Issued June 22, 1908.

U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE,
S. L. PATTERSON, COMMISSIONER, B. W. KILGORE, STATE CHEMIST.

SOIL SURVEY OF EDGECOMBE COUNTY, NORTH CAROLINA.

BY

W. EDWARD HEARN,

ASSISTED BY G. M. MACNIDER, OF THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE.

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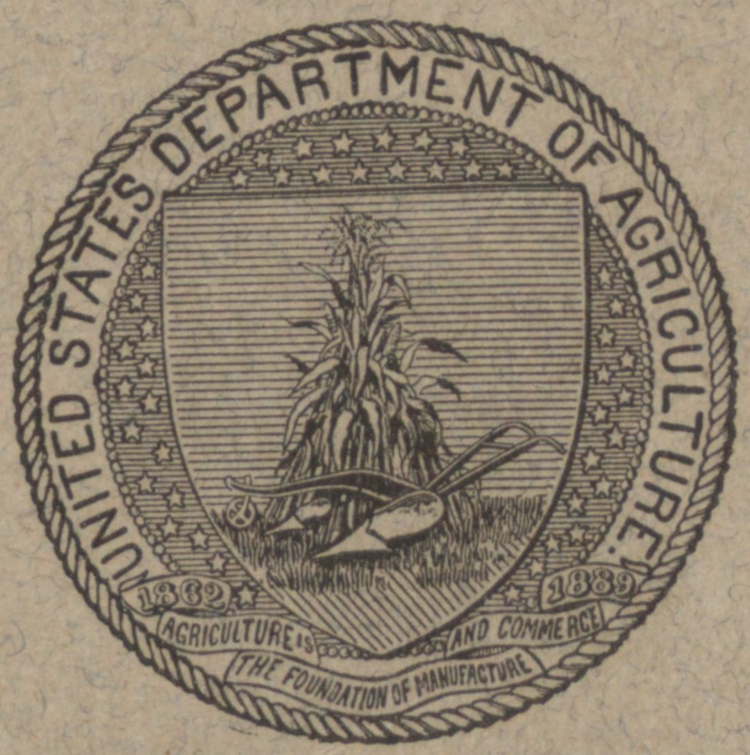
RETURN AT ONCE TO
E. C. BRANSON
CHAPEL HILL, N. C.

[Advance Sheets—Field Operations of the Bureau of Soils, 1907.]



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1908.

[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.]

Issued June 22, 1908.

U. S. DEPARTMENT OF AGRICULTURE,

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1908.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., January 7, 1908.

SIR: A soil survey of Edgecombe County, N. C., was made during the summer of 1907 for the purpose of learning the character and distribution of the various soil types and their individual capacities for the production of different crops. The survey was made in cooperation with the North Carolina State department of agriculture, and at the request of Prof. B. W. Kilgore, State chemist and director of the State experiment station. I have the honor to transmit herewith the manuscript report and map covering the investigations made and to recommend their publication as advance sheets of the Field Operations of the Bureau of Soils for 1907, as provided by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

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MAP.

Soil map, Edgecombe County sheet, North Carolina.

SOIL SURVEY OF EDGECOMBE COUNTY, NORTH CAROLINA.

By W. EDWARD HEARN, assisted by G. M. MACNIDER.

DESCRIPTION OF AREA.

Edgecombe County lies about the center of the northeast part of the State of North Carolina, being about 65 miles east of Raleigh. The county is bounded on the east by Martin County, on the north by Halifax County, on the west by Nash County, the Atlantic Coast Line Railroad forming the boundary, and on the southwest and south by Wilson and Pitt counties. The county is irregular in shape, and

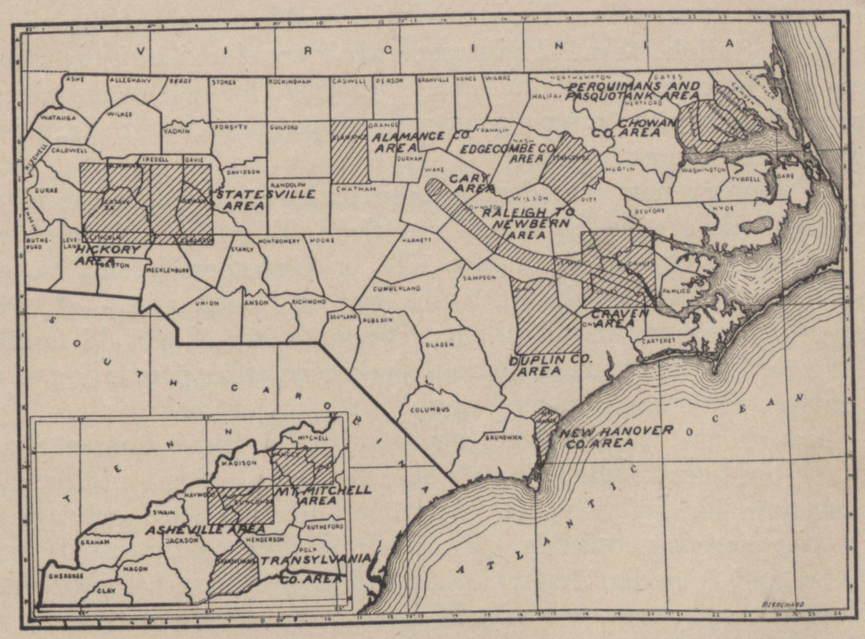

FIG. 1.—Sketch map showing location of the Edgecombe County area, North Carolina.

a little longer north and south than it is east and west. It contains 329,920 acres of land, or about 515 square miles. The Edgecombe County test farm of the North Carolina department of agriculture is located about midway between Tarboro and Rocky Mount, on the lower road about 2 miles south of Kingsboro.

The general surface features of Edgecombe County consist of level, undulating, and rolling areas intersected by a few strips of swamp following the streams. The main slope of the county is to the southeast, except along the eastern side, where it is to the southwest toward the Tar River. The broad level and undulating areas lie along the eastern border and in the southern and central parts, while the gently rolling and rolling areas occur as the western and southwestern parts of the county are approached. The more rolling areas are found adjacent to the swamps along the creeks and small streams. The surface of the county varies in elevation from about 35 feet on the Tar River in the southern part to 137 feet a few miles south of Rocky Mount. At Tarboro the elevation is 50 feet, at Leggett 63, at Pinetops 100, and at Rocky Mount 115.

