

# SOIL SURVEY OF TYRRELL COUNTY, NORTH CAROLINA.

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## DESCRIPTION OF THE AREA.

Tyrrell County is situated in the northeastern part of North Carolina, just south of Albemarle Sound, and about 80 miles south of Norfolk, Va. It comprises an area of 390 square miles, or 249,600 acres. It is irregular in shape, being about 23 miles long from north to south and about 18 miles wide from east to west.

The county has a comparatively flat and level surface. The prevailing level character is relieved in places by low ridges or slightly elevated flat areas a foot or two above the general level of the surrounding country. With the exception of these ridges, there is practically no relief in the plain throughout the county. The greater part of the higher lying land occurs along the shore of Albemarle Sound, and some areas slightly higher than the average surface of the plain border the swamps.

The surface has a gradual slope toward the east and north from the southwest corner of the county. The elevation ranges from practically sea level to about 19 feet above, the highest elevation occurring in the swamp area in the southwest corner of the county. The greater part of the land lies between 4 and 8 feet above sea level, and much of the land surface is only 2 to 4 feet above ordinary high tide.

The drainage of the county is effected through the Alligator and Scuppernong Rivers and their tributaries. The most important tributaries of the former are Alligator Creek, Second Creek, the Frying Pan, and the Northwest and Southwest Forks. Riders Creek, Second Creek, and canals leading from Lake Phelps drain the northwestern part of the county. The drainage of the county as a whole is very poor. The streams are sluggish, and very few of them are sufficiently elevated above the level of the water in the sound to be free from the effects of abnormal tides. Some of the farming lands are subject to inundation by tides, and water frequently backs up into drainage ditches from the streams.

Tyrrell County was settled about 200 years ago, but the population has varied very little in the last three-quarters of a century. The 1920 census gives the population as 4,849. The white population consists largely of descendants of early English and Scotch settlers. The entire population is classed as rural, and the density of population is 12.4 per square mile. About 30.4 per cent of the population con-



Fig. 25.—Sketch map showing location of the Tyrrell County area, North Carolina.

sists of negroes. The most thickly settled parts are in the eastern part of Columbia Township and in Scuppernong Township. In other parts of the county there is less drained land, and the population is confined to ridges and other elevated areas.

Columbia, the county seat, with a population of 738, is the principal town and most important shipping point. Other shipping points are Travis and Woodley, on the Norfolk Southern Railroad; Gum Neck and Kilkenny on the Alligator River; and Fort Landing, on Alligator Creek.

The transportation facilities in the northwestern part of the county are fairly good. A branch of the Norfolk Southern Railroad connects Columbia with the main line at Mackeys. In addition to this there is water transportation from Columbia and a number of other points in the county. There are numerous landings along the sound shore, and practically all of the streams in the county are navigable. A steamboat running between Elizabeth City and Fairfield stops at several points in Tyrrell County.

The roads in the county are generally poor but are never impassable. Through the swamp areas they are corduroy and are very rough. One section of the county, the Kilkenny neighborhood, is not connected with the rest of the county by road at all. Some interest is being shown in the improvement of roads.

Rural mail delivery reaches all parts of the county, and telephones are in use in some sections. Until recently the county has not been very progressive along educational lines, but a number of new school buildings have been built, and over \$50,000 is being spent for this purpose this year (1920).

Norfolk is the principal market for products from Tyrrell County, but much of the produce is shipped to Elizabeth City, New York, Newark, Boston, and Washington.

#### CLIMATE.

The climate of Tyrrell County is mild throughout the year. According to the records of the Weather Bureau station at Manteo in Dare County, east of Tyrrell County, the mean annual temperature is 61.9° F. The winters are generally mild, the average temperature for December, January, and February being 44.8° F. There are usually a few cold periods in the winter when the temperature stays below freezing for two or three days at a time, and a temperature as low as 6° F. has been recorded in February. Such low temperatures are unusual, however. Occasional snowfalls occur in winter, but they are so light as to be of little importance.

The summer months have an average temperature of 76.4° F. Temperatures above 100° F. have been recorded in the months of July and August only.

The average growing season is 246 days, the average date of the last killing frost in the spring being March 23 and the average date of the first in the fall being November 25. The latest recorded frost in the spring occurred on April 22 and the earliest in the fall on October 25.

The average annual rainfall is 51.55 inches. The total precipitation for the driest year on record (1893) was 29.52 inches and for the wettest year (1877) 80.70 inches. The rainfall is well distributed

throughout the year, the greater part coming during the growing season. Occasional dry periods occur during which crops suffer somewhat for want of moisture, but the low elevation of the land and the nearness of the water table to the surface prevent any serious damage from drought. At times the potato crop has suffered somewhat from excessive rains.

The abundant moisture and the length of growing season, allowing the growing of two crops a year on much of the land and the grazing of cattle the year round, make Tyrrell County climatically an ideal region for carrying on agriculture.

The following table gives the normal monthly, seasonal, and annual temperature and precipitation as recorded at the Weather Bureau station at Manteo, in Dare County.

*Normal monthly, seasonal, and annual temperature and precipitation at Manteo, Dare County.*

(Elevation, 12 feet.)

Month.	Temperature.			Precipitation.		
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year (1893).	Total amount for the wettest year (1877).
	° F.	° F.	° F.	Inches.	Inches.	Inches.
December .....	45.7	77	12	3.76	1.79	8.92
January .....	45.7	75	7	3.08	2.62	4.65
February .....	43.0	77	6	4.05	2.14	3.06
Winter .....	44.8	77	6	10.89	6.55	16.63
March .....	51.9	90	21	4.30	3.51	7.62
April .....	57.9	92	27	3.27	.96	7.83
May .....	67.1	94	34	4.66	5.92	1.42
Spring .....	59.0	94	21	12.23	10.39	16.87
June .....	73.5	99	45	5.51	2.63	10.97
July .....	78.2	107	50	6.34	1.67	4.95
August .....	77.4	102	51	6.53	3.54	8.39
Summer .....	76.4	107	45	18.38	7.84	24.31
September .....	73.4	97	42	4.51	1.27	13.39
October .....	63.4	92	30	3.58	1.01	4.08
November .....	52.2	80	23	1.96	2.46	5.42
Fall .....	63.0	97	23	10.05	4.74	22.89
Year .....	61.9	107	6	51.55	29.52	80.70

AGRICULTURE.

