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U. S. DEPARTMENT OF AGRICULTURE,

BUREAU OF SOILS—MILTON WHITNEY, Chief.

IN COOPERATION WITH THE STATE OF ALABAMA, B. B. COMER, GOVERNOR;
J. A. WILKINSON, COMMISSIONER OF AGRICULTURE AND INDUSTRIES.

SOIL SURVEY OF COFFEE COUNTY, ALABAMA.

BY

LEWIS A. HURST, OF THE U. S. DEPARTMENT OF AGRICULTURE,
AND A. D. CAMERON, OF THE ALABAMA DEPARTMENT
OF AGRICULTURE AND INDUSTRIES.

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., December 21, 1910.

SIR: In the extension of soil survey work in the State of Alabama work was undertaken in Coffee County during the field season of 1909. This work was done in cooperation with the Alabama department of agriculture and industries, and the selection of the area was made after conference with the state officials.

I have the honor to transmit herewith the manuscript report and map covering this area and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1909, as provided by law.

Very respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. JAMES WILSON,
Secretary of Agriculture.

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SOIL SURVEY OF COFFEE COUNTY, ALABAMA.

By LEWIS A. HURST, of the United States Department of Agriculture, and A. D. CAMERON, of the Alabama Department of Agriculture and Industries.

DESCRIPTION OF THE AREA.

Coffee County, Ala., is situated in the southeastern part of the State and contains 439,680 acres, or 687 square miles. The county was created by an act of the legislature December 29, 1841, from territory taken from Dale County, which forms its present eastern boundary. Geneva County lies on the south and Pike, Crenshaw, and Covington counties on the north and west. The county is a rectangle 29 miles long and 24 miles wide. The county line is broken on the south by a fractional section along the course of Pea River, which "dips" into Geneva County. The northeastern corner is also irregular, Township 7, R. 19, having been divided, a part being included in Crenshaw County.

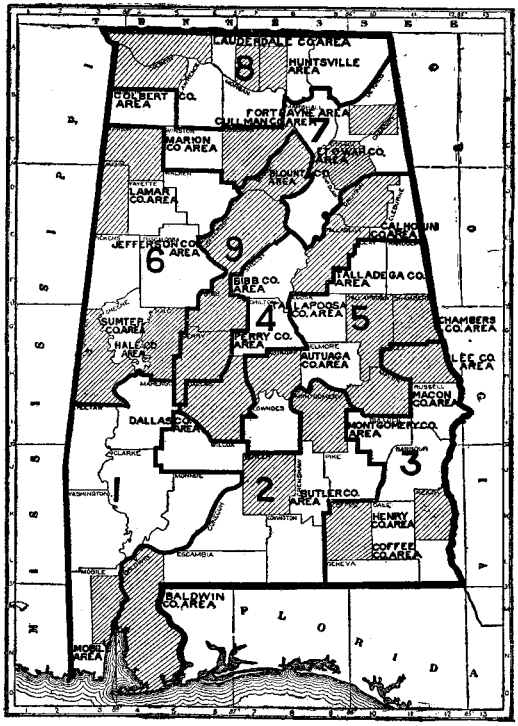

FIGURE 1.—Sketch map showing location of the Coffee County area, Alabama.

The county has had a moderate but steady growth in population. According to the census of 1850, 5,940 people were then living in the county. By 1900 the population had increased to 20,972. The greatest increase occurred between 1890 and 1900. The present population is 26,119.

Elba, the county seat and oldest town in the county, is situated near the center of the county at the junction of White Water Creek

and Pea River. It is the terminus of a branch line of the Atlantic Coast Line Railroad, and has a population of about 1,079. Enterprise, situated in the southeastern part of the county, is the largest town, with a population of 2,322. Eleven years ago it was merely a cross-roads point, in the heart of a large forest, consisting of two or three stores and as many houses. It is now a thriving town, equipped with all modern conveniences. There are located here a number of manufacturing plants. New Brockton and Richburg, near the center of the county, Pink, in the southeastern corner, Clintonville, and Victoria include the other towns and villages. Small country stores, conveniently located throughout the county, furnish the local needs of the more remote sections. The county is supplied with telephone systems, with rural free delivery of mail, and with churches and schools.

Transportation facilities are at present inadequate. The branch line of the Atlantic Coast Line Railroad, previously referred to, which enters the county about 3 miles east of Enterprise, and has a general northwest course to Elba, is the main outlet. The Louisville and Nashville Railroad, which crosses the southwestern corner of the county, is the only other means of transportation, except some tramroads which extend from Richburg into Geneva County. One of these latter roads is being gradually improved, and may in time become one of the main transportation outlets for the southern portion of the county. The northern portion of the county has no railroad transportation facilities. The nearest markets are Elba, Troy, Brantley, and Ozark. A large percentage of the trading from that section is at present being done at Troy, in Pike County. The good roads which have been built in Pike County make it easier to get to market, even with the extra distance to Troy. The building of roads in Coffee County would aid in building up the local towns.

Before the advent of railroads in southern Alabama, Troy, Eufaula, and Pensacola were the principal markets. Savannah, Ga., now receives the bulk of the cotton shipped out of the county. Montgomery, Ala., is the principal trading point.

The early settlers in Coffee County were immigrants who " drifted " into Alabama from the older States bordering the coast, including as principal sources Georgia, North Carolina, South Carolina, and Virginia. A few came from as far north as the New England States. Their settlement in the county dates from about 1830. The first settlements were established in the hills in the northern portion of the county. It was then considered unhealthy to live in the bottoms and in the " piny woods " section. The " Mountain Settlement," so called locally, which lies north and west of Elba, is probably the oldest settled section of the county. It constitutes a very rough, broken section and is mostly deep sand. It was originally forested

with oak, hickory, beech, ash, elm, and chestnut. Second-growth pine, scrub oak, and underbrush now occupy much of the same area.

The lack of market facilities gave very little encouragement to agriculture in the early days, and hunting and fishing were the chief occupations. Small patches of corn, potatoes, and wheat were grown for home use.

The clearing up and settlement of the "piny woods" section, or the southern and western portions of the county, and the building of the Atlantic Coast Line Railroad from Waterford to Elba have done more than anything else to develop the agricultural interests of the county. Within the past ten years the forests have been depleted of their fine growth of longleaf pine, and the lands cleared. At the present time the "piny woods" lands are largely under cultivation and constitute the most prosperous and productive section of the county. With better market facilities these lands will continue to advance in price. Less than one-fourth of the present population live in towns, but there seems to be a growing tendency for the landowners to lease their lands and take up residence in the towns.

The course of Pea River from the northeastern to the southwestern corner of the county indicates the general direction of the drainage of Coffee County, particularly the northern, western, and southern portions. The divide upon which the Atlantic Coast Line Railroad is built from Enterprise to Elba, and a similar divide extending from New Brockton in the direction of Tabernacle Church, give direction to the various drainage systems for the central and eastern portions of the county. In the latter case the drainage is eastward into the Choctawhatchee River, through Boles, Stripling, Cowpen, Line, and Wilkeson creeks. Double Bridges, Tight Eye, Phillips, and Flat creeks flow across the southern border of the county, but are tributaries to Pea River. The latter river flows into the Choctawhatchee River at Geneva, whence the waters find their way into the Gulf of Mexico. The largest tributary to Pea River is White Water Creek, which empties at Elba. Its main feeds are Big Creek and Pea Creek. The former also has several large streams flowing into it, including Bluff, Stinking, and Sweet Water creeks. This network of streams, emptying into White Water Creek, furnishes ample drainage for the northern part of the county. Other tributaries to Pea River include Clearwater, Halls, Cardwell, Indigo, Harpers Mill, Beaver Dam, Helms Mill, Bucks Mill, Hays, and Pages creeks. The county is naturally well drained, and even the bottom lands could all be cultivated if proper artificial connections were made with the natural outlets so as to drain the low-lying areas.

The topography of Coffee County ranges from long flat ridges in the southern part to hilly, broken surfaces in the northern part. The former include the "piny woods" section and the latter the

"hill lands." The choppy surface in the northern part of the county is due to erosion, which has reduced the original peneplane to a succession of rounded knolls and narrow ridges, with an extensive network of intervening gullies and branches, which serve as feeders for the several creeks. In the south erosion has not been so active and larger areas of the original peneplane are still intact, these areas occurring as long flat divides between the several stream courses. The slopes from the ridges to the streams are more gentle than in the northern part of the county. The largest ridge of this character extends from Pink to the northwestern corner of the county. In the central and eastern parts another large ridge occurs upon which are located Enterprise and New Brockton. Other ridges of similar character form the main watersheds between Wilkeson, Double Bridges, Tight Eye, and Phillips creeks. The latter ridges have a general north-and-south direction. The base map of the county, showing the location of roads, railroads, streams, towns, schoolhouses, churches, dwellings, etc., was constructed with the use of the plane table as the soil mapping progressed. This is the first traverse map made of the county and is upon the scale of 1 inch to the mile.

CLIMATE.

