is planted to cowpeas, and wheat and clover are grown to some extent. Sweetpotatoes, garden vegetables, potatoes, sorgo cane, fruits, watermelons, and cantaloupes are grown for home consumption.

Corn yields from 15 to 25 bushels an acre, tobacco from 800 to 1,000 pounds of bright leaf, and wheat from 8 to 10 bushels. Cowpeas and clover give good returns. Corn receives 200 pounds an acre of 2–8–2 fertilizer, and some farmers give a side application of 75 or 100 pounds of nitrate of soda when the corn is about ready to tassel. Some farmers do not apply commercial fertilizer to corn but plant it following clover or cowpeas. Some cowpeas are planted in rows. between the corn rows or broadcast at the last cultivation. Tobacco land is fertilized with from 800 to 1,000 pounds an acre of 2–8–2 or 3–8–3 fertilizer, and some farmers give an application of nitrate of soda at the rate of 50 or 60 pounds an acre.

Helena sandy loam is deficient in organic matter, and this can be supplied by turning under green-manure crops, such as rye, cowpeas, or clover.

Table 6 gives the results of mechanical analyses of samples of the surface soil, the subsurface soil, and several layers of the subsoil of Helena sandy loam.

TABLE 6.—*Mechanical analyses of Helena sandy loam*

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
238024	Surface soil, 0 to 2 inches	3.2	3.8	20.4	38.6	5.5	21.7	6.8
238025	Subsurface soil, 2 to 10 inches	4.1	22.3	17.0	17.7	6.0	23.4	9.5
238026	Subsoil, 10 to 16 inches	4.0	20.1	14.8	13.2	4.9	24.6	18.4
238027	Subsoil, 16 to 32 inches	1.7	9.0	5.9	4.6	1.9	13.2	63.8
238028	Subsoil, 32 to 40 inches	.7	8.9	7.0	5.6	2.4	18.2	57.4

HELENA FINE SANDY LOAM

The main difference between Helena fine sandy loam and Helena sandy loam is that the fine sandy loam is finer in texture, that is the sand grains are smaller. It is a mellow and easily tilled soil.

This soil is developed in the southwestern and extreme southeastern parts of the county, in areas ranging in size from a few acres to about 1 square mile, and its total area in the county is 5.7 square miles. The largest bodies are northeast of Roseville, north of Cates, in the vicinity of Push, east of Clements Church, and in the southeastern corner of the county near Moriah.

Most of this soil occurs on smooth undulating ridges, but some of it lies on gentle slopes. Surface drainage is good, but underdrainage is slow on account of the rather impervious character of the subsoil.

Approximately 50 per cent of the land is under cultivation. The forest growth, crops, yields, and fertilizer treatment are practically the same as on Helena sandy loam.

HELENA VERY COARSE SANDY LOAM

In forested areas the surface soil of Helena very coarse sandy loam is covered by a thin layer of leaf mold, beneath which the material is light-gray very coarse porous sandy loam containing a small amount of organic matter to a depth of 1 or 2 inches. This layer is underlain by grayish-yellow very coarse sandy loam which continues to a depth of 8 or 10 inches and grades into pale-yellow friable coarse sandy loam. The subsoil, which begins at a depth of 15 or 18 inches, is mottled gray, yellow, and brownish-yellow heavy tough clay. It is underlain by decomposed aplitic granite and diorite. In some places the subsoil is yellowish-brown or mottled yellow and red tough clay. In places on the surface of cultivated fields the coarse sand particles are very noticeable. The surface soil in plowed fields is grayish yellow or dull yellow when dry but light gray when wet.

Helena very coarse sandy loam occurs almost entirely in the western part of the county, and has a total area of 9.4 square miles. The largest bodies are in the vicinities of Bushy Fork and Bushy Fork School, near Salem Church, and north of Hesters Store.

Most of this soil occupies interstream country, but some of it is on the gradual slopes. The surface relief ranges from undulating and

gently rolling to rolling. Owing to the open, porous character of the surface soil, surface drainage is good but underdrainage is not thorough because of the heavy structure of the subsoil. Most of the land lies well for farming, and the loose sandy surface soil is easy to till.

Approximately 65 per cent of the soil is used for crops, and the remainder is in forest. The forest growth, crops grown, yields, and fertilizer treatment are about the same as on Helena sandy loam.

IREDELL FINE SANDY LOAM

In wooded areas the surface of Iredell fine sandy loam, locally called "pipe clay land" or "blackjack oak land," is covered by a thin film of dark leaf mold. To a depth of 2 or 3 inches the surface soil is brownish-gray fine sandy loam containing a few brown rounded ironstone concretions. This layer is underlain by light-gray fine sandy loam containing a large amount of rounded brown ironstone concretions and extending to a depth of 8 or 10 inches. The subsoil is yellowish-brown or brownish-yellow heavy tough plastic impervious clay which extends to a depth ranging from 24 to 30 inches. If exposed to the atmosphere, the color of the subsoil clay changes to rust brown and the material cracks into large irregular-shaped lumps. Beneath the subsoil the material is green or greenish-yellow partly decomposed diorite rock which grades into the solid rock. In cultivated fields the surface soil, when dry, is light gray or dingy gray, but when wet it is light brown or grayish brown.

Local variations occur in the surface soil. In some places the ironstone concretions are more plentiful than in others. The depth of the surface layer varies, in some places nearly all the material being removed by erosion and the heavy clay coming near the top, and in other places the soft decayed parent rock is only a few inches below the surface and rock fragments are scattered over the surface. Included with this soil as mapped are a few areas of Iredell loam, in which the surface soil is slightly darker and heavier than in the fine sandy loam but is similar in other characteristics.