The agriculture of Tyrrell County consists of general farming and the raising of hogs, cattle, and poultry. The principal cash crops are cotton, soy beans, and potatoes. A small surplus of corn and other crops also is sold, but the corn is largely used for feeding purposes, as is also the oat crop, the greater part of which is cut for hay, and some of the soy beans, cowpeas, peanuts, and clover.

The following table gives the acreage and production of the principal crops for the censuses of 1880 to 1920. This table shows the present status of agriculture, as well as the changes that have taken place in the last 40 years.

*Acreage and production of principal crops, as returned by the census, 1880 to 1920.*

Year.	Corn.		Oats.		Hay and forage.		Cotton.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Tons.	Acres.	Bales.
1879 .....	8,300	108,839	781	7,622	13	8	3,481	1,123
1889 .....	6,125	51,700	966	10,316	179	195	2,709	450
1899 .....	7,132	79,780	346	3,690	552	613	1,122	458
1909 .....	7,360	94,818	276	4,242	703	852	1,621	637
1919 .....	7,389	143,107	26	211	1,773	1,728	2,291	1,565

  

Year.	Potatoes.		Sweet potatoes.		Dry peas.		Peanuts.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
1879 .....		1,073	460	31,739		3,950		
1889 .....	75	4,688	640	37,193		2,788		4
1899 .....	268	20,637	587	46,979	853	10,062	91	3,349
1909 .....	721	53,223	601	46,066	1,078	18,381	143	5,444
1919 .....	483	60,944	468	43,695	138	297	160	10,450

<sup>1</sup> Soy beans, reported separately in 1919, occupied 1,583 acres, with a production of 18,489 bushels.

This table indicates that agriculture has made little progress in the last 40 years. The acreages of corn, cotton, and oats are less than in 1879, though cotton has recovered from the low point reached in 1889. Dry peas, if we include soy beans, have increased materially in importance since 1899, the year in which they were first reported. Cowpeas are probably a more important crop than the table shows, as the practice of interplanting with corn is common. There also has been a consistent increase in the acreage of potatoes, though the acreage was still small in 1919, and in the planting of forage crops.

Most of the corn is used on the farms where it is produced. A few farms, however, grow corn as a cash crop. Soy beans are grown largely for seed, which is sold to farmers and seed houses, principally in North Carolina and Virginia. The cotton grown in the northern part of the county is ginned there and shipped to Norfolk to be sold. The cottonseed is sold to farmers for planting and to buyers representing oil mills. That part of the crop grown in Gum Neck Township is sold without ginning and shipped to Elizabeth City by boat.

Potatoes are either sold and delivered to buyers at the station in Columbia or on barges at the different landings located some distance from Columbia, or they are shipped direct to commission houses in different cities. New York gets the greater part of the crop, although there are usually a number of shipments every year to Newark, Boston, Philadelphia, Washington, Norfolk, and Cleveland. Sweet potatoes are generally shipped to commission houses or sold to local buyers.

Truck crops are not very extensively grown and are absorbed mostly in supplying the home and by the local markets.

The principal livestock industry is the raising of hogs. In 1909 nearly 6,000 hogs were sold or slaughtered. The number of hogs in the county in 1919 was 8,819. Hogs are generally grazed throughout the year and are taken off the range and slaughtered. They are usually shipped to Norfolk and are marketed from November to February. A few farmers fatten their hogs, feeding peanuts, soy beans, and grain, before marketing them. This is much the better practice, as the weight of the animals is increased, the quality of the meat is improved, and a better price is obtained.

Cattle are well distributed throughout the county. They subsist mainly by grazing, but are sometimes fed through the winter. They are sold on the hoof and are shipped to Norfolk or Elizabeth City. Dipping of cattle for protection against the fever tick would be of great benefit to the cattle industry in the county. At present the grade of stock is rather poor, and it can not be improved until the tick is eradicated.

There are some sheep in the county. They are raised mostly for wool, some of which is spun on the farms. The male lambs are generally sold in the spring.

The topography and character of the soil influence to a considerable extent the kind of crops grown and the results obtained from the different crops. Sweet potatoes are grown only on light, sandy soils. Potatoes are grown on sandy soils which are naturally or artificially well drained. In general the darker colored sandy soils produce the largest yields, but late frosts are more likely to injure the crops on these soils than on the lighter colored, better drained types, and excessive rains more likely to cause rotting than on the lighter soils. Corn is grown on all the soils in the county, but gives best results on the black loams and fine sandy loams. Soy beans are grown mostly on the Hyde and Portsmouth loams and on the Bladen silt loam and very fine sandy loam.

Many of the farmers in the county use 2-horse plows and cultivators, although probably the greater number continue to use 1-horse implements. One or two tractors are in use in the county. Fall plowing is practiced on a good many of the farms and winter plowing on others. Soy-bean harvesters are used in gathering this crop, the beans being threshed out by the harvester as it is pulled along the rows. Corn is not cut and shocked; the leaves are usually stripped for fodder, and the ears, which are left on the stalk to mature, are harvested later. A few of the farmers still adhere to the practice of burning the cornstalks when the land is being prepared for the succeeding crop in the winter or spring. Potatoes are generally plowed out and picked up by hand; at the time this survey was made there was only one potato digger in operation in the county.

The equipment of the farms varies considerably. Most of the farmhouses are good-sized, comfortable buildings, and many of them are painted; some are equipped with electric light, the current being supplied by individual plants. Owing to the mildness of the winters, the barns are not so well constructed as the houses. Nearly every farm is well supplied with modern farming implements, including planters and cultivators. The hauling is generally done with 2-wheel carts, although there are a few 4-wheel wagons and a number of motor trucks in the county. The work stock is generally of light or medium weight.

Crop rotation is practiced in a general way, but no definite system is used. Corn is generally followed by soy beans or cotton, corn being planted again the third year. Where potatoes are grown they follow either corn or cotton, but give the best results when they are planted after corn. The potato crop is usually dug and marketed between the 1st and 20th of June, and generally corn, but sometimes cotton, is planted as a second crop on the same land. Soy beans are planted in the corn. In some instances either of these crops may

be planted between the rows before the potatoes are dug. Sweet potatoes are sometimes set out after potatoes are dug.