The climate of Coffee County is not only suited to a widely diversified agriculture, with certain crops growing in the field the year around, but those who till the soil find it equally suitable to their health and comfort. The summers are long, with periods of high temperature, but even during the four hottest months, June, July, August, and September, the mean monthly temperature rarely exceeds 80° F. The winters are short and usually mild, although an occasional "norther," or sudden cold wave from the north, causes the temperature to drop suddenly at times. The cold "snaps" seldom last for more than one to three days, and during these periods the soil rarely freezes to depths of more than an inch or two. Zero weather is almost unknown in this section, and 10° to 12° above zero is about the usual minimum temperature. January and February are generally looked upon as the coldest and most disagreeable of the winter months, but the weather moderates so that corn planting is usually begun by the 1st of March.

Cotton is planted at any time from the last of March to the first of May. Plowing can be done during any month of the year, and the growing seasons are sufficiently long to allow at least two plantings of most crops to mature between the time of the last killing frost in the spring and the first in the fall. The mild winter climate makes it possible to graze cattle and do out-door work, both in the field and upon public works, practically all the year. Shelter should be provided, however, for stock during the winter season.

The long summers and occasional hot days are necessary for the production of cotton and other crops requiring several months in which to mature. This climate is also well suited to truck and tobacco, but neither crop is grown for other than local consumption. It is favorable for the growing of winter-cover crops, such as oats rye, vetch, clover, etc., all of which furnish excellent pasture for stock, which would greatly reduce the cost of wintering.

The average mean annual precipitation is about 51 inches, with a summer mean of 16.2; so that the greatest rainfall occurs in showers during the growing season, when it is most needed. The fall mean is the lowest, which is especially favorable for harvesting cotton. The rainfall is adequate for all crops grown in the area, if proper attention be given to the tillage of the soil to conserve its moisture. To prevent washing and gullying during the winter season, when the precipitation is usually heavy, terracing should be more generally followed. The growing of winter-cover crops would also retard erosion, and when turned under as green manure in the spring would increase considerably the water-holding capacity of the soil.

The largest towns in the area are supplied with water obtained from artesian wells. In one of the larger towns many private artesian wells have been driven for home use. The county throughout is well supplied with an abundance of good water from springs and dug wells.

The following table gives the mean annual and monthly temperature and precipitation as well as the maximum and minimum as collected at Eufaula, Ala., which is the Weather Bureau station nearest to the area. The climatic conditions are quite similar, however, to those of Coffee County. The dates of the last killing frost in spring and the first in the fall are also included in the following table:

Normal monthly, seasonal, and annual temperature and precipitation at Eufaula, Barbour County.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute minimum.	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	Inches.	Inches.	Inches.	Inches.
December	49	82	10	4.0	3.4	5.1	0.0
January	47	81	12	3.8	3.5	4.3	0.1
February	50	81	− 4	6.7	5.6	7.2	0.5
Winter	49	.....	.....	14.5	12.5	16.6	0.6
March	59	88	21	6.1	3.9	7.8	0.0
April	66	92	30	2.7	2.3	3.7	0.0
May	74	101	42	3.2	3.1	5.7	0.0
Spring	66	.....	.....	12.0	9.3	17.2	0.0

Normal monthly, seasonal, and annual temperature, etc.—Continued.

Month.	Temperature.			Precipitation.			
	Mean.	Absolute maximum.	Absolute. minimum	Mean.	Total amount for the driest year.	Total amount for the wettest year.	Snow, average depth.
	°F.	°F.	°F.	*Inches.*	*Inches.*	*Inches.*	*Inches.*
June	79	101	52	3.9	3.7	2.6	0.0
July	81	104	56	6.7	10.2	3.1	0.0
August	80	103	63	5.6	1.9	10.1	0.0
Summer	80	.....	.....	16.2	15.8	15.8	0.0
September	76	100	39	3.0	2.0	11.4	0.0
October	66	94	30	2.5	2.7	1.9	0.0
November	54	83	23	2.9	4.0	1.1	0.0
Fall	65	.....	.....	8.4	8.7	14.4	0.0
Year	65	104	− 4	51.1	46.3	64.0	0.6

Date of first killing frost in fall (average), November 9; date of last killing frost in spring (average), March 14; date of earliest killing frost in fall, October 25; date of latest killing frost in spring, April 1.

AGRICULTURE.

Beginning with the early settlement of Coffee County, its growth and development have come from its agricultural resources. Mining or manufacturing has had no part in it, except as the latter aided in marketing the lumber. The revenue obtained from turpentine and lumber has enriched those who participated in the profits, but these industries, through their devastation of the forests, have decreased rather than increased the assets of the county, especially upon those lands which are not particularly adapted to general farming. The early settlers attached no particular value to the timber except for building purposes, rails for fences, etc., and destroyed by fire or otherwise whatever forest growth occupied the lands needed for farming.

Since the products raised by the early settlers had to be hauled long distances to market, it was generally unprofitable to grow money crops, or to practice diversified farming as it is now understood. Whatever the pioneer produced was mainly consumed at home. Corn and potatoes were the principal crops, but wheat, tobacco, rice, cotton, and a few truck crops were also cultivated. The little cotton grown had to be ginned by hand. Some sheep and a few hogs were kept, but the latter were of inferior grade.

The agricultural development of the county has always been a gradual one, but with the introduction of the power gin cotton became the money crop and since that time its production has been limited only by the supply of labor, or ability of the planters them-

selves to cultivate and gather the crop. This gave rise to the "one-crop" system, cotton being produced to the exclusion frequently of even home supplies, and most of the meat, flour, meal, fertilizers, and feed stuffs were shipped in from northern and western States. With the scarcity of labor in many sections, and its increased cost, this system must sooner or later be abolished and a better system of farm management established in its place. Corn, oats, and potatoes have always constituted the secondary crops, but in recent years their production has been gradually increased.

In 1860 there were only 56,612 acres in improved farms, as compared with 131,093 acres as shown by the census of 1900. The census of 1910 will undoubtedly show a much greater proportionate increase, for a large per cent of the "piny woods" section has been improved within the past ten years. The total number of acres of both improved and unimproved farms in 1860 was 269,793, valued at $1,004,062, with $392,032 to be added for live stock. The same data taken from the census of 1900 were 463,068 acres of improved and unimproved farms, valued at $1,618,093, and $463,482, the value of live stock. The implements and machinery used upon the farms in 1860 were valued at $41,228, while in 1900, $106,210 was thus invested. The production of cotton has increased from 5,294 400-pound bales in 1860 to 25,839 500-pound bales in 1908. In 1860 257,822 bushels of corn, 2,508 bushels of oats, 892 bushels of Irish potatoes, 78,357 bushels of sweet potatoes, and 3,483 gallons of molasses were produced, as compared with 558,220 bushels of corn, 7,620 bushels of oats, 18,414 bushels of Irish potatoes, 53,558 bushels of sweet potatoes, and 112,539 gallons of molasses in 1890. The statistics of 1900 also show that 11,683 acres were planted in peanuts, with an estimated yield of 117,541 bushels. The hay crop was estimated at 261 tons. Wheat production has practically been discontinued on account of decreased yields and the prevalence of rust, etc. Some of the heavier upland soils and the better-drained bottom lands will give good yields of wheat.

In the interest of higher prices for cotton some effort has been made in recent years to limit the production of this staple, but as the rentals for land and the liens are paid almost exclusively in cotton, the production has shown a gradual increase. The following table, compiled from the census reports from 1900 to 1908, shows this conclusively:

Production of cotton in Coffee County, 1900 to 1908.

Year.	Bales.	Year.	Bales.	Year.	Bales.
1900	17,951	1903	17,038	1906	24,698
1901	17,821	1904	26,565	1907	22,913
1902	20,261	1905	21,576	1908	25,839

Through the introduction of better methods of growing corn, the production of this staple has considerably increased, especially in the past two or three years, the largest crop in the history of the county being produced in 1909, at the time of this survey. Considerable acreages were grown under the Williamson method, but in many instances this method was modified to meet the local conditions. The average yield of corn per acre in 1900 was 11 bushels. The census of 1910 will probably show an increase over this figure. Sixty to eighty bushels per acre are not uncommon where the more intensive methods, including high fertilization, have been followed.

The acreage planted to peanuts increased from 2,334 in 1890 to 11,683 in 1900, and this crop has no doubt made much greater progress in the last ten years. The value of the peanut for fattening hogs and the ease with which the crop is made has led to its cultivation upon most of the farms in the county, even by many tenants who only rent their places for a year at a time. The peanuts are seldom gathered, except to supply seed required for the following year, but hogs are turned into the fields and allowed to forage for themselves. The general practice is to plant them between the corn rows, and thus cultivate them along with the latter crop. In some instances they are sown in the cotton middles, but the advisability of this method is questioned by some of the better informed farmers, unless the bunch or Spanish variety is used, for it is claimed the running varieties consume too much of the fertilizer which is intended for the cotton. The Spanish peanut is also early and can be harvested before the cotton is made. A better practice is to sow oats or rye, or rye and vetch, in the cotton middles in the early fall. Peanuts are also frequently sown alone in narrow rows. The tops are cut along with crowfoot, crab grass, etc., for hay, of which a ton or more per acre is obtained. The fields are temporarily fenced and the nut crop gathered by hogs, as previously stated. If this feed is supplemented with corn the results are quite profitable. The culture of peanuts is also beneficial to the land.