The larger proportion of the county has good natural drainage. The Tar River enters the county just north of Rocky Mount, flows in an easterly direction, swings around Tarboro, and then pursues a southerly course out of the county. This stream, with its numerous tributaries, the chief of which are Fishing, Swift, Town, Otter, Conetoe, and Deep creeks, waters the county and furnishes an excellent drainage system. The Tar River is navigable a part of the year as far up as Shiloh Mills. The streams are more sluggish in the eastern part, but become swifter and have cut deeper channels in the western part. Some water power was once developed on a few of the creeks, but none is used at present.

The country now included in Edgecombe County was one of the first sections of the State to be settled. Edgecombe County was formed from Craven County in 1733 by Governor Bunington, and confirmed by the legislature which met at Edenton in 1741. The majority of the white inhabitants represent some of the old families of North Carolina and are of English descent. The population of the county at present is composed of about 60 per cent negroes.

Throughout the county are many beautiful frame houses, neatly painted and surrounded by oak or elm groves. Some of these are antebellum houses, while the new ones in a measure indicate the county's present prosperity. In certain sections of the county most of the land is under cultivation, but there are large areas of undeveloped country east of Rocky Mount, in the eastern part along the Martin County line, and around Macclesfield. There is no waste land in the county save the few swamp areas. If all the arable land were intensively cultivated the county could easily support several times its present population, which is about 28,000.

Tarboro, the county seat, with a population of 5,000, located on the Tar River, in the center of the county, is the chief town. Rocky Mount, with a population of 7,000, is situated on the western side, partly in Edgecombe and partly in Nash County. Whitakers, Battleboro, Conetoe, Pinetops, Macclesfield, and Speed are towns of less importance.

The Norfolk branch of the Atlantic Coast Line Railroad crosses the county, passing through Tarboro, while the Plymouth branch of the same road runs southeast from Tarboro. The East Carolina Railway runs a little west of south through the county from Tarboro. The western boundary of the county is the main line of the Atlantic Coast Line. These roads afford excellent transportation facilities. During a part of the year a freight boat is operated on Tar River between Shiloh Mills and Washington, N. C. The dirt roads are being worked by convict labor, and most of them are in fairly good condition, except for the deep sand in a few localities. The county is well served by the rural free delivery of mail. There are good public schools in all parts of the county.

Tarboro is the chief market in the county for cotton, peanuts, and other farm produce. A large part of the tobacco is sold in Rocky Mount, but that grown in the southern part of the county is taken to Wilson. Most of the truck is shipped to the northern markets. A considerable quantity of cotton, peanuts, and other products is sold at Conetoe, Whitakers, and the other small towns.

CLIMATE.

The climate of Edgecombe County is characteristic of the climate of the middle Atlantic Coastal Plain. The winters are comparatively mild and the summers long and hot. December, January, and February are the coldest months, with an average temperature of 42° F. Occasional snows occur, but they are light and of short duration. The hottest months are July and August, with an average temperature of about 80° F.

The following table gives the normal and absolute maximum and minimum monthly and annual temperature and precipitation as recorded by the Weather Bureau observer at Tarboro. The normals are based upon records for eighteen years within the period August, 1871, to December 31, 1903—not continuous between the years 1875 and 1895. The dates of the first and last killing frosts are also shown. The average date of the last killing frost in the spring is April 13, and of the first in the fall October 24. This gives a growing season of 194 days for the tenderest crops.

Statistics of temperature and precipitation at Tarboro, Edgecombe County, N. C.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for driest year.	Total amount for wettest year.	Snow, average depth.
	°F.	°F.	°F.	In.	In.	In.	In.
January	41	78	− 1	4.0	4.4	3.6	1.9
February	43	76	− 2	4.0	5.4	3.6	3.1
March	51	91	13	3.7	2.7	3.9	.1
April	59	97	26	3.4	3.3	3.0	.2
May	69	99	37	5.2	2.1	5.6	.....
June	76	104	46	4.3	3.5	3.1	.....
July	80	105	48	6.3	2.0	11.6	.....
August	78	105	52	6.9	6.7	22.7	.....
September	72	106	36	3.7	1.0	2.0	.....
October	61	93	28	3.9	1.1	6.1	.....
November	51	87	16	2.7	3.7	1.9	Tr.
December	43	79	2	3.6	3.2	3.8	1.7
Annual mean	60	106	− 2	51.7	39.1	70.9	7.0

Dates of first and last killing frosts.

Year.	Tarboro.		Year.	Tarboro.	
	Last in spring.	First in fall.		Last in spring.	First in fall.
1899	Apr. 17	Nov. 5	1904	Apr. 22	Oct. 16
1900	Apr. 5	.....	1905	Apr. 18	Oct. 13
1901	Apr. 30	Nov. 7	1906	Apr. 3	Oct. 11
1902	Apr. 3	Oct. 30	Average	Apr. 13	Oct. 24
1903	Apr. 5	Oct. 27			

AGRICULTURE.

The agricultural products grown in Edgecombe County have been changed from time to time in order best to meet the varied and changed conditions. The first crops to be grown were corn, oats, and wheat. Hogs were raised for the home meat supply and a few cattle and sheep were also kept. In 1851 the population numbered about 16,000, the proportion of the races being as at present. Its products then were 5,000 bales of cotton, 715,000 bushels of corn, some oats, and wheat. Considerable wool was shorn. The turpentine industry flourished in those days. From 1851 to 1860 Edgecombe County made wonderful progress in agriculture, and the acreage of all crops was greatly increased. About twenty-five years ago some bright tobacco was grown, but it did not become one of the principal money crops until within the last fifteen years. Peanuts began to be grown on a commercial scale about ten or fifteen years ago. During the period between 1892 and 1897 the growing of tobacco assumed its

greatest importance. From the time of the civil war up to the establishment of the tobacco industry cotton had been the main money crop, but during years of depression following 1893 the price of cotton so declined that the farmers turned their attention to the production of bright tobacco. A warehouse was opened at Tarboro, but it was supported for a short time only. The peanut industry began to assume importance during the same period of low-priced cotton. Within the last six years, since the price of cotton has been comparatively high, the growing of tobacco has in many localities been abandoned for cotton and peanuts. The trucking industry, though developed as yet comparatively little, was taken up a few years ago.