The 1910 census reported a total expenditure for fertilizer of \$34,263. By 1920 this had increased to \$155,336. Complete fertilizers generally are used. On the darker colored soils fertilizers containing more potash and less nitrogen are frequently used, although the usual practice is to fertilize according to the crop instead of the soil. Corn generally receives from 200 to 500 pounds of an 8-4-4<sup>1</sup> mixture. The brands used on cotton most often have the formula 8-3-3. Potatoes are the most heavily fertilized crop in the county. The brands are usually high in potash, with an 8-7-5 or 7-5-5 formula, and the applications liberal, at the rate of 3 bags of fertilizer to each barrel of seed planted. As it usually takes 4 barrels of seed to plant an acre, this would indicate an acreage application of 2,400 pounds. Occasionally, where the seed is planted closer together in the row than usual, the application per acre is even greater than this. The crop which follows potatoes is not fertilized at all, dependence being placed on the residual effect of the earlier applications. When it is available barnyard manure is used, especially on the lighter colored soils, but the supply is entirely inadequate.

A large part of the farm labor is done by the farmer and the members of his family, although in harvesting special crops considerable labor is hired. Farm laborers are drawn from both the white and the negro races, and are generally paid \$2.50 a day. From \$1 to \$1.50 per 100 pounds is paid for picking cotton. Potato pickers receive 25 cents a barrel for picking up primes and 50 cents for culls. Laborers hired by the month usually receive from \$60 to \$75 a month with board. In the 1920 census 247 farms report the employment of labor, with a total expenditure of \$40,007.

The farms vary in size from 20 or 30 acres to several hundred acres each. The average size is about 80 acres. The 1920 census reports a total of 643 farms in the county, comprising 21.8 per cent of the land area. Of the land in farms, 34.2 per cent, or about 28.9 acres per farm, is reported improved.

About 70 per cent of the farms are operated by the owners. The rest are operated by tenants, except one or two run by managers. Very little land is rented for cash, the tenants usually leasing the farms on the share system. The landlord generally furnishes the work stock and implements, half the seed, and half the fertilizer, and receives half the crop.

The selling price of land varies from about \$25 to \$250 and \$300 an acre, according to location and improvements. The higher priced land is located in the vicinity of Columbia, in Columbia and Scuppernon Townships. The prevailing prices of improved farm land range from \$75 to \$120 an acre; the price of unimproved land is much less.<sup>2</sup>

#### SOILS.

Tyrrell County lies within the Coastal Plain soil province. The soils are derived largely from unconsolidated sands and clays of sedimentary origin composed of materials brought down from the Pied-

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

<sup>2</sup> Land values from Bureau of Crop Estimates.

mont Plateau and the Appalachian Mountain regions and deposited on the sea floor in ancient times. These sediments since their elevation above water have been more or less modified by drainage, oxidation, erosion, the decay of plants, and, in isolated instances, by wind action. Owing to the fact that the finer particles of soil have been carried downward by percolation or removed from the surface by run-off or the action of wind, the subsoils are generally heavier in texture than the surface soils. The reddish-yellow color of the subsoil of the Ruston series and the yellow colors in the subsoils of some of the other soils are due largely to the oxidation of the iron-bearing minerals contained in the soil. The dark-gray, black, and brown colors result from the decay of varying quantities of organic matter. The mottling in some of the subsoils is due largely to imperfect drainage conditions, the subsoil being saturated at such frequent intervals that the iron-bearing minerals in the soil have been only partly oxidized. Soil differences in different parts of the county are largely due to differences in material, elevation, and drainage, the ridge soils being generally lighter in texture and color than the level, more poorly drained soils.

Tests to determine the acidity of the soils indicate that all of the darker colored soils and the clay subsoils of lighter colored soils are strongly acid, while the lighter colored soils, especially the light-colored sandy soils, show very little acidity. This would indicate that acidity bears a very close relation to drainage.

Differences in soil material—that is, variations in the size and character of soil particles—and the effects of elevation, drainage, and the accumulation of organic matter have produced a number of different soils. These are grouped broadly into soil series, the soils of each series being similar in origin, color of the surface soil, color and structure of the subsoil, topography, and drainage. The soil series is divided into soil types on the basis of texture. In Tyrrell County 7 soil series are recognized and 14 soil types have been mapped. In addition to these normal soils, two miscellaneous soil types, Muck and Peat, have been mapped.

The surface soils of the Norfolk series are gray in color. Immediately below the surface there is a lighter gray or pale yellowish gray layer, which passes into a yellow, friable sandy clay or sand. These soils occupy undulating to slightly rolling uplands throughout the Coastal Plain. Where they occur in the more nearly level or seaward part of the plain they occupy ridges and better drained areas bordering streams and swamps. Two types, the fine sand and the fine sandy loam, are mapped in Tyrrell County.

The Ruston soils have grayish or brownish surface soils and a reddish-yellow, yellowish-red, or dull-red, friable sandy clay subsoil. In some places the lower part of the subsoil is mottled slightly with gray or yellow. The subsoil is generally slightly less friable than the subsoil of the Norfolk series. The Ruston fine sandy loam is the only type of this series mapped in Tyrrell County.

The Dunbar series is characterized by gray surface soils, passing into a yellow, fairly compact upper subsoil, which at a depth of 15 to 20 inches grades into a mottled yellow and gray or yellow, gray, and red, heavy, compact lower subsoil. The series is intermediate in position between the Norfolk soils on the one hand and the Bladen soils on the other, being slightly less well drained than the former and

better drained than the latter. The Dunbar fine sandy loam is mapped in Tyrrell County.

The types of the Bladen series are characterized by gray or brownish to nearly black surface soils. The subsoil consists of mottled brown, yellow, and drab or bluish-gray clay, which is heavy and plastic in the heavier types and slightly less so in the more sandy types. These soils occur in the lower lying part of the Coastal Plain and generally require artificial drainage before they can be cultivated. Five types, the fine sandy loam, very fine sandy loam, loam, silt loam with a deep phase, and silty clay loam are mapped in this county.

The Plummer series is characterized by gray or dull-gray surface soils, underlain by a dull-gray, sandy or sticky sandy subsoil, which is frequently mottled or stained with yellow. The soils of this series are low and wet and are very seldom cultivated. The fine sandy loam is the only type of this series mapped in Tyrrell County.