Some attention is being given to crop rotation, but the practice is largely confined to the smaller farms and to areas farmed by the owners. The renters or tenants follow almost exclusively the "one-crop system," the only rotation ever practiced being the occasional substitution of corn for cotton. One of the best rotations thus far suggested by the experiment station at Auburn includes the following: First year, corn with cowpeas (Iron cowpeas, velvet beans, or peanuts may be used), followed by oats in the fall; second year, follow oats with soy beans, cowpeas, or peanuts; third year, plant cotton and follow with crimson clover or rye and vetch; fourth year, again follow cotton with oats, clover, or rye and vetch. This rotation can be modified to meet the local conditions, but if stock raising is

given its share of attention the rotation should be carried out as near in full as practicable. The use of winter cover crops suggested by this system of rotation is especially valuable in taking up the plant food as it becomes available, conserving the excess of fertilizer from the preceding crop, furnishing winter pasture for stock, and in addition preventing the land from washing. When these crops are turned back into the soil they add a fresh supply of humus, which improves the physical condition, increases the fertility, and aids in regulating and conserving the moisture supply. The clovers and vetch, as a rule, do not make a stand for the first year or two without inoculation, but if the land is replanted their growth becomes luxuriant, furnishing a source of excellent hay and pasture and at the same time adding a store of nitrogen to the soil. Their more extensive use will save many hundred dollars now expended for commercial fertilizer, which annually amounts to nearly $100,000. The largest returns from the use of commercial fertilizers can only be obtained when humus is present in the soil. The turning under of winter cover crops, oats stubble, cotton stalks, weeds, grasses, corn stalks, pea vines, velvet beans, etc., is the most economical and efficient means of maintaining a proper humus supply.

The productiveness of the soil is at present maintained chiefly by the use of commercial fertilizers. The present annual expenditure for fertilizer is about $80,000 above that of 1880. It will be seen that the fertilizer problem is a large one and is growing larger instead of smaller. The plan should be to adopt methods which will yield the largest proportionate returns from the use of commercial fertilizers, rather than to discontinue their use. Better returns are usually obtained by high fertilization, provided the proper humus and moisture conditions are present. The moisture supply is best maintained through deep plowing, supplemented by frequent subsoiling, which renders the soil more open and porous. It further allows the water to move more freely and permits the roots of the plants to penetrate deeper into the soil and ramify over large areas in search of food. Deeper plowing is more necessary on the heavier soils of the area, particularly the sandy loam and fine sandy loam and clay loam types.

Fields that are abandoned for lack of labor to tend them, or because they are no longer found profitable for cotton, should not be allowed to lie idle, but should be seeded down in Bermuda or Johnson grass, which would bind the soil together and prevent erosion, and at the same time yield a nutritious pasturage and hay. The labor required to harvest the crop could be reduced to a minimum by the use of labor-saving machinery. As much as 5 tons in as many cuttings has been obtained in other sections of the State in a single season. The production seldom equals the demand, and if more

attention were given to the raising of mules, horses, cattle, etc., a still greater demand would be made for the hay. Where the Johnson grass is properly cultivated and is not allowed to become "sod bound" it makes excellent pasture. Bermuda could be grown successfully upon the bottom lands which are subject to overflow.

In the vicinity of the larger towns dairying and truck growing could be conducted more extensively, especially when shipping facilities have been improved and connection with the larger markets outside established.

The land values in Coffee County have advanced considerably in the past few years and are continuing to advance steadily. The average price is from $10 to $20 an acre for improved farming land. In the vicinity of the towns some of the land is held as high as $50 to $100 an acre and very little of it anywhere can be bought for less than $5 to $8 or $10 an acre.

A large percentage of the farms are operated by the owners, but the tenant system is quite general throughout the county. There are several methods used in leasing land, differing mainly in the manner in which the rent is paid. In some instances a fixed cash rent is determined upon, varying from $2 to $3 an acre; in others a fixed rent in cotton, ranging from 1 bale to 2 bales for a one-horse farm, is exacted. Where the crop is worked upon a share basis the landlord usually furnishes half the fertilizer and seed, and in addition the mule and farm implements with which to tend the crop. The supplies of food, clothing, etc., for the tenant are advanced to him through the season, and a lien upon the crop taken as security. The tenant is usually allowed as much land as he can tend, but generally not more than 15 to 20 acres are planted in cotton, the remainder being used for corn.

No special attention is given to seed selection, either of cotton or corn, and the methods of cultivation are primitive and haphazard. The plowing is usually done with a small one-horse breaking plow, and frequently no breaking is done at all, but the land is bedded up between the old rows or upon the rows themselves. The cultivation is done at irregular intervals and without reference to the moisture condition, no precautions being used to conserve the moisture. The fertilizers used are generally of low grade and are applied at the rate of 150 to 300 pounds per acre, 200 pounds being the general average. The applications are usually made at the time of planting.

The heavier sandy loam, fine sandy loam, and clay loam soils of the uplands seem to meet the demands of the cotton growers better than the lighter and deeper sands. These lands usually require more careful management, but when properly handled the yields are generally larger. The bottom lands are used largely for corn and oats.

Until more attention is given to the raising of live stock, crop rotation will not come into general practice and the one-crop system will prevail. But with the demand for feedstuff constantly increasing there will be a gradual departure from this system and the substitution of a system more competent to maintain the productiveness of the soils. The mild climate and long growing seasons, to say nothing of the great variety of soils, makes it feasible to practice a widely diversified agriculture.

To prepare the land for cotton the old stalks are usually "flayed" or broken down by dragging a log across the field, but a better practice consists in using a stalk cutter, which not only breaks down the stalks but cuts them into fine pieces so that they can be more easily turned into the soil. The land is generally plowed shallow, either in the fall or spring, and the soil thrown into ridges, the crest of the ridges being between the rows of the preceding year. If the ridging is done in the spring, the fertilizer is placed in the first furrow, while the ridging is done on top of it. Where the soil is broken twice the fertilizer is placed in the first furrow of the second breaking. The seed is generally sown about the last of March or first of April, and is dropped with a one-horse cotton planter along the tops of the ridges. By this means the furrow is opened and the seed dropped and covered in the same operation. A somewhat similar method is followed with corn, except that the breaking is more often done broadcast in the fall or spring, and usually not more than 2 to 4 inches in depth.

Oats should be sown in September or October, if possible, but most of the crop is put in in the latter part of October and November. Considerable expense could be saved in the seeding of oats if grain drills were used, for the fertilizer and seed could be put down in the same operation. A great advantage to be gained in this way is the even distribution of the seed and fertilizer. A better preparation of the seed bed is necessary, however, where the drill is used.

The common method of cultivating cotton and corn consists in running a shovel plow or "scooter" next to the rows and following it up throughout the middles; while subsequent cultivation is done with "scrapes." The size of the scrapes is usually increased with each subsequent cultivation, which insures a fairly flat cultivation. The use of the "scooter" next to the rows often injures the roots by pruning them too severely and is objectionable, too, in that it favors the loss of moisture.

The use of more improved machinery is especially recommended to those who cultivate the flat to moderately rolling lands. It has been demonstrated that the wide variation in the earning capacity of farmers, in various localities, bears a definite ratio of horsepower to number of laborers employed. In some of the northern and

western States the farm workers produce $600, with about four horses per man, while in the cotton-growing States $145 annually is produced with two laborers to each horse or mule. The use of labor-saving machinery further increases the farmer's independence of labor difficulties.

The three problems which seem most to concern the farmers of Coffee County at the present time are: (1) How to control the cotton wilt or blight; (2) how to obtain the largest returns from the use of commercial fertilizers; (3) what to do if the boll weevil comes to destroy the cotton.

With a more systematic study of the various soil types found upon the individual farms, so as to select the proper crops, varieties of crops, fertilizers, etc., for the different grades of land, a better system of farm management will be established, which will curtail the blight, increase the returns from the use of commercial fertilizers, and make the farms profitable without growing cotton exclusively when the boll weevil reaches the county.

SOILS.

The soils of Coffee County are derived largely, either directly or indirectly, from the sands and clays of the Lafayette formation, which occurs as a sandy mantle overlying the Tertiary substratum. The county lies wholly within the great physiological province known as the Coastal Plain. This includes that portion of Alabama which originally formed a part of the ocean bed, and was later gradually elevated to its present position. Thus the various soil types represent weathered or reworked materials of ancient marine deposition. The presence of waterworn gravel, rounded sand particles, and various species of marine shells, etc., is evidence of this origin. There is usually very little uniformity in the materials which have thus been deposited, and naturally their weathered products result in a wide range of textural and structural differences over small areas.

The present differences in texture of the surface formation, which gives rise to the various soil types, are not wholly due to the manner in which the materials were originally deposited, for when the ocean bed was uplifted and the waters receded, streams were formed, which have cut deeper and deeper into the deposits. By the erosive action of these streams and their fingerlike feeders, much of the original materials has been removed or modified, giving rise to two distinct soil provinces—the rolling uplands of sedimentary origin and the level terraces or bottom lands, which are formed from reworked alluvial materials.