For a number of years the people in Edgecombe County derived a large revenue from lumbering. The longleaf yellow pine and Savannah pine formed magnificent forests, and the sale of this timber added considerably to the support and wealth of a large percentage of the population. Practically all of this forest has now been cut, and only a few scattering areas of virgin timber are seen to-day. Some cypress and gum occur along the streams. Several small saw mills are in operation in different parts of the county.

At the present time the agriculture of the county is quite varied. Cotton is the staple and money crop; its yield for 1905 was 35,670 bales, and for 1906 it was 28,680 bales. Peanuts, both the Spanish and Virginia varieties, are recognized as an important money crop, and in some localities are partly taking the place of tobacco or are being rotated with cotton. The peanut vines make good hay when thrashed out.

Bright tobacco is grown quite extensively in the southern and western parts of the county, and also to a less extent in the northern part. It brings an average price of 8 to 10½ cents a pound. The price varies considerably, depending on quality, from 6 to 15 cents. Considerable money has been made from the production of this crop. About 7,000,000 pounds are annually sold at Rocky Mount. Corn is grown to a greater or less extent over the county and its acreage is gradually increasing. The main bulk of it is raised on the Portsmouth soils. Some truck crops, such as asparagus, cabbage, peas, and Irish potatoes, are grown around Conetoe, Tarboro, and in a few other localities. Several young orchards of peaches, a few pecans, and vineyards are found. Plantings of mulberries are also made in lots used as inclosures for hogs. Potatoes and garden vegetables are cultivated around every homestead. Only a small amount of sorghum is raised. Cowpeas and crimson clover are grown. Many hogs, a small number of cattle, and a few sheep are raised. Large quantities of hay and corn, as well as meat, are bought at high prices and used in the county. These products should be grown in sufficient quantities for home use.

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It is generally recognized that the Portsmouth soils, or what are better known locally as the "swamp lands," are well suited to the production of corn, and a few of the higher and better drained areas of these types to cotton. Peanuts are grown on the more sandy soils of each farm. Practically all of the tobacco is grown upon the Norfolk fine sandy loam and Norfolk sandy loam. The truck crops are confined to the lighter and warmer areas of the Norfolk sandy loam and Norfolk fine sandy loam and the sands of this series, except some of the cabbage, which is grown on the Portsmouth sandy loam. The peach trees and grape vines have for the most part been planted upon the knolls and well-drained areas. In many localities all of the above-mentioned crops are grown upon the same type of soil without regard to its adaptability.

The farmers in Edgecombe County are fortunate in having established a number of paying agricultural industries, offering the best possible opportunities for the changing of crops to suit economic conditions, as well as for the introduction of systematic and profitable crop rotations. Some have already departed from the one-crop system earlier in vogue and alternate two years of cotton with one of peanuts. Others rotate cotton with peanuts, one year of each, except for an occasional crop of corn. A fairly practicable rotation to follow would be cotton, peanuts, and corn, sowing cowpeas at last plowing.

On some of the large plantations the agricultural methods in practice are good, but on many of the smaller farms and even on some of the plantations where the tenant system is followed there is room for considerable improvement. The Norfolk sand and Norfolk fine sand are so loose that shallow plowing gives fairly good results. The Norfolk sandy loam, Norfolk fine sandy loam, and the Portsmouth soils are not in many cases plowed to a sufficient depth and not properly pulverized before the seeds are planted. The surface features, coupled with the mellow character of the soils, permit of the use of modern machinery. A great variety of improved labor-saving machinery is now in use. Cotton planters, fertilizer distributers, peanut and corn planters, sulky plows, and horse cultivators are common. Peanuts are thrashed out by machines. Tobacco transplanters could well be introduced, especially where a large acreage is devoted to that crop.

Most of the labor is of the colored class, many women being employed in the fields. The cost per month is about $12.50 with rations, or $16 without. Day laborers receive from 60 to 80 cents a day. The wage-earners in general aim to become tenants as soon as possible.

The large plantations are generally operated by a manager who hires labor and carries on the farming operations or superintends the tenants. An extensive tenant system is developed especially around

Tarboro. Many of the wealthy farmers live in Tarboro and rent their farms for a part of the crop. Under this system the landowner furnishes the land, stock, feed for stock, implements, seed, and one-half of the fertilizer, and receives one-half of the crops produced. A large number of farms in the southern and southwestern, and sections in the northern part are operated by the owners. Some farms are rented for one-third of the corn and cotton, and a few for a stated amount of lint cotton.

The farms vary greatly in size, the larger ones containing from 500 to 1,200 acres or more, and the smaller ones about 100 acres. The latter are found chiefly in the southern and northern parts of the county. There are large tracts of undeveloped land, from which the merchantable timber has been cut during recent years and which are now covered by a few scattering pine, old field pine, and old stumps.

Some of the land in the county can be bought for $15 to $30 an acre, but most of the developed land with improvements is held around $50 and some of the land near Tarboro and Rocky Mount would sell for $100 an acre. There is not much land being advertised or changing hands. Land in this county has increased in value greatly within the last ten years.

Edgecombe County contains one of the test farms of the North Carolina department of agriculture. The results obtained at this farm in fertilizer trials and variety tests should be very beneficial to the farmers of this section, as the farm is located upon one of the large soil types, the Norfolk sandy loam, with a spot of Norfolk fine sandy loam and Portsmouth sandy loam.

Most of the soils in the county should be plowed deeper and more carefully pulverized before the seeds are planted. A considerable increase in yields could be obtained by proper spacing of plants in rows and by using improved selected seed. A full stand is one of the requisites towards securing a full crop. A rotation of crops so as to include a forage crop should be practiced. Dairying, poultry raising, and trucking offer opportunities for profitable investments. More attention should be given to the needs of the soil as regards just the sort and quantity of fertilizer that the several crops require for their best development. The Norfolk types especially would be greatly benefited by coarse manures and green manuring crops, followed by lime.