The surface soils of the Portsmouth series are dark gray to black and contain a high percentage of organic matter. The subsoil is light gray to mottled gray and yellow. In the heavier types it normally is plastic, although it contains a noticeable quantity of sand. These soils occur in flat to slightly depressed areas and are naturally poorly drained, ditching being necessary before they can be farmed. The series is developed in the flatwoods or low, seaward part of the Coastal Plain, and is represented in Tyrrell County by the fine sand, fine sandy loam, and loam with a swamp phase.

The soils of the Hyde series are characterized by their black color, high organic-matter content, and the depth of the surface soil. They differ chiefly from the Portsmouth soil in the depth of surface soil; in the Portsmouth series it is from 8 to 15 inches, while in the Hyde series it varies from 2 to 3 feet or more. The subsoil is a gray, friable sandy clay, becoming more plastic with depth. The Hyde series is developed in flat or slightly depressed areas that are poorly drained. The soils in their natural condition support a heavy growth of hardwoods. They are inherently very productive, but artificial drainage is necessary before they can be used for crop production. The Hyde loam is mapped in this county.

Large areas of Muck and Peat are mapped in Tyrrell County. Muck is a black soil consisting of well-rotted vegetable matter containing considerable quantities, usually from 30 to 50 per cent, of mineral material. It occurs in swampy areas and supports a heavy growth of reeds and a scattering growth of pines or hardwoods. Peat is composed largely of organic matter, less completely decomposed than that in Muck, mixed with a very small percentage of mineral matter. Peat is brown in color and more or less fibrous in structure. It occurs in swamp areas.

The distribution of the soils of Tyrrell County is shown on the accompanying soil map. The table below shows the actual and relative extent of each soil type:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Peat .....	115,008	46.1	Dunbar fine sandy loam .....	3,456	1.4
Portsmouth loam .....	10,560	17.4	Portsmouth fine sand .....	1,280	.5
Swamp phase .....	32,896		Norfolk fine sandy loam .....	1,152	.5
Hyde loam .....	21,504	8.6	Ruston fine sandy loam .....	1,024	.4
Muck .....	15,552	6.2	Portsmouth fine sandy loam .....	896	.4
Bladen loam .....	12,800	5.1	Norfolk fine sand .....	832	.3
Bladen very fine sandy loam .....	10,624	4.3	Plummer fine sandy loam .....	448	.1
Bladen silty clay loam .....	9,728	3.9			
Bladen fine sandy loam .....	6,208	2.5	Total .....	249,600	
Bladen silt loam .....	4,160	2.3			
Deep phase .....	1,472				

NORFOLK FINE SAND.

The surface soil of the Norfolk fine sand is a gray fine sand 4 to 6 inches deep. The subsoil is a yellow or pale-yellow, rather loose fine sand, which is uniform in color and structure to a depth of 3 feet or more. Where the type has been cultivated for some time the surface soil is a lighter gray than in newly cleared areas; in forested areas it is dark gray to brown. An area of sand on Buck Island, in the southeastern part of Gum Neck Township, has been included with the fine sand, the area of material of this coarser texture being insufficient to warrant separate mapping. This type occupies a very small acreage in Tyrrell County.

Spots of the Norfolk fine sand occur along the Newlands Road in Columbia Township, others border on the sound in Scuppernong Township, and one small area lies in the southeastern part of Gum Neck Township. These areas occupy ridges elevated several feet above the surrounding soil types and constitute the best drained soil in the county. Probably 60 per cent of the type is cultivated. The principal crops are corn, cotton, and sweet potatoes. Corn yields 10 to 20 bushels per acre, cotton about one-half bale, and sweet potatoes about 100 bushels.

Land of this type is valued at \$20 to \$100 an acre.

The Norfolk fine sand can best be improved by growing and turning under green manure crops, such as cowpeas. This will improve the water-holding capacity of the soil and at the same time increase the supply of nitrogen, which is shown by chemical analyses and experiments to be the element of plant food most needed in this soil.

NORFOLK FINE SANDY LOAM.

The surface soil of the Norfolk fine sandy loam is a gray loamy fine sand to light fine sandy loam, underlain at about 4 to 6 inches by a pale-yellow loamy fine sand, which continues to a depth of 12 to 18 inches. The subsoil is a yellow, friable fine sandy clay, which extends to a depth of 3 feet or more without any noticeable change in color or structure. The surface soil in forested areas is decidedly darker in color than in the cultivated fields, where it has leached out to a light gray. In areas of the type bordering the Dunbar or Bladen soils the subsoil is in places heavier in the lower part of the 3-foot section and may be mottled with gray or grayish yellow below a depth of 30 inches.

On Dillon Ridge, on the south shore of Alligator Creek in Alligator Township, and on Long Ridge in Gum Neck Township, are a few patches that differ from the type in that the surface soil is deeper, the yellow, friable clay subsoil being reached at depths varying from about 18 to 30 inches. The yields on this variation are slightly lower than upon the typical Norfolk fine sandy loam. Tobacco and peanuts, however, do well on this land.

The Norfolk fine sandy loam has a small development in Tyrrell County, being found only in scattering areas in Columbia and Scuppernong Townships. It occurs on the ridges or better drained areas bordering the sound and the swamps. Although it is small in extent, it is an important soil agriculturally, practically all of it being under cultivation. The uncultivated areas generally support a growth of small oak and second-growth pine, with a scattering of sweet gum on some of the more poorly drained areas.

The crops most extensively grown on the Norfolk fine sandy loam are corn and cotton, but potatoes, sweet potatoes, and several vegetable crops are also important. Corn yields from 15 to 40 bushels per acre, cotton from one-half to 1 bale, potatoes from 50 to 75 barrels, and sweet potatoes about 150 bushels.

This soil is especially adapted to the growing of tobacco, and the production of this crop should prove profitable.

The Norfolk fine sandy loam is easily handled. It is generally broken in the spring with 1-horse turning plows and cultivated with 1-horse implements. The use of fertilizers is universal. For best results cotton is fertilized with about 500 pounds of an 8-3-3 or 8-4-3 mixture. Corn receives from 200 to 500 pounds of 8-4-3 or 8-4-4 mixture. Potatoes grown as an early truck crop, generally receive from 2,000 to 2,400 pounds of a 7-8-5 fertilizer per acre. This is a heavy application, but the succeeding crop, either corn, cotton, or soy beans, is grown without further fertilization.