The Lafayette mantle, as it occurs in this county, is composed of loose to compact gray, red, and yellow sands and clays, mixed with pebbles and iron concretions and having an average depth of between

25 and 30 feet. In the northern half of the county are strata of stiff, compact plastic clays, with alternate layers of sandy materials, which represent a marine sedimentary formation older than the Lafayette. It appears to have been laid down over a Cretaceous formation and just beneath the deposits giving rise to the Norfolk, Orangeburg, and Greenville soils. By erosion these stratified deposits have been exposed at the surface and give rise to the Susquehanna fine sandy loam, the most varied upland type in the area.

These several formations, through the agencies of weathering, leaching, erosion, and chemical action, have undergone certain changes affecting their texture, structure, color, topographic position, and drainage which effect their agricultural value and give rise to the various upland soil types of the area.

The classification of the soils into types is based primarily upon their physical properties, but all the factors that influence the relation of soils to crops were taken into consideration.

The upland soils in Coffee County are included in four groups or series, viz, the Norfolk, Greenville, Orangeburg, and Susquehanna. The bottom land or terrace soils are classed with the Kalmia and Myatt series. These do not include Meadow, the latter being a miscellaneous grouping of the low, poorly drained overflow lands which occur along some of the smaller stream courses and as first-bottom land along Pea River.

The Norfolk series includes those soils which have gray or brown surface soils with yellow subsoils, four types being mapped, a sandy loam, fine sandy loam, sand, and fine sand. The Norfolk sand and fine sand occur both upon the ridges and slopes in the northern portion of the county, though in the southern part these soils occupy the lower slopes adjacent to the stream valleys. The sandy loam and fine sandy loam are found principally in the southern portion of the county upon the broader ridges and are frequently called "piny-woods yellow land." The Norfolk soils occur widely distributed over the Atlantic and Gulf Coast States, and constitute some of the best trucking and tobacco lands in the South.

The Greenville soils are characterized by thin reddish-brown surface soils and deep-red subsoils. They are confined mostly to the northern half of the county and include some of the best general farming lands of that section. On account of the heavy growth of longleaf yellow pine, which formed the principal native growth upon these soils, the term "piny-woods red land" was applied to them. Four types of the Greenville soils are mapped, as follows: Sandy loam, clay loam, loamy sand, and fine sand. The sandy loam and clay loam usually occur upon the tops of the ridges, intermingled with the Norfolk sandy loam, while the loamy sand and fine sand generally occupy the gradual slopes of these ridges.

During the early settlement of the county the "piny woods land" was rated as almost valueless for agricultural purposes on account of the low yields obtained, but with the use of commercial fertilizers in recent years these lands have gradually been brought under cultivation and now constitute some of the most productive upland soils in the county.

The Susquehanna fine sandy loam, as already stated, is derived from the formation immediately underlying the Lafayette and has a characteristic dark-brown or reddish-brown, stiff, plastic, mottled subsoil. Eroded areas or "gall spots" occur throughout the type in which the subsoil is exposed at the surface and from which the soil receives the local name of "clay land" or "cowhidy land." This type occurs in two phases—a shallow and a deep phase.

The Orangeburg soils differ from the Greenville soils mainly in the gray or light-brown color of the surface and in topographic position. The Orangeburg soils occur upon the steeper, rounded knolls and narrow divides, and are frequently damaged by erosion. Three types of this series were mapped—sandy loam, sand, and fine sand—which occur mostly in the northern part of the county. These soils have been used extensively in other sections of the Coastal Plain for growing peaches.

The two series of terrace soils include the light-gray or brown surface soils with yellow subsoils belonging to the Kalmia and the Myatt, which is darker colored, low lying, and characterized by mottled drab, yellow, and red subsoils. Three types—fine sandy loam, sand, and fine sand—of the Kalmia series are found, while only two—a fine sandy loam and sand—of the Myatt series have been recognized.

Practically all of the soils of Coffee County are suitable for cultivation and with careful management are, on the whole, capable of producing much larger returns than are at present being obtained.

The following table gives the names and relative and actual extent of the several soils of the county:

Areas of different soils.

Soils.	Acres.	Per cent.	Soils.	Acres.	Per cent.
Norfolk sand	102,016	23.2	Kalmia sand	6,208	1.4
Susquehanna fine sandy loam	65,472	14.9	Orangeburg fine sand	5,120	1.2
Greenville loamy sand	61,376	13.9	Orangeburg sandy loam	3,904	.9
Greenville sandy loam	46,208	10.5	Greenville fine sand	2,432	.5
Norfolk fine sand	43,648	9.9	Myatt fine sandy loam	1,984	.4
Norfolk sandy loam	29,504	6.8	Norfolk fine sandy loam	1,152	.3
Orangeburg sand	22,080	5.0	Myatt sand	832	.2
Kalmia fine sand	20,416	4.6	Greenville clay loam	768	.2
Kalmia fine sandy loam	16,576	3.8			
Meadow	9,984	2.3	Total	439,680	

GREENVILLE LOAMY SAND.

Of the lighter soils which are generally classed as sand the Greenville loamy sand is probably the strongest and most productive in the county. This type is frequently called locally the "piny-woods sand." The surface soil is generally a dark-brown or reddish-brown loamy sand, or light sandy loam, having an average depth of about 4 to 6 inches. Below this depth the soil is redder and of a somewhat less coherent structure to a depth of 18 to 24 inches, where it grades into a dark-red to brick-red friable sandy clay. The gradation from the Greenville sandy loam into the Greenville loamy sand represents a heavier phase of the type, while a lighter phase is encountered in the gradation from the Greenville into the Norfolk sand or fine sand, which usually occurs adjacent to the streams in that section of the county in which the Greenville soils are found. The deeper phase of this type is a dark-red loamy sand to 3 feet or more in depth.

The line of demarcation between the Greenville loamy sand and the several other types with which it is associated is usually quite sharply drawn, although in a few instances, where the areas are broad and flat, the line is less distinct. Where the sand was lighter in color and less loamy, being loose and incoherent to 3 feet or more in depth, it was more often classed with the Norfolk sand when in contact with the latter type.

Included with the Greenville loamy sand were small basinlike areas in which organic matter and fine-earth materials have accumulated, forming a very dark-brown to nearly black loose loam, with an average depth of 20 to 24 inches. These depressions or "sinks" receive the fine-earth materials which are washed in from the surrounding soils and are naturally very fertile, and unless proper attention is given to the "chopping out" of the cotton in these places, it frequently becomes too rank to mature fruit properly. Corn also produces a rank growth. Sugar cane is sometimes planted in these basins and large yields are obtained, but the sirup is usually dark colored and of inferior flavor to that grown upon the lighter sandy soils.

The Greenville loamy sand, being of a loose, loamy structure, is naturally easy to cultivate, and with the usual shallow methods of breaking the heavier land produces about the same average yields of cotton and corn as are generally obtained from the heavier upland soils.

This type occupies gently sloping areas leading from the crests of the watersheds toward the streams and is naturally well drained. It is also found upon the local peneplains, where the heaviest phases of this type occur. The sandy nature of the soil allows the ready percolation of water.

The Greenville loamy sand occurs exclusively in the western, central, and southern parts of the county, embracing what is locally called the "piny-woods section." The largest connected areas occur in the southeastern part along the course of Wilkeson Creek. Practically every stream in the southern half of the county is bordered by this type and the Norfolk sand. No single areas were mapped with an acreage of more than 1 to 3 square miles, but the type is one of the most widely distributed in the county.

The native growth upon this type is largely longleaf pine, although some shortleaf pine and hardwoods occur as a scattering growth. The prevalence of wire grass has given this section another local name—"wire-grass section."

The Greenville loamy sand is frequently used to grow cotton, but it is probably best suited to corn and such leguminous crops as cowpeas, beans, vetch, velvet beans, etc. Peanuts also do well and are generally sown between the corn rows. Where the Greenville sandy loam occurs in conjunction with this type it is generally customary to plant the cotton upon the stiffer land, while the corn is planted upon the deeper sandy lands. This soil responds readily to fertilization, but is easily leached of its fertilizing properties, unless proper methods are employed to conserve the moisture and supply of organic matter. Probably no other deep sandy soil in the county is capable of being built up to a higher state of fertility than the Greenville loamy sand. The growing of velvet beans has been one of the best means thus far adopted for building it up, but cowpeas, peanuts, native grasses, oats and rye stubble, and other forms of vegetable matter will also enrich it when turned back into the soil. Light applications of lime should be included. The deep sandy soils are often lacking in humus. Deeper plowing with shallow cultivation is advisable when the soil is well stocked with humus. The use of barnyard manure and compost can not be too strongly urged upon the farmers who cultivate this soil. The effects are much more lasting than those to be obtained from the use of commercial fertilizers alone.

The average yields of corn obtained from the Greenville loamy sand range from 10 to 40 bushels per acre. Where intensive methods of cultivation including high fertilization are employed, as much as 60 bushels per acre has been obtained. Cotton yields from one-third to one-fourth bale per acre, but higher yields are possible with better management.