The largest areas of Iredell fine sandy loam are in the northwestern, western, and southwestern parts of the county, and smaller areas are in the central, eastern, and southeastern parts. The areas range in size from a few acres to large continuous bodies of about 2 square miles, and the total area of this soil in the county is 19 square miles. The largest areas are north of Shiloh Church, around and west of Woodsdale, south of McGehees Mill, south of Oak View School, east and west of Wheeleys Church, north of Whitfields Store, and northeast of Hurdle Mills. Smaller areas are in the central part of the county near Roxboro and Jalong, in the eastern part near Dennys Store, and in the southeastern part near Moriah.

In general, the soil occupies smooth interstream country, but some of it is on gradual slopes. The surface relief ranges from almost level to undulating, gently rolling, and rolling. Surface drainage in the undulating or rolling areas is good but in the nearly level areas is not well established. Underdrainage is everywhere slow on account of the heavy impervious character of the subsoil. Nearly all the land is favorably situated for cultivation, and improved machinery can be used on most of it.

Approximately 35 per cent of the land is under cultivation, some of it is in pasture, and the remainder is in forest consisting of post oak, white oak, cedar, shortleaf pine, old-field pine, and a few blackjack oak, sweetgum, and persimmon.

Corn is the leading crop, and some tobacco, wheat, cowpeas, clover, and oats are grown. Garden vegetables, sorgo cane, sweetpotatoes, and fruits are grown for home use. Corn yields from 15 to 25 bushels an acre, tobacco from 700 to 800 pounds of bright leaf, wheat from 8 to 12 bushels, and oats from 25 to 35 bushels. Cowpeas and clover give good returns.

Cornland receives from 200 to 300 pounds an acre of 2–8–2 fertilizer on some farms, but on others fertilizer is not used as corn is planted on land previously used for clover or cowpeas. Tobacco is given about 800 pounds an acre of 2–8–2 or 3–8–3 and wheat from 200 to 300 pounds of 2–8–2 fertilizer.

This soil is well suited to wheat, oats, corn, clover, cowpeas, and grasses, and it can be built up and kept in a good state of productiveness. The land is deficient in organic matter which can be supplied by turning under green-manure crops. More of the soil could be used for general farming or for grazing.

WILKES SANDY LOAM

In forested areas the surface of Wilkes sandy loam is covered by a thin coating of leaf mold. The surface soil consists of a 1 or 2 inch layer of gray sandy loam, containing a small amount of organic matter, underlain by grayish-yellow, pale-yellow, or light-brown friable sandy loam which extends to a depth of 8 or 10 inches, where the material passes into yellow or brownish-yellow friable sandy clay loam extending to a depth of about 15 inches. The subsoil is brownish-yellow or mottled brown, yellow, and gray heavy plastic sticky clay which cracks on drying but swells when wet. At a depth ranging from 2 to 3 feet the subsoil passes into gray, brown, or green soft decayed rock. The soil is derived from beds of granite and gneiss which have been cut by intrusions of diorite, diabase, and other dark-colored basic rock. On account of the mixed character of the parent rock, the soil for the greater part represents a condition rather than a definite soil type.

Over extensive areas there is much variation in the surface soil and also in the subsoil. In many places the surface soil and the upper part of the subsoil are similar to corresponding layers of the Durham or Appling soils, and the lower part of the subsoil is similar to the subsoil of the Iredell soils. The surface soil in cultivated fields is grayish yellow or brownish yellow when dry but is darker when wet. In some places the underlying rock is near the surface, and broken angular fragments are on the surface. Included with Wilkes sandy loam in mapping are areas of fine sandy loam and coarse sandy loam, but the soil in such places is not uniform over a large area.

Wilkes sandy loam occurs in the northern, northwestern, western, and southwestern parts of the county. It is one of the most extensive soils in the county and includes a total area of 57.3 square miles. It is developed in almost continuous areas along the slopes of Hyco River and parts of Castle, Marlowe, Ghents, North Hyco,

and South Hyco Creeks and their tributaries. Large bodies are northwest of Bethel Hill, north of Woodsdale, east and west of McGehees Mill, southwest of Cunningham, northwest of Ceffo, west of Concord Church, north of Leas Chapel, northwest of Hesters Store, and west of Salem Church.

The soil is developed mainly on steep slopes, and the surface relief is rolling, steep, or broken, with only a few smooth areas. This soil includes some of the steepest and most broken land in the county. On account of the relief, surface drainage ranges from good to excessive and many gullies and eroded areas occur on the steeper slopes. Underdrainage is somewhat slow on account of the heavy plastic character of the subsoil.

Wilkes sandy loam, although of comparatively large extent, is not extensively used for agriculture. About 25 per cent of the land is cultivated, and the remainder is forested with white and post oak, shortleaf pine, and a few blackjack oak, cedar, hickory, dogwood, and persimmon. Many abandoned fields are covered with broom sedge and others with a small growth of old-field pine.

The principal crops are tobacco and corn, and some cowpeas, clover, and wheat are grown. Sweetpotatoes, garden vegetables, fruits, and sorgo cane are grown for home consumption.

Tobacco yields from 600 to 800 pounds an acre of bright leaf, and corn from 15 to 20 bushels. Tobacco is fertilized with about 800 pounds an acre of a 2–8–2 or 3–8–3 mixture, and corn is given an acreage application of about 200 pounds of 2–8–2 fertilizer by some farmers.