SOILS.

Edgecombe County lies in the western part of the Atlantic Coastal Plain. The entire area is covered by the Columbia formation, but in the western part of the county the Columbia forms only a superficial covering and the dominating features of the topography and soils are those of the older or Lafayette formation. The eastern part of the

county is an almost level unbroken plain, but going westward the county becomes more rolling, the streams cut deeper channels, forming well-defined terraces, and as the falls of the Tar River are approached the whole surface of the country presents the aspect of an older geological formation.

The materials of which these two formations are composed were brought down from the Piedmont section and deposited while the present area was a part of the sea floor. These sediments have since been more or less altered by stream and organic agencies. Underlying many areas, particularly along the Tar River and the smaller streams, are extensive beds of shell marl at from 6 to 50 feet below the surface. These marl beds are principally of the Eocene and Neocene age and are very rich in carbonate of lime, occasionally containing considerable percentages of calcium phosphate. At one time the marls were the principal source of agricultural lime.

Along the western border of the county there are several outcrops of the older underlying crystalline rocks. These outcrops are small in extent and have had no more than a very local effect upon the soils.

The soils derived from the sediments are sandy loams or clays and sands of varying degrees of texture. In the eastern part of the county they are largely fine sandy loams with bright yellow sandy clay subsoils, typical of the materials of the Columbia formation. After the center of the county is passed the coarser materials become more prevalent, and in the western part of the county the soils are sandy loams with dark orange or reddish-yellow sandy clay subsoils, typical of the sediments of the Lafayette formation. Stream and road cuts in the west-central and western parts of the county afford many sections of the brick-red material of the Lafayette. This material is in many instances stratified and always contains a large quantity of rounded quartz gravel, varying in size from fine gravel to fragments an inch or more in diameter.

The soils of the county are typical Coastal Plain soils, and have been classified in two distinct series, the Norfolk and the Portsmouth. The Norfolk series comprises the light-colored upland soils, with yellow or orange sand or sandy clay subsoils. The Portsmouth series comprises the dark-colored soils of the lowlands, with gray or mottled gray sandy clay subsoils.

The soils of the Norfolk series occupy the greater proportion of the county and have been classified according to their texture into four types, viz, fine sandy loam, sandy loam, sand, and fine sand.

The soils of the Portsmouth series are derived directly from the same kind of material as the Norfolk series by the addition of organic matter. They occupy the lowlands around the streams, have very little drainage, and have been for a long time in a semiswampy condition which has favored the accumulation of very large quantities of

vegetable matter. This gives them their dark color and mainly distinguishes them from the light-colored soils of the Norfolk series. Three soils of this series have been mapped in this county, viz, sandy loam, fine sandy loam, and loam.

The following table gives the extent of each of the several types of soil mapped:

Areas of different soil types.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Norfolk fine sandy loam	150,912	45.8	Portsmouth sandy loam	5,056	1.5
Norfolk sandy loam	117,440	35.6	Norfolk fine sand	4,608	1.4
Swamp	23,424	7.1	Portsmouth loam	896	.3
Norfolk sand	16,192	4.9	Total	329,920	
Portsmouth fine sandy loam	11,392	3.4			

NORFOLK SAND.

The Norfolk sand is a light-gray, yellowish, or light-brown coarse to medium sand having an average depth of about 6 or 8 inches. It is porous, loose, and incoherent, and it contains a considerable quantity of small rounded gravel in a few of the areas along the river. The darker colored areas are those which have been heavily manured or never denuded of their forest growth, while the light-gray, and in spots whitish areas, have been badly leached. The soil of this type is very easily tilled.

The subsoil, to a depth of 36 inches or more, is a yellow, loose, incoherent coarse to medium sand. Occasionally a sticky sand or sandy loam is encountered at 30 to 36 inches. In a few places small rounded gravel are also present in the subsoil.

Most of the Norfolk sand is found in the southeastern and central parts of the county around Conetoe, Dogtown, and along the Tar River. Some isolated areas, however, occur along Fishing Creek in the northern part of the county and along Town Creek in the southern part.

This soil occupies gently rolling areas, ridges, and knolls. It is commonly a few feet higher in elevation than the surrounding soils, except when it occurs as the first bottom land along the streams. In the southeastern part it forms low ridges and knolls scattered indiscriminately throughout the Portsmouth types and along the Tar River. Owing to its coarse texture and slightly rolling position the natural drainage of this soil is excellent. Some areas are so excessively drained that the soil suffers seriously from drought. Farming operations can be successfully carried on immediately after heavy rains.

The Norfolk sand represents the coarser material of the Columbia formations in this county. Evidently some of these areas of sand

have been modified by stream action, while the finer particles from all areas of it have been washed out, leaving the coarse sand and fine gravel. Some of the coarser phase of this type is rather unproductive.

The forest growth on this soil is chiefly old field pine, together with a few shortleaf pines and scrub oaks. This soil is not adapted to general farming and should be devoted to growing early truck crops, grapes, pecans, peaches, mulberries, watermelons, and potatoes. A considerable part of the type is under cultivation, but the yields of corn and cotton are light, except when the soil is heavily fertilized. Cotton produces from one-fourth to two-thirds of a bale per acre; peanuts give fairly satisfactory returns, probably better than any other of the staple crops. Some truck, Irish potatoes, sweet potatoes, and peaches are grown. A large pecan orchard is located on this type in the northern part of the county.

The Norfolk sand is worth about $10 to $30 an acre. It can be wonderfully improved by coarse manures and by turning under green manuring crops such as cowpeas and vetch, and by applying a little lime. The manures will not only increase the humus content of the soil, but will also make this porous sand more loamy and more retentive of moisture.

The average results of the mechanical analyses of fine-earth samples of this type are shown in the following table:

Mechanical analyses of Norfolk sand.