Soil of this type is valued at \$75 to \$250 an acre, according to location and improvements.

Experiments and analyses at the Edgecombe Test Farm by the North Carolina Department of Agriculture indicate that on the average a mixture containing about 7 per cent of available phosphoric acid, 7 per cent of nitrogen, and 5 per cent of potash, applied at the rate of 400 to 1,000 pounds per acre, is most effective for cotton on this type of soil. The best results were obtained where half the fertilizer was applied in the drill at the time of planting and the other half distributed along the row about the first of July.

#### RUSTON FINE SANDY LOAM.

The surface soil of the Ruston fine sandy loam is a gray to brownish-gray loamy fine sand to fine sand, 10 to 18 inches deep. The subsoil is a yellowish-red, friable fine sandy clay, which continues to a depth of 3 feet or more. In places this is slightly mottled with yellow or gray below 30 inches.

The type occurs in small areas in Scuppernong Township and in the northeastern part of Columbia Township, and occupies ridges and elevated areas adjacent to the sound and to swamps. The areas are well drained. The total area of this soil in the county is not very large, but probably 75 per cent of it is in cultivation. This is a fairly

important soil. It is used in the production of the same crops and is handled in the same way as the Norfolk fine sandy loam. It would also grow good tobacco.

The land is valued at \$75 to \$250 an acre, according to location and improvements.

DUNBAR FINE SANDY LOAM.

The Dunbar fine sandy loam, to a depth of 4 to 6 inches, is a moderately dark-gray or grayish-brown fine sandy loam, underlain by a pale-yellow fine sandy loam or compact fine sandy loam, which continues to a depth of 12 to 20 inches. This passes into a compact and tough clay, mottled yellow and gray, or a pale yellow mottled with gray and darker yellow, and in places with light red. In areas that have been cultivated for some time the surface has a lighter gray color than in forested areas. This lighter gray color continues to the depth of plowing, the subsurface material being like that in the wooded areas. The type as mapped in Tyrrell County is intermediate in position, drainage, and color characteristics between the Norfolk and the Bladen fine sandy loams. In Scuppernong Township a few small areas of Dunbar very fine sandy loam were included with the fine sandy loam.

The Dunbar fine sandy loam occurs in Scuppernong and Columbia Townships as low ridges and slopes bordering swamps and is better drained than the surrounding soil types. Its total area is comparatively small, but it is a valuable farming soil because of its good drainage. About 70 per cent of it is in cultivation.

Uncultivated areas are forested with small oak, pine, sweet gum, and sourwood. The most important crops are corn, cotton, potatoes, and sweet potatoes. Some peanuts, soy beans, and oats are grown, and an occasional patch of clover. Corn yields from 15 to 50 bushels per acre, according to the season, the fertilizer applied, and the thoroughness of cultivation. Cotton yields from one-third to 1 bale per acre. Potatoes yield from 40 to 80 barrels per acre and sweet potatoes about 125 bushels. Oats are usually cut for hay. The different crops on the Dunbar fine sandy loam are given the same fertilizer treatments as on the Norfolk fine sandy loam. The better drained areas are adapted to the growing of tobacco.

The Dunbar fine sandy loam generally sells for \$50 to \$300 an acre, the higher priced land usually being well improved and situated nearer to Columbia than the lower priced land.

This type requires very little lime to correct acidity. The growing and plowing under of winter cover crops and the application of stable manure would increase the yields.

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

*Mechanical analyses of Dunbar fine sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
235834.....	Soil.....	0.2	0.5	0.5	47.3	19.1	21.9	10.5
235835.....	Subsurface.....	.0	.1	.5	48.9	16.0	24.0	10.3
235836.....	Subsoil.....	.0	.1	.4	41.8	14.0	22.2	21.4

## BLADEN FINE SANDY LOAM.

The surface soil of the Bladen fine sandy loam is a moderately dark gray fine sandy loam or loamy fine sand, 6 to 8 inches deep. This is underlain by a gray or mottled gray and yellow loamy fine sand, which continues to a depth of 12 to 16 inches, and is in turn underlain by a mottled drab and yellow, rather plastic fine sandy clay. In the vicinity of Columbia and Cross Landing areas of the type occur in which the subsurface material continues to a depth of 18 to 30 inches. If these areas were more numerous, they would have been mapped as a deep phase of the type.

This type is developed most extensively in Columbia and Scuppernon Townships, although one fairly large area lies in the northwestern part of Alligator Township. It occurs as comparatively level areas which are slightly better drained than the associated Bladen types, but which require artificial drainage before they can be successfully cultivated. Probably 50 per cent of the type is in cultivation. Sweet gum, pine, and some maple form the greater part of the forest on this soil.

The Bladen fine sandy loam is an excellent soil for potatoes and corn. It is one of the most important potato soils in the low seaward part of the Coastal Plain from Florida to North Carolina. Potatoes yield from 50 to 100 barrels per acre and corn from 20 to 50 bushels. Cotton, also extensively grown, yields from one-third to 1 bale per acre. Soy beans are grown in the corn for forage and also alone for seed. There is a small acreage in oats. A 7-8-5 fertilizer is generally used in growing potatoes, and a lower grade, about an 8-4-4, for corn and cotton. The soil is inclined to be slightly acid and some lime is used to correct this condition.

Land of this type is held at \$50 to \$200 an acre, according to location and improvements.

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

*Mechanical analyses of Bladen fine sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
235829.....	Soil .....	0.3	1.0	2.6	54.9	15.1	17.1	9.1
235830.....	Subsurface .....	.0	.8	2.4	56.2	10.6	19.2	10.7
235831.....	Subsoil.....	.0	.6	2.0	47.2	10.1	20.9	19.2

## BLADEN VERY FINE SANDY LOAM.

The surface soil of the Bladen very fine sandy loam to a depth of about 6 inches is a dark grayish brown very fine sandy loam, underlain by a lighter colored very fine sandy loam which continues to a depth of 12 to 15 inches. The subsoil is a rather plastic drab or gray and yellow mottled very fine sandy clay or clay. Where the type has been cultivated for a number of years the surface soil is much lighter gray in color than in forested areas. The surface of a cultivated field is very light gray in the spring after the beating of the winter rains. The areas occurring in Gum Neck and the eastern part of Alligator Township on the whole have a slightly darker color than those in other parts of the county.