This land in conjunction with the surrounding soils is held at $10 to $30 an acre, the price depending largely upon the character of improvements.

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

Mechanical analyses of Greenville loamy 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*
21292, 21294.....	Soil.....	2.2	17.9	14.1	35.3	9.1	11.8	9.2
21293, 21295.....	Subsoil.....	.7	13.6	11.4	28.0	9.9	10.2	25.8

GREENVILLE CLAY LOAM.

The surface soil of the Greenville clay loam, to a depth of 3 to 5 inches, is a dark-brown to reddish-brown heavy sandy loam to clay loam. The subsoil is a rather stiff blood-red sandy clay.

This type is one of the heaviest upland soils in the county and one of the most productive, but it requires careful handling to obtain the best results.

The largest single body of the Greenville clay loam occurs about 1 mile north of Goodman. Other smaller bodies were mapped about 1 mile east of Pages Bridge and 1½ miles west of Fairview Church. Small bodies of this type occur throughout the Greenville sandy loam, but these were generally too small to be mapped separately. Where it occurs associated with the latter type it occupies flat areas or occurs about the heads of streams, where erosion has exposed the subsoil in spots. The latter condition is generally characterized by the presence of varying amounts of iron concretions upon the surface.

In the area north of Goodman the Greenville clay loam is well drained. Its level surface would suggest that it originally occupied a basin, which by subsequent erosion has been cut up by stream heads and gullies to form its present undulating surface. The other bodies of this type are more rolling and no doubt their formation is largely the result of erosion. The materials which enter into the formation of this type are derived from the Lafayette. All of the Greenville soils are traceable to these marine deposits.

This type is more susceptible to drought and wet weather than most of the upland types, but this can be overcome largely by deeper plowing, subsoiling, and the plowing under of green manures. The last not only aid in conserving the moisture but furnish a valuable source of plant food.

A large percentage of this type is cultivated by tenants, who rarely ever follow a system of crop rotation, or plow deeper than 2 to 3 inches, on account of the stiff, impervious nature of the subsoil, which would have to be turned up if this soil was plowed deeper.

Subsoiling is preferable to deep plowing, unless the soil is deepened gradually through several successive seasons. This soil type is particularly well adapted to cotton and is capable of producing from 1 to 2 bales per acre. The yields secured under ordinary treatment are from one-half to 1 bale of cotton, and 15 to 20 bushels of corn per acre. Forage crops and oats do very well.

The Greenville clay loam has a limited acreage in the county and is not generally upon the market, but in recent years the price has advanced from $2 or $3 to $15 or $20 an acre.

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

Mechanical analyses of Greenville clay 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.*
22307	Soil	3.2	15.4	12.8	23.4	10.6	13.9	20.5
22308	Subsoil	2.4	12.2	9.7	17.8	8.0	15.2	34.8

GREENVILLE FINE SAND.

The surface soil of the Greenville fine sand is a brown to reddish-brown loamy fine sand, 18 to 20 inches in depth. Upon some of the steeper slopes it is grayish and quite similar to the Orangeburg fine sand. The subsoil is a dark-red or brick-red heavy fine sandy loam to fine sandy clay, which is darker in color below 30 inches. Wherever this type grades into the Norfolk fine sand the subsoil is a dark-red fine sandy loam to 3 feet.

This type has a small acreage and occurs in the central part of the county in the pine belt. It usually occupies the gentler slopes in the vicinity of stream courses. The areas mapped were small and widely distributed. Important areas occur near Pine Grove Church, on Red Oak Creek, and along Double Bridges Creek. The soil is derived from the Lafayette formation.

Longleaf pine constitutes largely the native timber growth, though scattered growths of hardwoods, including elm, hickory, oak, and ash are also to be found.

A large percentage of this type has been cleared within recent years and is now under cultivation. Fair yields of cotton and corn are produced. Corn is the crop probably best suited to it, giving average yields of 10 to 20 bushels per acre. With favorable season the cotton yields range between one-third and one-half bale per acre. The soil is also well adapted to cowpeas, velvet beans, peanuts, oats, rye, and similar crops, which should be included in the rotations.

The soil must be terraced upon the steeper slopes if washing is to be prevented. It is recommended that winter crops of oats, rye, and vetch be grown, or that such areas be seeded to Bermuda grass for permanent pasture, in order to prevent the washing of the land.

The brownish color of the soil is due to the relatively large proportion of organic matter present. Occupying as it does for the most part the gentle slopes, this soil is not so readily leached as the Norfolk sand, or fine sand, lying adjacent to the stream courses.

The main difference between the Greenville fine sand and Greenville loamy sand is the increased percentage of medium to coarse sand in the latter type. The fine sand is generally more compact, as is usually the case with finer textured soils.

This land is never sold in separate bodies, but in conjunction with other surrounding types it brings from $10 to $15 an acre.

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

Mechanical analyses of Greenville 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.*
22301	Soil	0.4	4.8	9.0	44.6	23.8	13.3	4.0
22302	Subsoil	.5	4.3	6.9	29.2	26.5	11.3	21.4

GREENVILLE SANDY LOAM.

The Greenville sandy loam is one of the most productive upland soils in the county. From its dark-brown to reddish-brown surface it receives the local name of "red lands." The surface soil is a sandy loam to an average depth of about 7 or 8 inches, the ranges in depth being from 4 to 12 inches. The subsoil is a dark-red to brick-red friable sandy clay, which becomes darker in color below 20 or 24 inches. At depths greater than 5 or 6 feet the sandy clay frequently gives way to a lighter textured, friable sandy material, which in gullies rapidly crumbles away.

The essential differences between the Greenville sandy loam and the Orangeburg sandy loam are the darker surface soil and level topography of the former. The subsoil of the Greenville sandy loam is slightly more plastic when wet, and deeper in color than the Orangeburg subsoil.

The average analysis of this type shows it to be for the most part a medium sandy loam, but local variations over small areas exhibit considerable differences in the ratio of fine and coarse materials. Where the soil is less than 6 inches in depth the color is darker and

the texture finer, or more loamy, the latter condition being due somewhat to its higher organic matter content. It is this phase of the type that is more often referred to as "red lands." These lands are rather difficult to handle, but are quite productive. Where the soil is deeper than 6 inches it is usually coarser, lighter colored, and much easier to cultivate. This phase of the type is sometimes called "piny-woods sandy land with red clay subsoil." The lighter phase is probably best suited to corn, while the heavier soil constitutes some of the best cotton land in the county.

The Greenville sandy loam, like the Greenville loamy sand, occurs exclusively in the southern and western parts of the county, or that section embraced in the "piny-woods section." This type has a wide distribution throughout this section of the county, but usually occurs in small bodies. Only a few areas of more than 1 square mile in extent were mapped. It usually occurs as flat to gently undulating areas upon the level ridges or divides, being a part of the original peneplane, which has since been cut up into long, narrow ridges by the various streams. Its position naturally insures good drainage and it is rarely ever necessary to use artificial drains, except to drain the small depressions which occur at intervals throughout the type.

The native timber growth upon this type consisted largely of longleaf pine, but an occasional growth of hardwood, chiefly oak, hickory, ash, elm, dogwood, etc., was also to be found. Most of the merchantable timber has been removed and the lands cleared for cultivation.

The Greenville sandy loam is derived from the weathering of the sands and clays of the Lafayette, as are also the other members of the Greenville series. The position of this type and level surface accounts for the dark color. The accumulations of organic matter are greater in the small depressions, where the soil is a very dark brown to almost black heavy loam, or clay loam. These areas are naturally very fertile, and give heavy yields of corn and cotton when properly handled. Unless the proper distance is given to cotton, the growth becomes so thick as to shade much of the fruit and it fails to mature. More attention should be given to distancing the cotton to avoid this. Similar conditions prevail throughout the Greenville loamy sand.

Shallow, eroded areas frequently occur about the heads of gullies, spring heads, etc., in which the subsoil is exposed at the surface in spots. These areas were referred to under the Greenville clay loam. Where these areas occur they should either be seeded to Bermuda grass or properly terraced to prevent washing. In the latter case winter cover crops should always be grown to assist in binding the soil. The Greenville sandy loam is probably the best soil type in the county for cultivation with labor-saving machinery. Cultivation should be done as much as possible with 2-horse cultivators, so as to

permit the crop to be worked rapidly and often. If the cotton and corn were planted in check rows and cultivated both ways much of the expense and labor of chopping and hoeing could be avoided.

The necessity of deep plowing as well as subsoiling can not be too strongly recommended for this soil. Plowing should not be to the depth desired in one season, but should be an inch or two deeper each time through several successive seasons. Subsoiling should be practiced as often as possible at least once in three years. This renders the soil more open and porous and permits a freer passage of the air and moisture through the soil mass. It also aids in conserving the moisture in that it breaks up any hardpan that may have formed and allows the water to penetrate more deeply into the soil. It further permits the roots of plants to sink deeper and ramify over larger areas in search of food and moisture, which is the surest protection against drought. During seasons of wet weather the excess of water passes more readily from around the roots and they are not so liable to be drowned. In case of the shallower phase of the type, some difficulty has been experienced in plowing deep, on account of the turning plow failing to "scour" in the stiffer subsoil. It is recommended under these circumstances that the revolving disk plow be used instead of the regular turning plow. The two-horse, steel-beam turning plow is probably better suited for use on the deeper, sandier phases of the type, although the disk plow can be used to advantage.