Number.	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.*
16637, 16639	Soil	2.3	26.5	21.7	35.5	2.8	6.3	4.8
16638, 16640	Subsoil	2.9	28.4	20.9	35.1	3.1	5.6	3.7

NORFOLK FINE SAND.

The Norfolk fine sand is a gray, pale-yellow, or light-brown fine sand to a depth of from 5 to 8 inches. It is loose and incoherent when dry, but slightly loamy when wet. Spots of it are whitish in color, owing to the fact that cropping has practically depleted such areas of organic matter. The soil is mellow, being composed of fine rounded sand particles and only a very small percentage of clay. It is doubtless the most easily tilled of any soil in the county.

The subsoil to a depth of 36 inches is a yellow, orange-yellow or light-gray fine mellow sand, usually loose and incoherent. In a few localities and especially along the contact between this type and the Norfolk fine sandy loam the subsoil becomes sticky at 30 to 34 inches and passes into a yellow fine sandy loam.

The Norfolk fine sand occurs in small isolated areas in the south-central part of the county. The largest of these areas lie along Town Creek and west of the Tar River on the Tarboro and Old Sparta road and directly west of Tarboro. A few very small spots of this soil were mapped in the eastern and southern parts of the county.

This soil occupies gently rolling and undulating areas, usually slightly higher than the surrounding soil types, which moderately inclined character of surface, together with the loose, open character of the soil, insures good drainage. It is a warm, well-drained soil and can be tilled soon after a rain.

The Norfolk fine sand is sedimentary in origin, being derived from the finer sands of the Columbia formation. Most of the silt and clay originally in the material has been carried away in the drainage waters, leaving the fine sand. There is only a small proportion of organic matter present, except in a few of the more densely forested areas.

Most of the uncultivated areas of this soil are forested to shortleaf pine, old field pine, some scrub oaks, dogwood, and sweet gum. The soil is too light for general farming, but it is admirably suited to early truck crops, such as peas, beans, radishes, lettuce, and to Irish potatoes and Scuppernong and Mish grapes. Of the staple crops peanuts and potatoes give best returns.

The yields of cotton range from one-fourth bale to 1 bale per acre, the latter yield being obtained only when good cultivation is practiced and when large quantities of fertilizer or manure are applied. Peanuts yield from 30 to 60 bushels per acre, corn makes small yields, while Irish potatoes, sweet potatoes, grapes, peaches, cabbage, and berries give fair returns.

The truck crops and cotton are usually heavily fertilized, while a lighter application is given to peanuts and corn. The Norfolk fine sand is a valuable early truck soil. It can be improved greatly by coarse manures and by plowing under green manuring crops, after which the soil should be dressed with lime. This treatment would not only add the needed humus to the soil, but would improve the texture and moisture conditions as well.

The following table gives the results of mechanical analyses of the soil and subsoil of the Norfolk fine sand:

Mechanical analyses of Norfolk fine sand.

Number.	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.*
16641	Soil	0.5	4.3	5.1	64.7	13.5	8.3	3.6
16642	Subsoil	.5	3.3	3.5	63.3	15.8	7.6	5.3

NORFOLK SANDY LOAM.

The Norfolk sandy loam consists of a gray to yellowish-gray medium to coarse sandy loam, varying in depth from 6 to 24 inches, with an average depth of about 12 or 15 inches. Below the first 5 or 6 inches of soil there is a stratum of yellow medium to coarse sandy loam. In a few places in the western part of the county along the Tar River the soil is brown in color, contains a few river gravel, and is more variable in depth and texture than the typical areas. In a few localities there are spots of coarse sandy loam containing from 5 to 15 per cent of small quartz gravel. Occasionally in the more rolling areas the sandy surface soil has been washed off, leaving the reddish-yellow subsoil exposed. The soil is cultivated with ease and its position allows the use of modern machinery, except on a very few of the steeper slopes near the streams.

The subsoil for the larger and more uniform areas of the type is a yellow sandy clay, the sand particles being coarse to medium. Along the Tar River, in the western part of the county, and in a few other localities, the subsoil varies from the typical yellow sandy clay to a brown sandy loam, and in spots to a red clay loam.

The Norfolk sandy loam comprises the greater proportion of the western, west-central, and northwestern parts of the county, and large areas throughout the east-central part. The largest continuous areas are found on the Edgecombe-Nash line between Rocky Mount and Kingsboro, and to the east of Battleboro and Whitakers. Other prominent bodies lie along the Tar River around Tarboro and Old Sparta, and strips along Town Creek. Smaller areas of it occur in the southeastern part of the county. The Edgecombe County test farm is located upon this soil type.

This soil type possesses the widest range in topography of any soil in the county, occupying as it does the level to rolling areas and occurring in both the lowest and highest positions. It ranges in elevation from 40 feet in the southeastern part of the county to 137 feet in the western part. The large level to gently rolling areas are found between Rocky Mount and Kingsboro, around Tarboro, and east of Battleboro and Whitakers. The rolling areas of the type occur chiefly in the western and southern parts of the county as strips lying between the Norfolk fine sandy loam and the Swamp, and along the streams in the northern part. It is the most rolling soil in the county, and a few spots of it are eroded to a noticeable extent. All the rolling and undulating country covered by this type is well drained, and only the level areas need artificial drainage. Such areas, however, can be readily drained by open ditches.

The Norfolk sandy loam is sedimentary in origin and is derived for the most part from the Columbia sands and clays. On the steeper

slopes and more rolling areas the material has been subject to considerable washing and the rain waters have carried away a large amount of the finer material, leaving a light sandy loam, while on the more level areas the soil contains a larger proportion of clay and is slightly more compact. In the west-central part of the county the Lafayette formation of sands and clays is capped by the Columbian material and where the streams have cut down a few feet the red sandy clay with rounded quartz gravel is exposed. Along the Tar River, near the Edgecombe-Nash line and for a few miles to the east there outcrops some granitic rock in spots, and the soil in these places is probably modified by the residual products from this granite, as the subsoil is a red clay loam.