The type is developed throughout the county. It occurs as nearly flat areas elevated slightly above the surrounding swamp soils. Except on slopes bordering lower lying soil types the Bladen very fine sandy loam is poorly drained, and ditching is necessary before it can be cultivated successfully. There is a considerable area of the type in the county. It is valued for farming and probably 50 per cent of it is in cultivation. Uncultivated areas support a forest consisting chiefly of sweet gum and pine, with some maple. The principal crops are corn, soy beans, and cotton. Potatoes also are successfully grown, with as good yields as on the lighter textured soils, although the crop is not so early. Soy beans yield from 15 to 40 bushels per acre. Yields of the other crops are about the same as on the Bladen fine sandy loam.

Land of this type is held at \$50 to \$250 an acre, according to improvements and location with respect to markets and transportation.

Where land of this type has been cropped for a number of years it is likely to be deficient in organic matter. This condition should be corrected by the plowing under of green-manure crops and by the application of barnyard manure.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Bladen very fine sandy loam:

*Mechanical analyses of Bladen very fine sandy loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
235827.....	Soil.....	<i>Per cent.</i> 0.2	<i>Per cent.</i> 0.2	<i>Per cent.</i> 0.4	<i>Per cent.</i> 8.7	<i>Per cent.</i> 54.3	<i>Per cent.</i> 25.9	<i>Per cent.</i> 10.4
235828.....	Subsoil.....	.2	.1	.1	4.4	34.5	29.7	31.3

#### BLADEN LOAM.

The Bladen loam consists of about 10 inches of rather dark brown or dull grayish brown loam, resting on a subsoil of drab clay mottled with yellow and rusty brown. In the more swampy areas the subsoil may be gray and mottled with yellow, but the clay subsoil is everywhere rather stiff and plastic. In the swampy areas there is considerable organic matter on the surface or mixed with the surface few inches of soil.

The largest areas of the type are developed in the eastern part of Alligator and Gum Neck Townships. Other areas lie near Jerry, Cross Landing, and Kilkenny. The areas are flat or slightly depressed and in most places somewhat swampy. Artificial drainage is necessary before the land can be farmed. The natural vegetation consists chiefly of sweet gum, black gum, poplar, pine, and maple, with an undergrowth including myrtle, smilax, and some gallberry. In the more swampy areas black gum predominates and some cypress occurs. Reeds, ferns, and sphagnum moss are common among the smaller plants in the swampy areas. Probably not over 5 per cent of the type is in cultivation at present. Corn, cotton, and soy beans are the principal crops. The grazing of cattle and hogs is now more important than the production of crops, but this is a valuable soil and more of it should be drained and cultivated.

The land sells for \$35 to \$200 an acre, the higher prices being obtained for land that is well drained and in a good state of cultivation.

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

*Mechanical analyses of Bladen loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
235825.....	Soil.....	0.5	0.7	0.9	25.4	23.1	24.5	25.0
235826.....	Subsoil.....	.1	.2	.6	20.9	18.4	27.4	32.5

#### BLADEN SILT LOAM.

The surface soil of the Bladen silt loam is a moderately dark grayish brown silt loam, about 6 inches deep. This is underlain by a gray silt loam, which continues to a depth of 10 to 14 inches, where it passes into a gray or drab plastic clay mottled with yellow. In areas that have been cultivated for some time the surface soil is prevailingly very light in color, the surface of the fields having a light-gray appearance. The cultivated soil in the Gum Neck region is darker than in Scuppernong Township.

This type occurs as scattered, nearly level areas lying slightly above adjoining swamp soils and not quite so high as associated soils of lighter texture. The drainage is poor, and open ditches are used to carry off the water from the cultivated fields. About 50 per cent of the type is in cultivation. The characteristic vegetation on virgin areas consists of sweet gum, maple, and pine, with myrtle and reeds conspicuous among the smaller plants. The most important crops are soy beans, corn, and cotton. Some oats and cowpeas are grown. Soy beans yield from 15 to 40 bushels per acre, corn about the same, and cotton from one-third to three-fourths bale. Cattle and hogs are grazed on the unreclaimed areas.

The land sells for \$35 to \$200 an acre, according to location and improvements.

Soil of this type is apt to harden in dry weather. This condition can be remedied by the incorporation of organic matter. Liming is also beneficial, as the soil is somewhat acid.

*Bladen silt loam, deep phase.*—The deep phase of the Bladen silt loam differs from the typical soil chiefly in that the layer of silt loam material continues to a depth of 2½ to 3 feet or more. To a depth of 6 inches the soil is similar to that of the typical soil. This is underlain by a gray silt loam slightly stained in places with yellow. In spots the content of very fine sand is greater than in a typical silt loam. This subsurface layer is underlain at about 30 inches by a mottled yellow and gray silty loam, which passes into a fairly plastic very fine sandy clay also mottled gray and yellow.

This phase differs very little in agricultural value from the typical Bladen silt loam. The fact that the clay subsoil is encountered at greater depths gives the phase better underdrainage and makes it safer in wet seasons than the typical soil. The same crops are grown as on the typical soil. This phase occurs in the Gum Neck neighborhood.

BLADEN SILTY CLAY LOAM.

The surface soil of the Bladen silty clay loam is a dull-gray or drab silty clay loam or clay loam, with an average depth of 10 inches. A thin layer of organic matter occurs here and there on the surface in the more swampy areas. The subsoil is a dull-gray or drab, rather plastic silty clay or clay mottled with yellow and brown. In one or two areas north of the Scuppernong River the surface soil is heavier than typical, being a clay in texture. In some of the larger areas are included small patches of Bladen loam too small to be mapped separately.

The type occurs as depressed, swampy areas, usually situated a short distance from Albemarle Sound, the Scuppernong and Alligator Rivers, and Lake Phelps. The largest areas are in Gum Neck Township. The drainage of all areas is poor, and only a few small fields are in cultivation. These are utilized mainly for the production of soy beans, corn, and oats. The virgin areas support a forest growth of black gum, sweet gum, maple, and cypress. Cattle and hogs are grazed on the type.

The unimproved land is generally valued at \$15 to \$50 an acre, but cultivated land of the type located near Lake Phelps is held at about \$200 an acre.