This land, being particularly well adapted to cotton, has suffered considerable decline in its productiveness from the one-crop system, but if the proper cultural methods are employed, it will be found to be well adapted to corn, oats, rye, vetch, sorghum, cowpeas, and velvet beans, besides a variety of truck crops, including tomatoes, beans, radishes, beets, turnips, cabbage, collards, etc. This soil is especially adapted to tomatoes, and if canneries were established to handle the crop a profitable industry could be built up. It is also well suited to peaches, plums, prunes, certain varieties of grapes including Scuppernong and Concord, blackberries, raspberries, and figs. The last could be made a profitable industry if provision were made for preserving and canning the fruit for the northern markets, where an ever-increasing demand prevails. The growing of lettuce, English peas, radishes, snap beans, navy beans, kale, spinach, parsley, and bunch onions for the early markets, both local and distant, offers opportunities to those who operate small farms near the railroad stations. A high grade of Burley tobacco and some wrapper and filler tobacco are being grown upon this soil in other counties of the State.

The Greenville sandy loam is naturally a strong soil and is probably capable of being developed to a higher state of fertility than any other type in the area. This can best be done through care-

ful management or rotation of crops so as to include the leguminous crops, such as peas, beans, clovers, etc., which add nitrogen to the soil. All forms of vegetation turned back into the soil furnish a source of humus. More attention should be given to conserving the barnyard manure, which can best be done by composting. A shed should be provided for this purpose, and for every foot of manure 100 to 150 pounds of acid phosphate should be added. The latter should be spread out evenly over the pile so as to form alternate layers of phosphate and manure as the compost heap is increased. This is the most economical and efficient fertilizer to use upon this soil. It also tends to build up the land permanently, which can not be done when commercial fertilizers are used alone.

This land is valued at from $10 to $50 an acre, according to improvements and proximity to market.

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

Mechanical analyses of Greenville 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.*	*Pre cent.*	*Per cent.*	*Per cent.*
21296, 22305.....	Soil.....	2.1	14.4	16.7	36.7	10.1	11.3	8.5
21297, 22306.....	Subsoil.....	.7	10.5	10.8	30.4	12.1	10.4	24.5

SUSQUEHANNA FINE SANDY LOAM

The Susquehanna fine sandy loam is probably the most variable type in the county, especially in the matter of depth of the surface soil. The textural differences have a definite relation to the soil profile, being fine where the soil is shallow and increasing in coarseness as the depth of the soil increases. The average texture, however, is generally fine, as is attested by its soft, velvety feel when rubbed between the fingers. The surface soil has an average depth of 7 to 10 inches and in color varies from ashy gray to brownish, the texture being that of a fine sandy loam. The subsoil is a reddish to brownish or terra-cotta colored, stiff, plastic clay, which below 20 to 24 inches is usually less plastic, and mottled red, gray, and brown. The layer in which the mottling occurs contains a higher percentage of fine sand and silt, which imparts a friable structure. Owing to the presence of finely divided mica in this horizon, the material has a slightly greasy feel.

Where weathering has taken place to considerable depths, as in gullies and road cuts, the lower lying materials are composed of gray or mottled, stiff, jointed clays, with alternate layers of mottled sandy materials. These in turn are underlain by argillaceous shales, or

indurated clays, which break up into white or grayish chalklike flakes, or thin sandy blocks. The stiff waxy clay bakes and cracks into cubical blocks where exposed to the sun.

Irregularities in the early deposition of materials, together with subsequent erosion, have given rise to the wide variation over small areas, which is characteristic of the type.

The Susquehanna fine sandy loam occurs as two phases, the shallow silty to fine sandy loam, in which the surface soil has an average depth of 5 or 6 inches, and a deeper medium fine sandy loam, which may range in depth from 10 to 30 inches. But these two phases are so complex in the manner of their occurrence as to preclude their separation upon the present scale of mapping. The agricultural differences are shown in the adaptability to corn and cotton. The shallow phase is best suited to cotton, while corn is generally planted upon the deeper sandy soils.

Small bodies or " pockets " of deep, loose fine to medium sand occur throughout the type, which would have been classed with the Norfolk fine sand had they occurred in large enough bodies to warrant their separation. Where these areas occur along with the Susquehanna fine sandy loam they should be cultivated in the manner suggested for the Norfolk fine sand.

The gray or brown color of the surface is determined by the percentage of organic matter present. Below 3 or 4 inches the soil is usually a light cream-yellow to bright-yellow color, which may grade off into a yellowish sandy clay, overlying the characteristic red stiff clay of the subsoil proper. This phase of the type is generally found on the more gradual slopes, where the drainage is inclined to be sluggish. It resembles somewhat the Norfolk fine sandy loam. A few iron concretions and fragments of iron sandstone occur in small areas upon the surface, but not in sufficient quantity to interfere with cultivation or to affect materially the agricultural value or adaptation of the land.

The Susquehanna fine sandy loam is most extensively and typically developed in the north-central and northwestern parts of the county. The largest continuous body occurs east and south of Victoria, parallel to Pea River. Other areas occur along the course of Pea Creek and northwest of Tabernacle Church. Practically every stream in the northern portion of the county is bordered by this type, but in some cases the areas were too narrow to be represented on the map.

The Susquehanna fine sandy loam is derived from sedimentary deposits which were laid down prior to the Lafayette. They consist of disintegrated argillaceous shales or indurated clays. Limestone fragments frequently occur in the subsoil, and along some of the steeper escarpments outcrops of limestone were observed, especially in the northwestern part of the county. It seems probable that at

least a portion of this type is derived from limestone. The native growth upon this type is chiefly pine, red oak, post oak, and hickory. The occurrence of moss-covered oaks is especially characteristic of the shallow phase of this type.

Areas of this type are characterized by an undulating to moderately rolling surface, except where they occur as bluffs or escarpments along the streams and around stream heads, where erosion is excessive. The latter conditions give rise to the "bald clay" hills, in which the subsoil is exposed at the surface. These areas would have been correlated with the Susquehanna clay had they occurred in large enough bodies to warrant their separation.

Here the drainage is naturally excessive, and careful contour plowing and terracing should be practiced to prevent erosion. The drainage of the main bodies of the type is made up of a network of spring heads, gullies, and other drainage outlets, which reach out like fingers in every direction. These supply a fairly adequate drainage for the type, but occasionally the narrow valleys and depressions have to be drained artificially. This is more frequently the case with the larger bodies where the surface is less rolling. The stiff, impervious nature of the subsoil has a tendency to retard the movement of the soil moisture.

Seasons of excessive rainfall as well as of drought affect this soil, but for the average season the drainage and moisture supply are adequate, and fair yields of the staples, corn and cotton, are obtained. Where the surface soil averages about 6 to 8 inches and it is properly cultivated and fertilized, from one-half to 1 bale of cotton per acre should be obtained, the present yields being from one-fourth to one-half bale. From 10 to 20 bushels of corn per acre are the yields ordinarily obtained.

This type, especially the deeper phase, is fairly well adapted to fruits, including peaches and grapes, of the latter the Scuppernong being a favorite variety. The occurrence of blight and other diseases common to trees in this section has discouraged fruit growing in the last few years. No attention is given to the spraying of trees or to pruning so as to check the ravages of disease and entire orchards soon become infected and die. With proper cultural methods, the growing of fruit could be made profitable, especially if canneries were established to take care of the fruit which could not be handled by the local markets.

Practically all of the areas of this type under cultivation are used to grow cotton and corn without rotation, except in the alternation of these two crops. A three-year rotation of cotton, oats and cowpeas or velvet beans, and corn is recommended for the small farmer who has stock to feed. Peanuts should be sown between the corn rows to supply forage for hogs. The price of this land ranges from $5 to $15 an acre.

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

Mechanical analyses of Susquehanna 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.*
22341, 22343.....	Soil.....	0.4	3.5	4.4	33.6	22.8	27.9	7.4
22342, 22344.....	Subsoil.....	.1	.8	.8	5.7	18.6	22.8	51.2

ORANGEBURG SAND.

The Orangeburg sand is a dark-gray or slightly reddish-gray medium loamy sand, from 12 to 30 inches in depth, with an average depth of 15 to 18 inches, which grades into a reddish sandy loam, and this in turn generally into a red sandy clay. Where this type is closely associated with the Orangeburg sandy loam the sandy clay subsoil comes near the surface. A few inches below the surface the soil is often yellowish in color to a depth of 10 or 12 inches, changing gradually to the reddish or deeper red color of the subsoil proper. Fragments of mica and iron concretions are found in the soil of some areas.

This type occurs in two distinct phases about equal in area. The heavier phase is usually found very closely associated with the Susquehanna fine sandy loam and Orangeburg sandy loam in the northern part of the county, while the lighter phase is found in the central part, where it occurs in connection with the Norfolk sand. The subsoil of the lighter phase is a red to dark-red heavy loamy sand or sandy loam, while the subsoil of the heavier phase consists of a friable sandy clay, ranging in depth from 15 to 20 inches.