The forest growth at present is loblolly and shortleaf pine, with a few scrub oaks and other hardwoods. There remains only a small quantity of merchantable timber. This soil is well suited to late truck, cotton, bright yellow tobacco, peanuts, grapes, and potatoes. Cowpeas do well, and crimson clover and alfalfa can be grown.

The yield of cotton ranges from one-third bale to 1¼ bales per acre; tobacco from 500 to 1,000 pounds; peanuts 50 bushels of the Spanish or 75 bushels of the Virginia variety; corn from 12 to 20 bushels. Some truck is grown around Conetoe and in other localities, with a marked degree of success. A few Irish potatoes, sweet potatoes, peaches, grapes, and mulberries are grown. Several small fields of crimson clover were seen and also a patch or two of alfalfa. Cowpeas give good returns, but are only grown to a limited extent. Practically all the crops on this soil are fertilized, but the tobacco, cotton, and truck crops receive the heaviest applications. Many farmers use the standard brands found in the market, while on a large number of the more extensive plantations they use a home mixture of cotton-seed meal, kainit, and acid phosphate. This soil holds manures fairly well and is capable of being maintained in a state of high productiveness. Cowpeas plowed under, and manure and lime, added together, with a systematic rotation of crops, would soon cause this soil to produce good yields without the use of so much commercial fertilizer. Deeper plowing, better preparation of the soil, and more thorough cultivation would also increase the yields. Land of this type sells at $15 to $50 an acre, and some of it near Tarboro and Rocky Mount is held at even higher prices.

The following table gives the average results of mechanical analyses of samples of this soil type:

Mechanical analyses of Norfolk sandy loam.

Number.	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.*
16645, 16647.....	Soil.....	4.7	25.7	14.6	20.1	7.1	20.7	6.7
16646, 16648.....	Subsoil.....	2.8	22.7	12.2	17.4	6.9	15.3	22.3

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam consists of a gray or yellowish-gray mellow fine sandy loam ranging in depth from 6 to 30 inches, with an average depth of 10 to 15 inches. Between the gray surface soil and the yellow sandy clay subsoil there is a yellow fine sandy loam. Spots of dark-gray soil are sometimes found in the forested areas, while in the areas which have been cultivated for a long time and lightly manured the soil is lighter in color. Immediately west of Pinetops and in other level areas the soil is a very fine sandy to silty loam and is more compact than in the typical areas. Near some of the streams and on the slopes a small proportion of rather coarse particles are present. The soil is very easily tilled and suited to the use of all kinds of labor-saving machinery.

The subsoil to a depth of 3 feet or more is yellow sandy clay, the sand particles being fine. There are some places where the subsoil is a reddish-yellow to red sandy clay, and in other places a yellow clay loam sometimes streaked with red or purple is found.

The Norfolk fine sandy loam has the greatest development of any soil in the county. Large continuous areas occur along the Edgecombe-Martin line, and in the central and southwest parts of the county. Smaller areas and isolated bodies are scattered throughout the remaining parts of the county. It is typically developed east of Coakley, around Speed and Lawrence, to the east of Gethsemane, and along the East Carolina Railway in the vicinity of Henrietta, Pinetops, and Macclesfield, and around St. Lewis and Lancaster.

The surface features of this type vary from high flat and undulating to rolling areas. It ranges in elevation from 40 feet in the southeastern part of the county to 128 feet at Lancaster. The broad flat areas are found on the eastern side and in the northern part of the county and around Pinetops, south of Macclesfield, near Lancaster, and east of Crisp. The surface of this soil becomes rolling as the streams are approached, and the more rolling areas lie around Lawrence and in the central part of the county. On a few of the steepest slopes the soil washes and low terraces are sometimes necessary. The

undulating and rolling areas have good natural surface drainage. The flattest areas have to be drained artificially, but this can be accomplished quite effectively by canals and open ditches leading into the natural drainage ways. The banks stand up well, thus insuring considerable permanency.

The Norfolk fine sandy loam is derived from the Columbia formation, but has been modified to some extent by erosion. In the western part of the county this type, and especially the subsoil, has been influenced by the underlying Lafayette formation, which gives a reddish sandy clay subsoil. On the rolling areas an appreciable quantity of the silt and clay has been carried away in suspension and a light, loose soil is left, while on the flat areas the soil is a mellow fine sandy loam containing considerable silt.

This soil type was once forested with longleaf pine and the Savannah pine. However, most of the merchantable timber has been cut, and only small lots now remain. Where the land has been allowed to reforest itself a thick growth of loblolly or shortleaf pine and a few scrub oaks have come up. A large proportion of this soil is still undeveloped. The Norfolk fine sandy loam is one of the best general-purpose soils in the county, being suited to a diversity of crops and especially adapted to late truck, peanuts, bright tobacco, and cotton. Potatoes, peaches, grapes, crimson clover, cowpeas, and alfalfa can be successfuly grown. Cotton produces from one-third bale to 1¼ bales per acre, the latter yield being attained with very heavy fertilization. Tobacco yields from 500 to 1,200 pounds, corn from 10 to 25 bushels, peanuts from 30 to 60 bushels of the Spanish nut and from 50 to 100 bushels of the Virginia nut; potatoes, cabbage, and garden vegetables do well on this soil, and also peaches and grapes. Cowpeas yield well and crimson clover is grown to a limited extent.

Of the complete commercial fertilizer the 2:8:2 grades are extensively used, but there are also some brands of 3:8:3 grade in favor with the planters. Many of the best farmers mix cotton-seed meal, acid phosphate, and kainit. A little lime is occasionally applied to this soil. From 200 to 600 pounds of fertilizer to the acre is commonly used for cotton, while from 400 to 1,000 pounds is applied to the tobacco fields. Peanuts and corn are not so heavily fertilized.

The Norfolk fine sandy loam is susceptible of high improvement and a few are realizing it. The soil will be greatly improved by applying coarse manures, plowing under pea-vine stubble, vetch, or clover, and applying lime. A systematic rotation of crops, together with better and deeper preparation of the soil and more thorough cultivation, will be found profitable. Especially after turning under a considerable quantity of green manure, it would be well to give the land a moderate application of lime. This soil ranges in price from

$15 to $50 an acre, depending upon the location and transportation facilities.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Norfolk fine sandy loam.