A large part of Wilkes sandy loam, on account of its steep broken relief, is probably best suited to forestry, and some parts of it could be sown to grass and used for pasture. The land when cleared should be terraced or winter cover crops should be planted to prevent soil erosion.

DURHAM FINE SANDY LOAM

In wooded areas the surface soil of Durham fine sandy loam to a depth of 3 or 4 inches is light-gray fine sandy loam, containing a small amount of organic matter. This layer is underlain by pale-yellow mellow fine sandy loam extending to a depth of 12 or 15 inches. The subsoil is yellow friable crumbly clay which at a depth ranging from 30 to 34 inches passes into mottled yellow and light-gray friable clay, with a few spots of red. The subsoil is underlain by almost white, with ocherous-yellow mottlings, soft decomposed granite or gneiss. In cultivated fields the surface soil is grayish yellow or slightly brownish yellow when dry and light gray when moist. Included with the soil as mapped are a few areas of Durham sandy loam, which occur east of Concord Church, near Lambeth Church, Clements Church, and Hurdle Mills.

Durham fine sandy loam occurs almost exclusively in the southwestern part of the county, the largest areas being southeast of Wheeleys Church, southwest of Hurdle Mills, and north of Push. This soil is not extensive in Person County.

The soil is developed mainly on smooth undulating interstream ridges, but some of it occurs on slopes to drainage ways. The relief is undulating, gently rolling, and rolling, and both surface drainage and underdrainage are well established. The land lies favorably for

cultivation, and improved machinery can be used on most of it. The soil is easy to till and can be plowed soon after rains.

Approximately 65 per cent of Durham fine sandy loam is cultivated, and the remainder is in forest consisting of white, post, and red oaks, a few hickory, dogwood, sourwood, cedar, poplar, and maple.

Tobacco and corn are the main crops, and some oats, wheat, and clover are grown. Garden vegetables, sweetpotatoes, sorgo cane, and fruits are produced for home supply.

Tobacco yields from 800 to 1,000 pounds of bright leaf and corn from 15 to 25 bushels an acre. Tobacco is fertilized with about 800 pounds an acre of 2-8-2 or 3-8-3 fertilizer and corn with 200 pounds of 2-8-2 fertilizer and a side application of about 50 pounds an acre of nitrate of soda. Some farmers do not use commercial fertilizer on cornland.

Durham fine sandy loam is deficient in organic matter, and this can be added by growing and turning under rye, clover, or cowpeas. It is especially well adapted to bright tobacco.

Table 7 gives the results of mechanical analyses of samples of the surface soil, the subsurface soil, and several layers of the subsoil of Durham fine sandy loam.

TABLE 7.—*Mechanical analyses of Durham fine sandy loam*

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
238033	Surface soil, 0 to 4 inches	0.7	3.0	12.4	22.8	13.3	36.6	11.3
238034	Subsurface soil, 4 to 14 inches	.8	2.9	11.8	20.6	12.3	49.9	1.7
238035	Subsoil, 14 to 34 inches	.9	2.5	10.7	13.5	7.8	60.7	4.1
238036	Subsoil, 34 to 50 inches	.4	2.3	8.6	8.8	6.7	19.9	53.5
238037	Subsoil, 65 + inches	.5	10.7	9.2	9.0	12.4	27.6	30.6

ORANGE SILT LOAM

In forested areas a thin film of leaf mold and in places a growth of moss covers the surface of Orange silt loam. The surface soil, to a depth of about 2 inches, is grayish-yellow silt loam. This layer is underlain by pale-yellow smooth floury silt loam ranging in depth from 15 to 18 inches. The subsoil is brownish-yellow plastic heavy impervious clay, in places faintly mottled with dull red or gray, extending to a depth ranging from 24 to 30 inches, where it is underlain by ocherous-yellow, brown, black, or green decomposed bedrock. The surface soil in cultivated fields when dry is grayish yellow or almost white and when wet is light gray. The depth to the subsoil is variable. In places the heavy clay lies within a few inches of the surface, and in other places the underlying parent rock is only a few inches below the surface and fragments of rock are scattered over the surface but not in sufficient quantities to alter the texture of the soil.

Orange silt loam is developed mainly in the eastern and northeastern parts of the county, in close association with the Georgeville and Alamance soils. The areas range in size from a few acres to about 2 square miles. The largest bodies are south of Five Fork School, north of Lawsons Chapel, east and west of Olive Branch

Church, near High Plain School, north of Mill Creek Church, south of Allens Church, northeast of Allensville, near Picks, and south of Claytons Store. Its total area in the county is about 20 square miles.

The soil occurs principally on smooth interstream country, but some of it is on gradual slopes to drainage ways. Its relief ranges from nearly level to undulating and gently rolling. Surface drainage on the nearly level areas is poor but ranges from fair to good on the more rolling areas. Underdrainage is somewhat retarded by the heavy impervious subsoil. The surface soil bakes when dry and is sometimes difficult to plow. However, most of the land lies well for farming, and improved machinery can be operated nearly everywhere.

About 40 per cent of the land is cultivated, and the remainder is forested with white, post, scrub, and blackjack oaks, shortleaf pine, cedar, and persimmon. A number of abandoned fields support a growth of old-field pine and an undergrowth of broom sedge.

Corn and tobacco are the leading crops, and some wheat, clover, cowpeas, and oats are grown. Garden vegetables, sweetpotatoes, sorgo cane, and fruits are grown for home use.

Corn yields from 10 to 25 bushels an acre, tobacco from 600 to 800 pounds, and wheat from 8 to 10 bushels, and cowpeas, clover, and oats give fair returns. The fertilizer treatment for corn and tobacco is about the same as for similar crops on Alamance silt loam.