The Orangeburg sand as a rule occupies rolling to hilly uplands, being generally confined to the ridges. It has rapid surface drainage, the run-off being frequently excessive and causing serious erosion, especially upon the steeper slopes. The deep gullies in the vicinity of Clintonville show the effects of erosion where care is not given to check it in the earlier stages. Here many acres of valuable land have been destroyed. More attention should be given to terracing, contour cultivation, and the growing of winter cover crops to prevent erosion, which in time gives rise to the forming of big gullies.

The larger areas of the Orangeburg sand are found in the central and eastern portion of the county, particularly in the vicinity of Clintonville. Smaller bodies are found on the main divide between Pea River and White Water Creek; other areas of the type occur throughout the northern half of the county.

The soil is of sedimentary origin, being formed by the weathering of sands and clays of the Lafayette mantle.

Most of this type is under cultivation, the chief crops being the staples—cotton and corn. The lighter phase being deeper and looser is not so well suited to cotton and is more generally used for corn, while the heavier phase is usually highly prized as a cotton soil. This type is considered a more productive soil than the Norfolk sand. Cotton yields from one-fourth to one-half bale and corn usually from 10 to 20 bushels, or where highly fertilized from 15 to 25 bushels per acre.

This soil in many instances is closely related to the Norfolk sand, resembling the latter particularly in the low content of organic matter. In consequence more attention should be directed to the addition of organic matter. It has become the practice in the last few years to plant peanuts between the corn rows. After harvesting the corn the land is used as pasture for hogs. The rooting up of the ground by the hogs in their efforts to obtain the food is beneficial, while the turning under of the vines and other refuse grasses and weeds adds much to the humus supply, and the practice should be more general. The growing of velvet beans is another means of building up this soil. In a few instances cowpeas planted in the corn rows were noted. A better method is to follow oats with cowpeas in a three-year rotation with cotton and corn.

The Orangeburg sand is suited to truck growing and is particularly adapted to fruits, especially the peach. The native timber growth consists of oak, hickory, dogwood, sweet gum, and pine. Land of this type is valued at $5 to $20 an acre. The price depends on the location, improvements, and state of cultivation.

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

Mechanical analyses of Orangeburg 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.*
22335	Soil	1.8	14.0	19.8	37.2	11.7	10.6	4.8
22336	Subsoil	1.2	11.6	16.7	33.5	11.4	11.4	14.0

ORANGEBURG FINE SAND.

The Orangeburg fine sand consists of a grayish to slightly brownish fine loamy sand, underlain at a depth of about 15 to 20 inches by a brick-red sandy clay, increasing in redness with depth.

This type usually occurs in small areas occupying gently undulating strips along stream courses in the northern section of the county and small knolls and rolling uplands in the central portion of the county. Owing to its position upon the slopes and knolls the

natural drainage is free and frequently excessive. Erosion has taken place to a considerable extent in the northern portion of the county along the slopes adjacent to stream courses. The structure of both soil and subsoil are sufficiently compact to conserve the moisture, especially when the organic matter content is high.

The Orangeburg fine sand owes its origin to the Lafayette, being derived through weathering from unconsolidated materials of that formation. The timber growth is mainly oak, dogwood, and second-growth pine.

The cultivation of the Orangeburg fine sand is easy. Most of it is at present farmed. It is quite productive when first cleared, but soon deteriorates unless some form of diversified farming is practiced. Corn and cotton are the staple crops. Sorghum and sugar cane are crops well suited to the soil. The ordinary yields of cotton range from one-fourth to one-third bale per acre; corn averages about 10 bushels. The growing of truck crops, such as watermelons, Irish and sweet potatoes, cantaloupes, and various other vegetables can be made profitable. The soil is also well suited to peaches. The leguminous crops, such as cowpeas and velvet beans, make good growths and should be used to supply organic matter and nitrogen to the soil. They also will yield a valuable hay.

The value of this land ranges from $10 to $20 an acre.

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

Mechanical analyses of Orangeburg 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.*
21298	Soil	2.4	12.3	12.8	45.9	15.1	7.6	3.2
21299	Subsoil	.4	9.0	9.7	46.2	13.6	7.2	13.5

ORANGEBURG SANDY LOAM.

The surface soil of the Orangeburg sandy loam is a grayish to reddish sandy loam, from 8 to 15 inches in depth, with an average depth of 8 or 10 inches. The texture of the soil varies from medium to slightly coarse, the areas of medium texture predominating. The subsoil consists of a dark-red to brick-red sandy clay, extending to a depth of about 36 inches, where it grades into a more friable heavy sandy loam or clay loam. Below 5 or 6 feet a loose red loamy sand is encountered.

The soil of the lighter colored areas is loose and incoherent, while the darker colored soil is more loamy and compact. The latter phase resembles somewhat the Greenville sandy loam, but is more rolling.

less loamy, and of a more nearly gray color. On the slopes and hillsides the soil is shallow and redder in color, while on the more elevated, or less rolling areas, it is deeper and of a lighter grayish color.

The Orangeburg sandy loam occurs in small isolated bodies throughout the northern half of the county, the most extensive area being found in the vicinity of Victoria. This type is usually associated with the Orangeburg sand and Susquehanna fine sandy loam. In topography it varies from rolling to hilly, and the principal areas are found on the slopes where erosion has been more active. The drainage of this soil is thorough and sometimes excessive, especially where the deeper phase, associated with the Orangeburg sand, occurs. In many cases on hillsides gullies have been formed and the surface soil entirely washed away, exposing the underlying clays. More attention should be given to terracing, contour plowing, and the planting of cover crops to prevent erosion. The native growth consists of post oak, black-jack oak, hickory, red oak, dogwood, and second-growth pine.

The materials from which this soil is derived belong to the Lafayette formation, but these have been modified by weathering and by surface wash.

Excepting the areas on the gentler slopes, most of which are under cultivation, the areas should either be left in wooded pasture or seeded to Bermuda for the same purpose. Cotton and corn are the staple crops. The heavier areas are generally classed as a strong cotton soil, the yields ranging from one-fourth to one-half bale per acre. Corn does better on the lighter soil, from which yields of 10 to 20 bushels per acre are obtained. Yields depend to a great extent on the manner of cultivation and the amount of commercial fertilizers used, the application ranging ordinarily between 150 and 200 pounds per acre. Where the underlying clays come within 8 inches or less of the surface the land should be subsoiled. A light-gray color of the surface soil indicates a low content of organic matter. This should be increased if the productiveness of the type is to be maintained or improved. A large percentage of the land is farmed by tenants, who cultivate the crops wholly for the immediate returns, without regard to the permanent building up of the soil, and as a result it soon deteriorates to a point where the yields are no longer profitable, when it is abandoned. Such fields are taken possession of by old-field pine, broom sedge, etc. With proper rotation of crops, better cultural methods, selecting of seed, and the turning under of refuse vegetable matter, such loss could be prevented and the soil made to produce double the present yields.

Land of this type is usually sold at $8 to $20 an acre, depending upon the location and state of improvement.

NORFOLK SAND.

The surface soil of the Norfolk sand consists of a light-gray to gray sand, from 5 to 10 or 12 inches deep, with an average depth of 6 or 7 inches. The sand is composed mainly of medium to fine rounded quartz grains with a small percentage of coarse and angular grains. Along the crests of ridges it has a loose, incoherent structure, but becomes slightly more compact along the slopes, where it grades into the Norfolk fine sand. The subsoil consists of a yellow to grayish-yellow sand, similar in constitution to the soil, though slightly more open in structure and usually containing a somewhat larger percentage of coarse sand. In the vicinity of Haw Ridge the sand is of a very loose nature, and ranges from medium to coarse in texture, while in the vicinity of the Farmers Academy and in other sections of the county the sands are of a more compact nature and of a medium to fine texture. The sands occurring in the vicinity of Haw Ridge are several feet in depth and are poor and unproductive. The Norfolk sand around the Farmers Academy and elsewhere is considered a good soil and with systematic cultivation produces very profitable crops.

Along the stream courses the Norfolk sand is of a darker color and is slightly more loamy in structure than elsewhere, owing to a larger content of organic matter. The sandy material may extend to a depth of several feet along the streams, but gradually becomes shallower as the crest of the ridge is approached.

The Norfolk sand is the most widely distributed type in the county. It occurs in the vicinity of nearly all stream courses, and in many portions of the county it forms the main watersheds. The largest areas occur in the vicinity of Tabernacle Church and Haw Ridge in the eastern part, and in the vicinity of Pine Level School in the western part of the county. Other small areas are found throughout the county, but chiefly in the northern and eastern portion.

The surface features consist of elongated ridges and hollows giving rise to a rolling topography. As a result the drainage is excellent and in many cases excessive, and the soil is inclined to be droughty.

The Norfolk sand is sedimentary in origin, being derived from the weathering of the sands and clays of the Lafayette mantle. Subsequent erosion has altered the depth of the soil in many cases.