Number.	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.*
16649	Soil	0.6	2.5	5.0	55.9	15.2	15.0	6.4
16650	Subsoil	.1	1.9	3.8	50.3	13.8	12.8	17.5

PORTSMOUTH SANDY LOAM.

The soil of the Portsmouth sandy loam to a depth of 6 to 15 inches is a dark-gray or black medium to coarse sandy loam. The dark-gray phase is usually under cultivation, the heavy black phase occurring in the thickly forested and poorly drained areas. In a few localities, particularly along the Tar River, the soil contains a considerable amount of gravel.

The subsoil is a light to dark-gray sandy clay mottled with brown. In some areas the subsoil consists of a dark-gray coarse sandy loam, while in others it is a dark-brown mucky sand or sandy loam.

This type is confined largely to the southeastern part of the county, the largest areas occurring along the railroad between Mildred and Conetoe. Small strips occur along White Oak Swamp in the northern part of the county and Cokey Swamp in the west-central part. A few acres are found along the Tar River. Along Tar River and the smaller streams the soil occupies level and depressed areas, and many areas are in a semiswampy condition. Artificial drainage is necessary throughout the type, the usual method—large central canal with side ditches through the fields—being in use.

The Portsmouth sandy loam is composed of the coarser materials of the Columbia formation, which in the areas bordering the streams, particularly along the Tar River, have been modified by stream action. To this material has been added, through the swampy condition to which the type has been subjected, a relatively large quantity of organic matter.

On the more elevated portions of this type a few loblolly pines are found, but the typical vegetation is black gum and poplar, with cypress in the swampy areas, always with a thick undergrowth of reeds and other swamp vegetation.

This soil is very well adapted to corn and, when well drained and limed, to cotton and oats. Corn is the principal crop; from 200 to 500 pounds of rock lime to the acre are used and the yields vary from

20 to 50 bushels, averaging about 30 bushels per acre. A small quantity of cotton is grown, and when the land is well limed and a little commercial fertilizer used the yields vary from one-half to 1 bale per acre. This type is held at a rather high price on account of its value as a corn soil.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of this type:

Mechanical analyses of Portsmouth sandy loam.

Number.	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.*
16655	Soil	1.7	7.4	10.4	34.5	17.5	16.1	12.8
16656	Subsoil	1.4	7.3	9.9	34.1	17.4	11.7	18.8

PORTSMOUTH FINE SANDY LOAM.

The soil of the Portsmouth fine sandy loam consists of a light to dark gray fine sandy loam varying in depth from 6 to 15 inches. In the heavily forested areas the soil is black and very heavy, while in the depressed areas, where there is always considerable water, the soil to a depth of 6 or 8 inches is a brown mucky material.

The subsoil of the typical phase of this type is a gray fine sandy clay mottled with yellowish brown. In the depressed areas the subsoil is heavy and contains a large amount of silt. In other areas where there is a large proportion of sand in the soil the subsoil consists of a gray or brown sticky fine sand.

The greater proportion of this type occurs in the southeastern part of the county. The largest areas are found west of Mildred, east of Dogtown, and east of Piney Grove. Small strips occur along the streams in the eastern part of the county separating the Swamp areas from the soils of the Norfolk series. Less important areas are found along the streams in the northeastern part of the county.

The Portsmouth fine sandy loam occupies level areas at elevations of about 50 feet. Slightly higher elevations are found along the streams in the eastern part of the county. The natural drainage is in all cases very poor, but good artificial drainage can be secured on most of the areas by a system of open ditches.

This soil is composed of the finer sediments of the Columbia formation to which have been added large amounts of organic matter, thus bringing about its present condition. A few small areas of medium sandy loam were found along some of the streams, but these are not of sufficient size to be represented on the map.

The higher, better drained areas are forested to loblolly pine and scrub oak, while on the poorly drained swampy areas the typical swamp forests of gums and cypress are found.

This soil is well adapted to corn and the better drained areas to cotton and peanuts. While no truck is grown at present, it would probably make a very good soil for late truck, such as cabbages, potatoes, and other vegetables requiring a moist soil. Corn is the principal crop grown on this type; the land is well limed and the yields vary from 20 to 30 bushels per acre. A little cotton is grown on the lighter phase; with liberal applications of lime and a small amount of commercial fertilizer from one-third to 1 bale per acre is the usual yield. A few peanuts are grown on the better drained areas.

On account of its value as a corn soil, this land is held in high esteem and is valued at from $30 to $40 an acre.

The following table gives the results of mechanical analyses of a sample of the soil and subsoil of this type:

Mechanical analyses of Portsmouth fine sandy loam.

Number.	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.*
16657	Soil	0.8	6.7	8.3	27.0	14.5	28.8	14.2
16658	Subsoil	1.3	5.8	7.2	21.4	12.1	22.3	30.5

PORTSMOUTH LOAM.

The Portsmouth loam consists of a dark-gray to black heavy loam, varying in depth from 10 to 20 inches. It contains a relatively large proportion of organic matter and is a mellow, easily tilled soil. In a few instances there is a considerable quantity of fine sand in the soil, but in the greater part of the areas lying next to the swamps the soil contains an unusually large amount of organic matter and closely resembles a muck. The subsoil is a heavy silt loam, clay loam, or very fine sandy clay, in color dark gray mottled with brown. In the deeper phases the subsoil is only slightly lighter in color than the soil and is composed of a heavy fine sandy clay.

This soil occupies a very limited acreage, a few small areas being found in the eastern and southeastern parts of the county. The largest of these occur northeast of Conetoe, southeast of Shiloh Mills, and west of Piney Grove.

The Portsmouth loam occupies low-lying, level or depressed areas, frequently adjoining or surrounded by swamp. Some of the areas near the large swamps are frequently flooded and are in a semiswampy condition during a greater part of the year. The drainage of the few areas under cultivation is effected by large open main ditches with a number of smaller laterals.

The Portsmouth loam is derived from the finer sediments of the Columbia formation. Its topographic position and semiswampy

condition have favored the accumulation of very large quantities of organic matter, which has been largely the factor in distinguishing this soil from the soils of the Norfolk series.