The soil is deficient in organic matter, and this can be supplied by such green-manure crops as rye, clover, or cowpeas. Liming would probably be beneficial to the soil and would help to improve the working qualities. More of the land could be sown to grass and used for pasture.

Orange silt loam, gravelly phase.—Orange silt loam, gravelly phase, is similar in the surface soil and subsoil to the typical silt loam except that sufficient gravel is scattered over the surface and mixed with the soil to give it a gravelly texture. The gravel content ranges from 20 to 40 per cent of the soil mass and in most places consists of brown somewhat rounded slate particles, in other places being composed of thin platy pieces of slate. Included with this soil as mapped are small areas of Iredell gravelly loam which were not of sufficient total extent to indicate on the map.

Soil of this phase occurs mainly in the eastern part of the county. Its total area is 17.3 square miles. The largest areas are east and northeast of Olive Branch Church, northeast and southwest of Durgy Mine, south of Allensville, and in the vicinities of Surl and Glenns Store.

Most of this gravelly soil occupies positions on smooth interstream country, although some of it occurs on gradual slopes to drainage ways. The relief ranges from almost level and undulating to gently rolling and rolling. Surface drainage ranges from fair to good, but in the more nearly level places it is not well established. Underdrainage is slow on account of the heavy impervious character of the clay subsoil.

Approximately 40 per cent of the land is cultivated, and the remainder is in forest similar to that on Orange silt loam.

The chief crops are corn and tobacco, some wheat, clover, oats, and cowpeas are grown, and garden vegetables, sweetpotatoes, and fruits are grown for home consumption. The crops grown, yields, and fertilizer treatment are about the same as those on Alamance

gravelly silt loam, and the suggestions for the improvement of that soil will also apply to this soil.

More of the land could be used for general farming or sown to grass for pasture, and some of it should remain in forest.

Table 8 gives the results of mechanical analyses of samples of the surface soil, the subsurface soil, and two layers of the subsoil of typical Orange silt loam.

TABLE 8.—*Mechanical analyses of Orange silt loam*

No.	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
238038	Surface soil, 0 to 2 inches	2.4	4.0	1.8	8.0	12.7	59.9	11.3
238039	Subsurface soil, 2 to 16 inches	4.1	4.1	2.1	6.2	9.5	58.6	15.5
238040	Subsoil, 16 to 24 inches	2.9	1.2	.9	2.7	4.2	31.1	57.1
238041	Subsoil, 24 + inches	5.2	10.9	4.7	6.0	6.3	31.3	35.6

DAVIDSON CLAY LOAM

The 3 or 4 inch surface layer of Davidson clay loam in forested areas consists of a thin layer of dark leaf mold overlying dark-brown heavy loam which contains a large amount of organic matter. It is underlain by dark reddish-brown clay loam extending to a depth of 7 or 8 inches. The subsoil is dark-red or maroon heavy stiff smooth clay extending to a depth of about 40 inches, where it passes into light-red friable clay with yellow mottlings. Beneath the subsoil, the material is ocherous-yellow and light-red soft decomposed basic rock. The surface soil in cultivated fields is dark red or reddish brown. A few dark-colored basic rocks occur on the surface in places.

Davidson clay loam is developed in scattered areas in the northern, eastern, and southern parts of the county, the largest areas occurring northwest and southwest of Woodsdale, near Mill Creek Church, north of Jalong, near Catilina, at Mount Tirzah, near Hurdle Mills, and southwest of Timberlakes Store along the Orange County line.

Most of the soil occupies slopes, but some of it occurs on the ridge crests. The areas are undulating, gently rolling, or rolling, and both surface drainage and internal drainage are good. On some of the steeper slopes, erosion is active and in places the red clay subsoil has been exposed. Owing to the rather heavy texture of the surface soil, the land can not be tilled so soon after rains as the lighter sandy soils. Most of the land lies well for farming.

About 60 per cent of the land is cultivated, and the remainder is forested with exceptionally large white, post, and red oaks, shortleaf pine, and a few poplars, dogwood, cedar, and walnut. Sassafras bushes grow in some places.

The leading crops are corn and wheat, and clover, cowpeas, and oats are grown to some extent. Garden vegetables, potatoes, sweetpotatoes, and fruits are grown to meet home needs.

Corn yields from 25 to 35 bushels an acre, wheat from 15 to 30 bushels, and clover, oats, and cowpeas give good yields. Some farmers apply from 200 to 300 pounds of 2–8–2 or 2–9–2 fertilizer to cornland, and others plant corn on land previously used for

clover or cowpeas. Wheat receives from 200 to 300 pounds an acre of 2–8–2 or 0–10–6 fertilizer.

Davidson clay loam is well suited to wheat, oats, corn, clover, alfalfa, and grasses and is naturally one of the strongest soils in the county. It is considered a choice alfalfa, clover, and wheat soil in other parts of the State. Deeper plowing and the incorporation of organic matter would improve the land.

MECKLENBURG LOAM

The surface soil of Mecklenburg loam consists of a 6 or 8 inch layer of brown loam which in forested areas is covered by a thin layer of brown leaf mold. The subsoil to a depth ranging from 18 to 30 inches is reddish-brown heavy stiff and slightly plastic clay which is underlain by ocherous-yellow, mottled with reddish brown, heavy plastic clay. Beneath the subsoil is ocherous-yellow, streaked with black, soft decomposed diorite rock. In cultivated fields the surface soil is brown or reddish brown when dry and is darker when wet. Locally small rounded ironstone concretions are present in the soil and fragments of the underlying rock are scattered over the surface.