The following table gives the results of mechanical analyses of samples of the soil and subsoil of the Bladen silty clay loam:

*Mechanical analyses of Bladen silty clay loam.*

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		<i>Per cent.</i>						
235832.....	Soil .....	0.2	0.3	0.6	7.6	37.1	31.4	23.1
235833.....	Subsoil.....	0	.1	.2	3.4	47.6	33.3	15.5

PLUMMER FINE SANDY LOAM.

The surface soil of the Plummer fine sandy loam is a gray to moderately dark gray fine sandy loam, 6 to 8 inches deep. This is underlain by a gray, rather loose clayey fine sand, mottled with different shades of yellow. In some places the subsoil shows more yellow than gray. Areas of this type lie a short distance from the Scuppernong River; the most extensive development is north of the river. One small area is mapped 1½ miles south of Columbia.

The areas are flat and poorly drained, most of them being swampy. None of the land is cultivated at present, although one small area is cleared and was cultivated at one time. The land has a low agricultural value, owing to its poor drainage and its low position, which makes artificial drainage impracticable. The vegetation consists chiefly of pine, maple, and gum, with an undergrowth of bay and briers. The value of the land is determined by the stand and quality of timber growing on it.

PORTSMOUTH FINE SAND.

The surface soil of the Portsmouth fine sand consists of a black fine sand, 10 to 16 inches deep, containing a high percentage of

organic matter. The subsoil is a gray fine sand, in places slightly mottled with yellow, which continues to a depth of 3 feet or more. The Portsmouth fine sand, as mapped in Tyrrell County, includes some variations. Part of the type lies at a higher elevation and is therefore better drained than the remainder.

The type occurs in Columbia Township and is developed most extensively about 4 miles south of Columbia and in the vicinity of the Newlands Road. One area lies about 2 miles north of Columbia. The surface is prevailingly flat, and drainage is effected through the subsoil. The lower lying part of the type is at present very poorly drained, while that on ridges has been ditched and is sufficiently well drained to be cultivated. Where the type occurs on a ridge it occupies the top or flat part of the ridge, the better drained slopes being occupied in most cases by the Norfolk fine sand. Fifteen or twenty per cent of the type is cultivated. Pine, gallberry, and bay are characteristic plants in the vegetation on uncleared areas. Corn is the leading crop.

#### PORTSMOUTH FINE SANDY LOAM.

The surface soil of the Portsmouth fine sandy loam is a dark-gray to black fine sandy loam with a depth of 6 to 12 inches. This is underlain by a friable fine sandy clay, mottled gray and yellow, the gray color predominating.

Some areas of very fine sandy loam in the vicinity of the Frying Pan were mapped with the fine sandy loam because of their small extent. The agricultural value of the two soils is very much the same.

Areas of the Portsmouth fine sandy loam lie just east of Columbia, on Mills Ridge, and along the Newlands Road, on low ridges elevated slightly above the surrounding Portsmouth loam. The type is too flat to have good surface drainage, but the subsoil is friable and the land is sufficiently elevated to be well drained by the open ditches that have been dug where the type is cultivated.

The Portsmouth fine sandy loam is not very extensively developed in Tyrrell County, but it is a fairly important agricultural soil. About 40 per cent of it is cultivated. The remainder supports a growth consisting chiefly of pine, sweet gum, maple, myrtle, and gallberry. The crops most extensively grown are corn, cotton, soy beans, and potatoes and other vegetable crops. Corn yields from 20 to 40 bushels per acre, cotton from one-half to 1 bale, soy beans from 15 to 30 bushels, and potatoes from 60 to 100 barrels or more. During the 1920 season potatoes averaged better yields on this type than on any other in the county.

A good deal of this land is advantageously located, and cleared land in a high state of cultivation is valued as high as \$250 an acre. Uncleared land not so well situated may sell for as little as \$40 an acre.

#### PORTSMOUTH LOAM.

The surface soil of the Portsmouth loam is a dark-gray to black loam, high in organic matter, varying in depth from 8 to 16 inches. This surface material in most places passes into a layer of gray, friable very fine sandy clay, from 2 to 6 inches thick. The subsoil

below this layer, to a depth of 3 feet or more, is a gray and yellow mottled very fine sandy clay.

Areas of this type are found in all parts of Tyrrell County except Scuppernong Township. The surface is flat and slightly above that of the surrounding swamp soils, but lower than that of the adjacent fine sandy loam and very fine sandy loam types. The natural drainage is poor, and the type must be artificially drained before it can be farmed. About 20 per cent of the type is under cultivation. The native vegetation on uncleared areas consists largely of scattered pines, a few sweet gums, and an undergrowth of gallberry and myrtle and other minor plants. In most places there is a good growth of grass, which makes excellent pasture. This soil is especially adapted to the growing of corn, soy beans, and cotton. Corn yields from 20 to 60 bushels per acre, soy beans from 20 to 40 bushels, and cotton about three-fourths bale. Newly cleared land of this type is generally not fertilized for several years, and afterwards the applications of fertilizer are comparatively light. Lime has been found to be beneficial. This land generally is held at \$50 to \$200 an acre.

*Portsmouth loam, swamp phase.*—The swamp phase of the Portsmouth loam differs from the typical soil chiefly in characteristics that are caused by a lower position and consequent poorer drainage. There is a greater accumulation of organic matter in the soil, and the immediate surface is in places somewhat mucky, the black soil varying from 10 to 18 inches in depth. This is underlain by a gray, fairly compact though frequently somewhat friable, very fine sandy clay or clay, slightly mottled here and there with yellow. This phase occurs rather extensively in all parts of Tyrrell County, except Scuppernong Township. At present it is not cultivated, although the drainage and development of several large areas is contemplated. The native vegetation consists of pine, sweet gum, maple, black gum, myrtle, gallberry, bay, smilax, small reeds, ferns, and mosses. Some cypress is found in small exceptionally wet areas. Cattle are grazed rather extensively on this soil.

The swamp phase of the Portsmouth loam is a valuable soil and would well repay the expense of clearing and draining. In its present condition it is valued at \$15 to \$50 an acre.

#### HYDE LOAM.

The Hyde loam is a black mellow loam containing a high percentage of organic matter and varying in depth from 18 inches to 3 feet, the average depth being about 24 inches. Dry samples of the soil and the surface of cultivated fields that are very dry are dark gray rather than black. Although this surface material is similar to and closely associated with Muck, it differs in having a higher percentage of mineral matter, which makes it heavier and causes the characteristic dark-gray color of the dry sample, while Muck remains black. The subsoil is a gray, friable very fine sandy clay, or in places a gray very fine sandy loam that passes into the friable clay. In some places the surface 12 inches is decidedly mucky, the second foot being a typical black loam.