The greater proportion of this type is forested with black gum, sweet gum, poplar, and a few pines, with cypress on the wetter areas. There is always a heavy undergrowth of reeds, vines, and other swamp vegetation.

This soil is especially adapted to corn, and the heavier phase, when properly drained, would probably grow good onions and celery. Lime is practically the only fertilizer used, the yield of corn on well-limed soil being from 30 to 50 bushels per acre. Very little of this soil is at present under cultivation, but when cleared and properly drained it will be a very valuable soil for the production of corn and hay.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Portsmouth loam:

Mechanical analyses of Portsmouth loam.

Number.	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.*
16659	Soil	0.5	4.5	5.6	20.8	11.2	27.6	28.8
16660	Subsoil	.5	2.9	5.1	24.5	7.4	25.7	34.2

SWAMP.

The areas mapped as Swamp consist of the low-lying land that is always very wet, a large proportion being flooded during part of the year. The soil to a depth of 6 to 20 inches is a dark-brown or black muck or heavy loam, composed largely of decomposing vegetable matter mixed with a small amount of silt and clay. The subsoil is usually lighter in color than the soil, but varies greatly in color and texture in different areas. In some instances it is a heavy gray silty clay mottled with brown, while in others it is a dark-brown mucky sand. Along the Tar River there are a few areas mapped as Swamp that do not come under this head, but which can not be classified with any one of the soil types. These areas occur in the oxbows of the river and are composed of a heavy brown silty loam of uniform color and texture. These areas would be very valuable were it not for the fact that they are frequently flooded by the river.

The Swamp areas occur generally along the streams throughout the county, and vary in width from a narrow strip along the smaller streams to one-half mile or more along the larger ones. The largest areas are found along Fishing, Swift, Town, and Conetoe creeks, Cokey Swamp, and Tar River, and small isolated spots are found throughout the county. All of the Swamp areas are thickly forested

with cypress, black gum, and other water-loving trees, beneath which occurs a thick undergrowth of reeds and vines. On the driest areas a few pines are found. Practically all of the merchantable timber has been cut from the swamps. Many areas of these swamp lands could be drained very cheaply and these when cleared would make excellent pasture land during the summer months.

SUMMARY.

Edgecombe County—area 329,920 acres or about 515 square miles—lies in the northeastern part of North Carolina. Its topographic features vary from broad level to gently rolling and rolling areas. The general slope of the surface is toward the southeast, the elevation ranging from 137 feet in the western part to about 35 feet on Tar River at the southern boundary. The regional drainage of the rolling sections is good and the county is well watered by the Tar River and its numerous tributaries.

The county is well situated as regards transportation facilities. It is served by the main line and two branches of the Atlantic Coast Line Railroad. The East Carolina Railway, running south from Tarboro, has opened up a good country. Fairly good dirt roads are found, and these are steadily being improved.

Good public schools, churches, and the rural free delivery of mail are found throughout the county.

Tarboro, the county seat, is the principal town. Rocky Mount, situated on the western boundary of the county, is a progressive town of large business interests. Several smaller towns and shipping points are conveniently located along the railroads. These furnish good markets for cotton, tobacco, peanuts, and other farm products.

The climate is mild. Slight freezes occur during the winter, but are of short duration. The summers are usually long and hot. There is a comparatively long growing season, thus affording opportunity for the production of a wide range of crops, and in many cases for two or more crops in one season from the same field.

Edgecombe County was one of the leading agricultural counties in North Carolina before the civil war, and it has maintained that reputation to the present time. In relation to area it is one of the largest cotton-producing counties in the State. It grows a fair quality and a large quantity of bright tobacco. The peanut crop is also important, and some trucking is carried on profitably. Large quantities of commercial fertilizers are used in growing these crops.

Upon most of the large plantations and on some of the small farms are seen neat frame houses and other improvements, which indicate a prosperous condition of the farming class.

A great variety of improved farm machinery is used in Edgecombe County, and the character of the surface makes the use of most labor-saving machinery advantageous.

An extensive system of tenant farming has been developed. Labor is principally colored. The ordinary laborer receives about $16 a month.

Land values have been increasing steadily and in the last few years rapidly, owing to the ruling high price of cotton. Still there are areas of undeveloped land throughout the county to be had at very reasonable prices, which will give good crops and support a greatly increased population.

The soils of Edgecombe County are derived from the Columbia formation of sands and clays, modified to a slight extent in the western part of the county by the materials of the Lafayette formation. The weathering of these sands and clays has given rise to two distinct soil series, viz, the Norfolk series and the Portsmouth series.

The Norfolk series represents the lighter colored, better-drained soils, while the Portsmouth series are darker in color, contain more organic matter, and are naturally deficient in drainage. The Norfolk soils cover practically all of the county except a portion of the southeastern part.

The Norfolk fine sandy loam occupies the largest area. It is a mellow, easily tilled soil, and one suited to practically all of the crops of the region except corn. Large areas of this type in the southern and northern parts of the county are undeveloped. It is especially adapted to bright tobacco, peanuts, late truck crops, and, when fertilized, to cotton.

The Norfolk sandy loam differs from the Norfolk fine sandy loam mainly in texture, but partly in the character of the topography. It is coarser, a little better drained, and truck matures a little earlier on it. It is a good cotton, tobacco, and peanut soil.

The Norfolk sand and Norfolk fine sand are loose, porous, well drained, and warm soils. They can be cultivated immediately after a rain. In dry seasons they are droughty and crops are apt to suffer. These sand types are very easily tilled, and are the earliest soils in the county. They are well suited to the production of early truck crops, peaches, grapes, and light farming.

The Portsmouth sandy loam, Portsmouth fine sandy loam, and Portsmouth loam are fairly easily tilled and very productive soils. Owing to their low, flat surface they must be artificially drained. They are by far the best corn soils in the county and also in eastern North Carolina. Cotton does well on the better-drained areas, and cabbage and onions would prove profitable crops.

The Swamp is at present nonagricultural. Some of it is used for summer pasturage. It is usually forested with cypress and gum.

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