Mecklenburg loam occurs in a few comparatively small bodies mainly in the western and southwestern parts of the county, the largest areas being north and east of Hurdle Mills, near Whitfields Store, southwest of Salem Church, and west of Concord Church.

This soil is developed on smooth interstream country and on slopes to drainage ways. The areas are undulating, gently rolling, or rolling, and drainage is good.

About 60 per cent of the land is in cultivation, and the remainder is in forest consisting of white, post, and red oaks, shortleaf pine, and a few hickory, dogwood, and cedar. Some abandoned fields support a growth of old-field pine.

Corn and wheat are the principal crops, and the yields and fertilizer practices are about the same as for the same crops on Davidson clay loam.

CONGAREE LOAM

The surface soil of Congaree loam is brown loam to a depth of 12 or 15 inches. It passes into slightly lighter-brown silt loam or silty clay loam which extends to a depth of 30 or more inches. In places the lower part of the soil is mottled with gray or yellow. Included with this soil as mapped are narrow bands of Congaree fine sandy loam, most of which occur near the streams or as low ridges away from the streams. Some areas of Congaree silt loam are also included, the largest being west of Woodsdale on Marlowe Creek. The silt loam soil is brown and is slightly heavier in texture than the loam. Included also are a few narrow strips of soil, lying slightly higher than the Congaree soil, in which the surface soil is grayish-yellow fine sandy loam and the subsoil is yellow friable fine sandy clay. These strips would have been mapped as Altavista fine sandy loam if they had been more extensive. Congaree loam in most places contains finely divided mica flakes through the soil and subsoil.

This soil is developed in the first bottoms along streams in the northern and northwestern parts of the county. It is an alluvial

soil and has been formed through depositions of sediment carried by running water from the adjoining slopes. It occurs in narrow bands or strips ranging in width from a few feet to about one-fourth mile, and its total area is 4.4 square miles. Some of the largest bodies are on Maho and Castle Creeks and parts of North Hyco Creek and Hyco River.

The surface relief of Congaree loam is nearly level or slightly undulating, with a slight gradient toward the stream and in the direction of stream flow. Low ridges and slight depressions occur in places. Natural surface drainage and underdrainage are not everywhere well established, and ditches are necessary to give the soil sufficient drainage. This soil lies only a few feet above the normal level of the streams and is subject to overflow.

About 35 per cent of Congaree loam is in cultivation, and a considerable area is used for summer pasture land. The vegetal growth consists of a few sycamore, willow, birch, and sweetgum trees, and in places an undergrowth of alder bushes and other water-loving plants.

Corn and hay are the principal crops. Corn yields from 25 to 40 bushels an acre without the application of fertilizer. Hay is cut from the native grasses and yields about 1 ton an acre.

Congaree loam is a good fertile soil and is especially suited to corn and hay crops. More of the land could be utilized for crops if the creeks were properly dredged and the land ditched and thoroughly limed. Chemical analyses of the Congaree soils in other counties of the State indicate that they are fairly well supplied with plant food.

MEADOW

Meadow includes mixed soil materials so varied in color, texture, and structure that they can not be separated into definite soil types. The soil is composed of alluvial material, together with some colluvial wash from near-by slopes, which ranges in texture from sand to fine sand and silt. In places the surface material is brown or light-brown silt loam which is underlain by alternating layers of sand. Mica flakes occur in most places throughout the soil. Small areas of Congaree silt loam and Congaree loam are included with meadow in mapping.

Meadow occurs in the first bottoms of many of the streams of the county, in narrow strips ranging in width from a few feet to nearly one-fourth mile. The soil lies only a few feet above the normal level of the streams, so that it is subject to frequent overflows, and new material is added. The relief is nearly level or sloping with the direction of stream flow, and some of the land is in a saturated condition during part of the year.

The largest areas of meadow are along South Hyco, Storys, Ghents, and Marlowe Creeks, and smaller bodies are along creeks in other parts of the county. The total area of meadow in the county is 6 square miles.

A few small areas of meadow are used for corn, some are used for hay crops, and some are used for summer pasture. Much of the land supports a growth of willow, birch, and sweetgum and an undergrowth of alder bushes, reeds, and bulrushes.

Meadow, if thoroughly drained and limed, would in places produce fair yields of corn.

SOILS AND THEIR INTERPRETATION

Person County lies wholly within the piedmont plateau, a physiographic region which extends from New Jersey to Alabama. The elevation of the county ranges from about 400 to 650 feet above sea level. The relief is prevailingly rolling, and natural surface drainage ranges from good to excessive, owing to the surface relief, the open porous character of the soils, and the friability of the lower soil strata.

The soils are dominantly light in color, ranging from light gray and pale yellow to reddish brown and brown. Conditions have not been favorable for the accumulation of large amounts of vegetable matter in the soils and because of this they are deficient in organic matter. In the forested areas a thin layer of leaf mold covers the surface and a comparatively small amount of organic matter is mixed with the first inch or two of the surface soil, but when the land is cleared of forest and cultivated the small amount of organic matter is soon disseminated.

In this region of rather heavy rainfall and warm temperature, active leaching continues throughout the greater part of the year, as the soil is not frozen to so great a depth or for so long a time as the soils in latitudes farther north. It is probably due mainly to the washing out of the soluble plant foods through the process of leaching that the surface soils do not contain so high a content of plant-food elements as the subsoil, and, further, the fact that much of the land is bare during the winter and is used largely for clean-cultivated crops during the summer may account for some of the loss of plant food from the surface soil. On account of the leaching process, free carbonate of lime has not accumulated in the soil, although calcium is present in the mineral constituents of the rocks, and all the soils of the county are slightly acid.