The type occurs in rather large areas in Alligator, Gum Neck, and South Fork Townships, and one smaller area lies near Cross Landing in Columbia Township. Areas of the soil are usually level or slightly

depressed and the drainage is poor. About 10 per cent of the type is cultivated. The remainder is swamp, most of which could be successfully drained by large canals and smaller lateral ditches. There are three types of plant associations on the virgin areas. On those areas bordering higher lying soil types the growth generally consists of hardwoods, principally black gum, maple, and cypress. Other areas support a scattering growth of hardwoods and a heavy growth of tall reeds, and in still others the growth is similar to that occurring on the swamp phase of the Portsmouth loam. Corn, soy beans, and cotton are the principal crops. Corn produces from 25 to 65 bushels per acre, soy beans from 20 to 40 bushels, and cotton from one-half to 1 bale.

Cultivated land of this type is worth from \$100 to \$200 an acre and swamp land from \$35 to \$50.

#### MUCK.

Muck consists of well-decayed vegetable matter mixed with varying proportions of mineral matter, usually from 30 to 50 per cent. It is black in color and varies in depth from 26 inches to several feet. In places there is a surface layer of 2 or 3 inches of Peat, which consists of organic matter in a less advanced stage of decomposition. The subsoil is a gray very fine sandy loam, immediately beneath the surface soil, gradually passing into a gray, moderately friable very fine sandy clay.

The most extensive areas of Muck occur south of Mills Ridge, north and west of Kilkenny, between the Bodwell and Newlands Roads, and in a long strip southeast of the Bee Tree Canal near Lake Phelps. Muck occupies flat or depressed swamp areas, and none of it is at present cultivated. Reeds are a characteristic growth on the type. They occur associated with scattering pines and in some places with gallberry, bay, and smilax. Where Muck borders areas of higher soils near bodies of water the growth generally consists of hardwoods, chiefly black gum, maple, and cypress.

Grazing is the only agricultural use of this soil at present. In near-by counties, however, large areas of Muck have been drained and are successfully cultivated. Corn is the crop to which it is best adapted, and yields as high as 70 bushels per acre have been obtained. At present the land is valued at \$25 to \$50 an acre.

#### PEAT.

Peat consists of brown, rather spongy vegetable material that has not reached the degree of decomposition of the material constituting Muck. The material is rather fibrous in structure, and the roots, leaves, and stems of plants from which Peat is derived are frequently distinguishable. In general, Peat contains less mineral matter than Muck, but in some low areas bordering streams there has been some accumulation of mineral sediment along with the fibrous vegetable matter. Peat is generally several feet in thickness, there being only a few areas in Tyrrell County where the bed is less than 3 feet deep. Such areas occur 2 miles north of Columbia and just south of the Newlands Road. The underlying material in these areas is a gray fine sand.

Peat is rather extensive in Tyrrell County and occupies two distinct positions. It occurs either as swamps bordering streams and lying very little above the level of the water, or as relatively high, level areas lying so far back from the streams that drainage has not been established. The vegetation on the former consists largely of cypress, juniper, and maple, with a heavy undergrowth of shrubs, ferns, and moss. The latter areas support a growth of scattering pines, with an undergrowth of bay, gallberry, and smilax, and occasionally low-growing reeds. In a few places juniper is the predominating growth. This soil is not cultivated, but it is at present valued for forest and for grazing. Areas of the type sufficiently elevated to be drained could be farmed, but not so successfully as the other swamp soils. Chemical analyses show Peat to contain large quantities of nitrogen, but owing to the raw state of the material very little of this would be immediately available to growing plants.

#### SUMMARY.

Tyrrell County, situated in the northeastern part of North Carolina, has a total land area of 390 square miles, or 249,600 acres. It lies entirely within the lowest and most eastern of the marine terraces making up the Coastal Plain region of the State. It is generally flat in topography, but contains numerous ridges elevated only a few feet above the surrounding country. Except for the higher of these ridges, the drainage of the county is poor, every farm being at least in part artificially drained. The regional drainage is effected through the Alligator and Scuppernon Rivers and their tributaries.

Parts of the county have good transportation facilities; other parts are somewhat isolated. The county roads are generally poor, but they are being improved in a number of instances. The most important outside markets are Norfolk and Elizabeth City.

The climate of Tyrrell County is mild and very favorable for diversified farming, trucking, and cattle raising. The mean annual temperature is about 62° F. Killing frosts rarely occur after the last week in March or before the last week in November, the average growing season being about eight months. The mean annual rainfall is about 52 inches. This is distributed pretty well throughout the year, the greater part, however, coming during the active growing season.

The agriculture of Tyrrell County consists chiefly of general farming. The most important crop is corn, with soy beans and cotton ranking next in order. Although potatoes occupy a smaller acreage than any of the three crops mentioned above, they constitute one of the most important cash crops in the county. Cattle and hogs are raised to a considerable extent, and there are a number of sheep in the county.

Light implements and work stock are generally employed in farming operations.

Commercial fertilizers are used in large quantities on most of the crops, especially on potatoes.

About 70 per cent of the farms are operated by the owners.

The selling price of the land varies from \$25 to \$300 an acre, according to location and the character and extent of the improvements.

The soils of Tyrrell County are derived from unconsolidated sands and clays of sedimentary origin. The normal soils, of which there are 14, are classed in 7 series. In addition to these there are two miscellaneous types, Muck and Peat.

The Norfolk, Ruston, and Dunbar soils are the better drained soils of the county. They are well adapted to the growing of corn, cotton, soy beans, potatoes, and truck crops.

The Bladen soils have a flat surface and poor drainage, but are especially fertile soils when they are artificially drained and properly cultivated. These soils are well adapted to corn, soy beans, and cotton, and the sandy types are especially suited to potatoes.

The Plummer fine sandy loam is a poorly drained soil little used for agriculture.

The Portsmouth and Hyde soils are black, poorly drained soils, especially adapted to corn and soy beans, although other crops do well.

Muck and Peat are soils composed almost entirely of organic matter, the Muck being well decomposed and the Peat being much less so. These soils occur in swamps and at present are not farmed.

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