Changes due to the influence of surface configuration and the action of rainfall are evident in many of the soils. Through erosion and gullying, which have in many places reached serious proportions, not only have the surface features been changed but also the soil texture itself. In places the sandy or silty surface material has been entirely removed, exposing the underlying heavier material of the B horizon or the partly disintegrated rock. The results of erosion are particularly noticeable in areas of the Cecil, Georgeville, Appling, Iredell, and Wilkes soils.

The soil-forming material is derived from medium-grained and fine-grained granite, gneiss, mica schist, slate, diorite, diabase, and hornblende schist. The bedrock occurs at a depth ranging from a few feet to 20 or more feet, but the disintegrated rock in most places is from 4 to 10 feet below the surface. There is no uniformity in the color, texture, or structure of the partly decomposed rock which underlies the uniformly heavy or well-oxidized subsoil, or B horizon. The surface soil ranges from light to heavy, the texture ranging from light sandy loam to silt loam, silty clay loam, and clay loam. The light sandy loams are extensive and occur in the central and throughout the western parts of the county. Rock fragments and

bowlders are on the surface in places, and large areas of gravelly soil occur in the eastern half of the county.

A striking feature of the texture profile of the well-developed or normal soils is the presence in most of them of a comparatively light-textured surface layer, or A horizon, which is underlain by the heavier-textured, uniformly colored, and well-oxidized B horizon, and this by a third still deeper layer, or C horizon, which may vary considerably in texture but is prevailingly lighter than the second layer, or B horizon, but in some places heavier than the surface layer, or A horizon. The textures of these layers differ greatly in the soils of the county, the surface layer, or A horizon, ranging from very coarse sandy loam and gravelly silt loam to clay loam; the second layer, or B horizon, consisting of friable or heavy clays; and the third layer, or C horizon, being composed of partly decomposed or disintegrated rock material lying beneath the B horizon. This rock material is extremely variable in color and texture and is without definite structure.

There is a direct relationship in this county between the soil profile and the rocks from which the soils have been derived. All the soils in Person County, with the exception of a few strips of recent alluvium, have been formed, in situ, from the underlying rock formations. The various textures, colors, structures, and consistences of the material resulting from the disintegration and decay of these rocks are, in a large measure, traceable to the influences of climate, aeration, and oxidation. The thickness of the B horizon, which is usually from about 2 to 6 or more feet, of the normally developed soils and the uniform color and consistence of the material indicate that the soils are very old.

The different soils of the county are grouped into series on the bases of the origin, color, and consistence of the soil material, general topographic features, and drainage conditions. The individual types in the series differ from each other in the percentage of sand, silt, and clay contained in the surface soils.

The soils of the Cecil, Appling, and Durham series have been derived from the weathering of granite, gneiss, and, to less extent, of schist. The difference in color of these soils is wide, and there is also considerable difference in their consistence, especially in the B horizon. In the Cecil soils, the red color of the B horizon is due to the high content of iron compounds contained in the original material. The decidedly yellow color of the B horizon of the Durham soils is due to the fact that the rocks from which this material is derived do not contain so high a percentage of iron compounds. Analyses of Cecil and Durham soils show that the B horizons of Cecil soils contain approximately 10 per cent Fe_2O_3 whereas the B horizons of Durham soils contain from 3.5 to 4 per cent Fe_2O_3. The differences in color are probably due to differences in amount of iron or differences in the hydration of the ferric oxide, the more highly hydrated oxides being yellow and the least hydrated oxides being red. The degree of oxidation will be the same in either case. The B horizon of the Appling soils shows considerable fine mottling and streaking of reddish yellow and yellow. The mottlings are probably due to an unequal distribution of ferric oxide or to differences in hydration of ferric oxide rather than to poor drainage.

A large part of the county is underlain by fine-textured slates, called the "Carolina slates." As these slates are decidedly fine grained, they have given rise to soils extremely high in silt, which are classified in the Georgeville and Alamance series. The surface soils have a smooth floury feel and are underlain by smooth silty clay B horizons. These soils very closely resemble each other, and the principal difference between them in many places is in color which may be due to aeration, drainage, and oxidation of the iron compounds in the parent rock. The Georgeville soils are developed in slightly more rolling and hilly areas, and they are consequently better drained than the Alamance soils.

Both mature and young soils in this county are derived from the same kind of rock, that is, dark-colored basic rocks, such as diorite, diabase, gabbro, and hornblende schist, and have given rise to such soils as the Davidson, Iredell, and Mecklenburg soils. The differences in the soil profiles are due to the stage of development and oxidation of the material. In the Davidson soils, the dark-red color of both the A and B horizons indicates complete oxidation of the iron compounds; the structure, the consistence, the uniform color, and the thickness of the B horizon indicate rather complete weathering and oxidation. The Iredell soils have a gray A horizon and a brownish-yellow B horizon. The B horizon consists of an extremely heavy plastic and puttylike clay and in most places ranges from 12 to 24 inches in thickness. Below this is greenish-yellow soft diorite rock. The Mecklenburg soils are intermediate between the Davidson and Iredell soils in color and structure of their profile.

Extensive areas of the Orange, Helena, and Wilkes soils occur in the county. These soils may be considered young, or, in the Wilkes, a degraded soil. The A horizons of soils of the Orange series resemble the A horizons of the Alamance soils, but the B horizons are variable and have the characteristics of the B horizons of the Iredell soils. The Orange soils are derived from slates and dark-colored fine-grained rocks associated with the slates. The Helena soils have A horizons similar to the Appling soils, but the B horizons are decidedly heavier and mottled. These soils are derived from aplitic granite and diorite. The Wilkes soils do not have a normally developed soil profile due to the fact that the areas of these soils are badly eroded and also to the fact that they are derived from a mixture of rocks such as granite, gneiss, diorite, and pegmatite.

The Congaree soils and meadow represent deposits of recent-alluvial material in the first bottoms along the streams. This material has been washed from the uplands, brought down and deposited at times of overflow. The material is so recent in age and is so poorly drained that no normal soil profile has developed.

The following profile descriptions of a few normally developed soils taken from forested areas will illustrate the color and structural differences of the soil series:

In Cecil fine sandy loam, 2½ miles west of Cunningham, horizon A_1, from 0 to 1 inch, is gray fine sandy loam containing a small amount of organic matter, with a thin layer of moss on the surface; horizon A_2, from 1 to 12 inches, is light-yellow fine sandy loam, mellow and friable, having a single-grained structure; horizon B_1, from 12 to 17 inches, is yellowish-red or reddish-yellow friable fine sandy

clay; horizon B_2, from 17 to 60 inches, is red stiff but brittle clay, breaking readily and crumbling easily into a fine granular mass; horizon B_3, from 60 to 70 inches, is light-red, with streaks of yellow and purple, friable clay; and horizon C, from 70 inches downward, is purplish-red, with yellow and white spots, very friable decomposed schist.

In Appling sandy loam, near Lambeth Church, horizon A_1, from 0 to ½ inch, is dark-gray leaf mold; horizon A_2, from ½ to 2 inches, is gray loamy sand; horizon A_3, from 2 to 10 inches, is grayish-yellow light friable sandy loam of single-grained structure; horizon B_1, from 10 to 15 inches, is yellow friable sandy clay; horizon B_2, from 15 to 24 inches, is yellowish-red stiff but brittle clay; horizon B_3, from 24 to 36 inches, is mottled or streaked yellow and red stiff but brittle clay, more friable than the B_2 horizon; horizon C_1, from 36 to 50 inches, is reddish-yellow, with a mingling of light yellow and light red, very friable decomposed granite; and horizon C_2, from 50 inches downward, is soft decomposed granite having a mingled color of yellow, brown, and white.

In Helena sandy loam, 1¼ miles northwest of Helena, horizon A_1, from 0 to 2 inches, is light-gray loamy sand, with a veneer of soft smooth moss on the surface; horizon A_2, from 2 to 10 inches, is grayish-yellow light sandy loam; horizon A_3, from 10 to 16 inches, is pale-yellow, with splotches of light gray and brownish yellow, heavy sandy loam which when crushed and mixed is pale-yellow heavy sandy loam; horizon B_1, from 16 to 32 inches, is mottled light-gray or steel-gray, yellow, and brownish-yellow heavy tough silty clay which breaks into irregular-shaped lumps with no definite cleavage, the yellow or brown colors or stains being more noticeable along breakage lines than on the inside of the soil particles; and horizon B_2, from 32 to 40 and more inches, is very light-gray or almost white silty clay with brownish-yellow mottlings and some soft friable spots of reddish-brown iron accumulations. This layer is more friable than the B_1 horizon and it is very variable in color. The underlying rocks are aplitic granite, slates, and quartz diorite. In some places the B_1 horizon is brownish-yellow or yellowish-brown heavy plastic clay similar to that in the Iredell soil.

In Georgeville silty clay loam, 2½ miles northwest of Moores Mill, horizon A_1, from 0 to 3 inches, is light-brown heavy silt loam, with a thin layer of brown leaf mold on the surface; horizon A_2, from 3 to 7 inches, is yellowish-red heavy silty clay loam; horizon B_1, from 7 to 40 inches, is red, stiff, smooth, and brittle silty clay, breaking into large lumps which easily break down into small angular and subangular soil particles; horizon B_2, from 40 to 60 inches, is light-red friable silt loam which is more friable than the B_1 horizon; and horizon C, from 60 inches downward, is purple and yellow material containing some white soft smooth decomposed slate.

In Alamance silt loam, 2 miles west of Moores Mill, horizon A_1, from 0 to 2 inches, is light-gray silt loam with brown leaf mold on the surface; horizon A_2, from 2 to 8 inches, is pale-yellow silt loam; horizon B, from 8 to 26 inches, is yellow friable silty clay which grades into a 4-inch layer of soft mottled brown and gray rock material; and horizon C, from 30 inches downward, is soft disintegrated gray and yellow slate.

In Iredell fine sandy loam, 1 mile south of McGehees Mill, horizon A_1, from 0 to 3 inches, is brownish-gray fine sandy loam containing a few ironstone concretions; horizon A_2, from 3 to 9 inches, is light-gray fine sandy loam carrying a large amount of small soft ironstone concretions; horizon B, from 9 to 28 inches, is yellowish-brown heavy tough plastic impervious clay which becomes rust brown on exposure to the atmosphere, cracks badly, and breaks into large lumps which are difficult to separate into soil particles, and which swells when wet; and horizon C, from 28 inches downward, is green soft decomposed diorite.

In Davidson clay loam, at Mount Tirzah, horizon A_1, from 0 to 4 inches, is dark-brown heavy loam, containing a large amount of organic matter, with a thin layer of brown leaf mold on the surface; horizon A_2, from 4 to 8 inches, is dark reddish-brown clay loam; horizon B_1, from 8 to 42 inches, is dark-red or maroon heavy stiff smooth clay which breaks into irregular-shaped lumps and finally crumbles down into a granular mass, and in which a cut surface is yellowish red; horizon B_2, from 42 to 54 inches, is light-red, mottled with yellow, friable clay; and horizon C, from 54 inches downward, is ocherous-yellow and light-red soft decomposed basic rock.

SUMMARY

Person County lies in the north-central part of North Carolina, adjoining the Virginia State line. The southern boundary is about 15 miles north of Durham.

The surface relief ranges from undulating, gently rolling, and rolling to strongly rolling, steep, and broken. Surface drainage ranges from good to excessive, but underdrainage in some places is not well established on account of a heavy impervious clay subsoil.

Railroad facilities are sufficient for the present needs of the county, and State highways extend through nearly all sections. Churches and consolidated schools are located at convenient points. Roxboro is the only market within the county, and Durham and Mebane, N. C., and Danville and South Boston, Va., are near-by outside markets.

The climate is continental, and there is considerable difference between the summer and winter mean temperatures. The rainfall is ample, and the frost-free season is long enough for the maturing of the crops commonly grown.

The important crops grown are corn, tobacco, hay and forage, and wheat. Tobacco is the money crop and practically all business is based on its production. Corn and tobacco lead in acreage. The corn, hay and forage, and wheat are produced almost exclusively for use on the farm.

The total area of the county is 401 square miles. According to the 1930 census the population is 22,039, and the average density of the rural population is 56.4 persons to the square mile. The average size of farms in 1925 was 76.1 acres.

The soils of the county are grouped in the following soil series: The Appling, Cecil, Georgeville, Alamance, Helena, Iredell, Wilkes, Durham, Orange, Davidson, Mecklenburg, and Congaree. Meadow is a miscellaneous classification. The soil series are represented by a total of 22 soil types and 2 phases of soils. Appling sandy loam,

Appling fine sandy loam, Georgeville silty clay loam, Georgeville silt loam, Alamance silt loam, Helena sandy loam, Helena very coarse sandy loam, Iredell fine sandy loam, Wilkes sandy loam, Orange silt loam, and Orange silt loam, gravelly phase, constitute the main agricultural soils. The Appling and other light-colored and sandy-textured soils are used extensively for the production of tobacco.

Person County has a great variety of soils which are adapted to many kinds of crops. The climate is favorable to the production of many different crops, including winter cover crops. The rolling topography, high elevation, and good surface drainage contribute to the healthfulness of the region. Good drinking water from wells or springs is available in all parts of the county.

The county includes many acres of forested and cut-over land and abandoned fields that could be reclaimed for agriculture. Much more land could be used for pasture than at present, and cattle raising could be further expanded. The price of improved land is reasonable.

O

[PUBLIC RESOLUTION—No. 9]

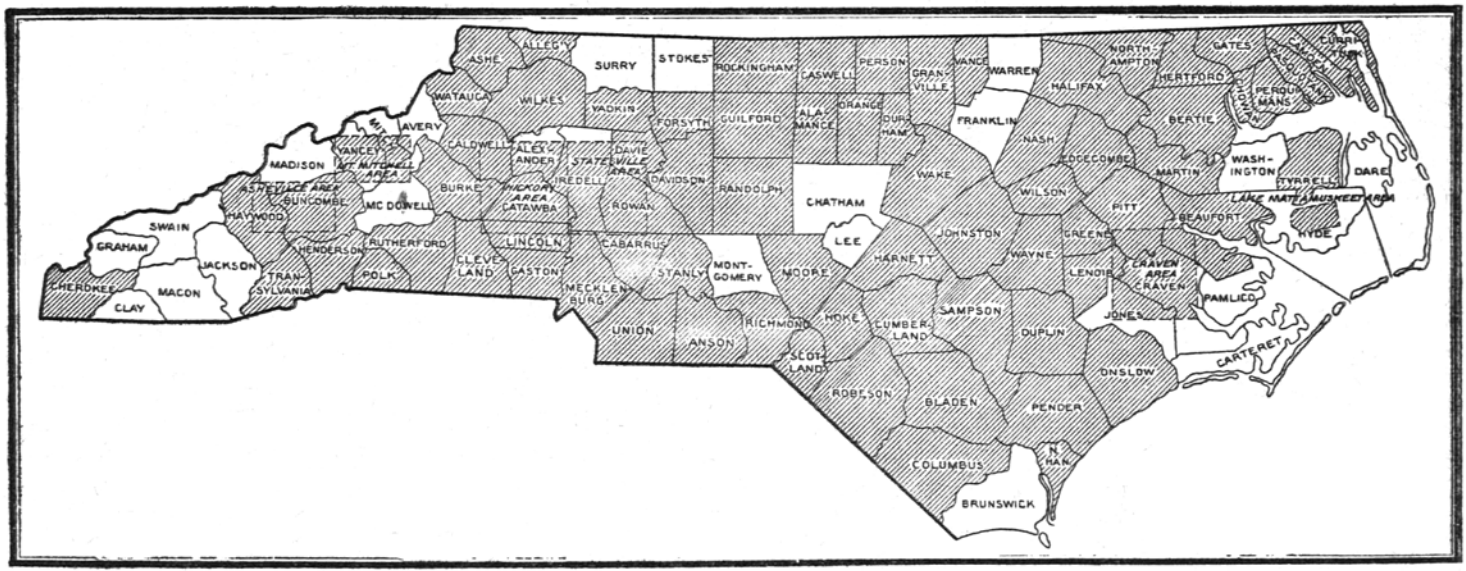
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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

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

Approved, March 14, 1904.

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



Areas surveyed in North Carolina, shown by shading

U. S. GOVERNMENT PRINTING OFFICE: 1931

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