At present the greater part of this type is under cultivation. The remainder is covered with a native growth of longleaf and shortleaf pine, black-jack oak, dogwood, hickory, and along the stream courses with a scattering growth of poplar, black gum, and sweet gum, with a considerable undergrowth of shrubs.

Naturally the Norfolk sand is a warm soil and easy to cultivate, owing to its coarse structure. It is generally considered a good soil

for light trucking, where it is desired to grow crops for the early market. Good crops are assured in wet seasons. Peas, beans, radishes, lettuce, collards, sweet and Irish potatoes, cantaloupes, watermelons, and strawberries do exceptionally well. At the present time the local market for trucking is limited, and the growing of these products for outside markets has been but little tried. More attention should be given to the development of this industry.

At the present time most of the Norfolk sand under cultivation is devoted to general farming. Cotton, corn, peanuts, sugar cane, oats, and sweet potatoes are the principal crops, cotton yielding from one-fourth to one-half bale, corn 10 to 15 bushels, and oats 12 to 18 bushels per acre. Bermuda grass and crab grass are used almost exclusively for grazing, but are sometimes cut for hay. If more attention was given to the raising of stock a greater demand would be created for forage and a better system of rotation would be encouraged. Practically all of this type is deficient in organic matter, which can be readily supplied by the use of cover crops, including oats, rye, and winter vetch. Clover, cowpeas, peanuts, and other leguminous crops should also be used. These afford good grazing as well as hay, and at the same time supply the soil with a large amount of organic matter. All the staple crops should be grown in rotation with cowpeas or velvet beans, the latter being preferred where the land is infected with cotton blight.

Where leguminous crops are turned under green 30 to 50 bushels of burned lime per acre should be applied to the land before plowing. Much benefit to the soil will follow such treatment through the quicker decomposition of the materials and the neutralizing of any acid condition that may occur in the fermentation of the succulent vegetation. Lime will also tend to bind the soil particles and improve its power to hold moisture. Barnyard manure and compost are especially beneficial when applied to this soil. For such crops as sweet potatoes, melons, cane, and vegetables, phosphoric acid and potash should be applied in the ratio of 2 to 1 and in quantities varying from 500 to 1,000 or more pounds to the acre. Cotton-seed meal is used more extensively for fertilizing Irish potatoes and sugar cane.

Lower lying areas of Norfolk sand adjacent to streams are often used for growing sugar cane. This probably produces a lighter colored sirup than any other soil in the county. With liberal applications of fertilizers the yields range from 150 to 250 gallons per acre. From 80 to 175 bushels of sweet potatoes and 60 to 150 bushels of Irish potatoes are ordinarily produced on this type.

Fall plowing, except for turning under the season's accumulation of vegetable matter, is not generally recommended for this soil. Shal-

low cultivation should be practiced to conserve and regulate the moisture supply.

The Norfolk sand is valued at $8 to $15 an acre, according to location and improvements.

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

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.*
20568, 22323.....	Soil.....	1.0	18.7	22.3	35.9	8.6	9.9	3.6
20569, 22324.....	Subsoil.....	.6	17.7	20.3	36.8	9.9	9.5	4.9

NORFOLK FINE SAND.

The soil of the Norfolk fine sand is a gray to dark-gray fine sand, 4 to 10 inches in depth, with an average depth of about 5 inches. The lighter gray color occurs on the more elevated ridges and here the soil has a rather loose structure; the darker colored areas lie along the stream courses and in such locations the soil is slightly more loamy, as a result of the higher content of organic matter. The subsoil is a yellowish to pale yellow fine sand of about the same texture as the soil, but somewhat more coherent in structure. This type generally occurs upon slopes along the stream courses, but where it is associated with the Susquehanna fine sandy loam it is sometimes found upon flat-topped ridges.

The largest single area occurs in the northwest portion of the county along Big Creek. Other smaller areas were mapped throughout the county, but principally in the northern part.

In general the topography of the Norfolk fine sand is gently rolling to undulating, but in the northwest corner of the county it is more broken or ridgy. Owing to its position and porous nature the soil has excellent drainage. It can be cultivated shortly after heavy rains without danger of impairing its physical condition.

This type is sedimentary in origin, being derived from the weathering of the sands and clays of the Lafayette mantle. It has been formed from finer beds in this formation or through some assortment of the finer materials subsequent to their deposition. In its native state this type is covered with a growth of longleaf and shortleaf pine, black-jack oak, and scrubby growths of other oaks. In the northeastern section of the county a large percentage of this soil has been cleared and is used for general farming purposes. It is a warm, early soil and considered a better general farming soil than the Norfolk sand, with which it is closely associated. Its fine texture makes it more compact and enables it to retain moisture and fertilizers

better than the coarser sand and at the same time it is loose enough to make cultivation easy. It is especially well adapted to the growing of early truck crops, such as watermelons, cantaloupes, cabbage, lettuce, sweet and Irish potatoes, and berries. It produces a highly flavored juicy peach, suitable for home use, but for the markets those grown upon the Orangeburg soils are preferred on account of their better color. The local market for truck is limited and the growing of these products for outside markets has received but little attention.

At the present time only the staple crops—corn, cotton, and oats and such secondary crops as peanuts, sugar cane, and sweet potatoes—are grown. Sugar cane yields a light-colored, mild-flavored sirup, but the soil has to be highly fertilized to secure satisfactory yields. Sweet potatoes do exceptionally well upon this soil, yielding, with high fertilization, from 200 to 300 bushels per acre. In other sections of the South some light-grade tobaccos are grown upon this type, but it is not as well suited to this crop as the Norfolk fine sandy loam. Cotton yields on an average about one-third bale and corn 10 to 15 bushels per acre. Bermuda and crab grass afford good grazing, and are used for hay to a small extent. More attention should be given to sodding the steeper slopes with Bermuda, especially around the spring heads, where erosion is excessive. Practically all the soil of this type is deficient in humus, and more attention should be given to supplying this constituent by growing winter cover crops and by including the legumes, such as peas, velvet beans, vetch, and peanuts, in rotation with the staple crops.

With systematic rotation, the productivity of this soil could be greatly increased and a part of the expenditure for fertilizers saved.

Land of this type of soil brings from $8 to $18 an acre, depending on location and improvements.

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

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.*
20570, 22325.....	Soil.....	0.2	6.1	13.6	60.7	8.6	8.3	2.2
20571, 22326.....	Subsoil.....	.2	5.2	13.7	61.6	9.4	7.1	2.7

NORFOLK SANDY LOAM.

The Norfolk sandy loam occurs in two phases; a deep phase consisting of a light sandy loam, ranging in depth from 8 to 20 inches, with an average of 8 to 10 or 12 inches, and a shallow phase which rarely exceeds a depth of 6 to 8 inches, the average being between 5

and 6 inches. Where the latter phase occurs it is characterized by the presence upon the surface and throughout the soil profile of from 10 to 20 per cent or more of iron concretions, or small iron sandstone pebbles. A few waterworn quartz gravel are also present. The surface soil of both phases is dark gray to almost black where the vegetation is heavy or where the land has been recently cleared and put under cultivation. With subsequent cultivation, however, the soil becomes lighter in color as the supply of organic matter becomes reduced. The color of the soil changes to bright yellow below 2 or 3 inches and deepens in color with the transition from the soil to the subsoil.

The subsoil is a bright-yellow sandy clay, which varies in texture with the nature and depth of the surface soil. The lighter, deeper phase of the type grades off less rapidly from the sandy loam surface soil into the clay, and to a depth of 20 to 24 inches the texture is usually a heavy sandy loam, underlain by a friable sandy clay. In the heavier or shallow phase of the type the subsoil is a yellow sandy clay below the average depth of soil, and below 18 to 20 inches it is more stiff and plastic and lighter in color. Both phases of the type occasionally show mottling in the lower depths.

In other sections of the Gulf States, where the "pimply soil" or shallow phase of the type occurs in sufficiently large areas to justify their separation, it has been classed with the Tifton sandy loam, but in this county the areas were small and occurred widely distributed throughout the dominant type. The main body of the soil consists of a medium or medium to coarse sandy loam, represented in depth and in color by the description of the deeper phase and contains only a small percentage of iron concretions and quartz pebbles, either upon the surface or through the soil profile.

The Norfolk sandy loam occurs largely in the southern and western parts of the county. A few isolated areas, which occur north of Pea River, were also included with the type. The largest continuous bodies lie along the southern border of the county in the vicinity of Marvin Chapel, Goodman, and Bowdens Store, where they occupy flat to undulating ridge land, with the Greenville loamy sand and sandy loam upon the slopes along the creeks and branches. This condition marks the transition from the higher better drained section of the Coastal Plains to the less undulating or flat lands of the same province, where the Norfolk soils usually predominate over the Greenville or Orangeburg soils.

The topographical position and porous nature of this soil usually affords adequate natural drainage, the only artificial drains required being those which are necessary to furnish outlets for the small low-lying areas or sinks which occur at intervals throughout the type.

The gravelly areas, locally called "pimply land," which occur upon the sharper ridges and knolls and more particularly about the heads of streams or gullies, are liable to suffer from drought, as the drainage is generally excessive.

Like the other Norfolk soils, the Norfolk sandy loam is derived from the sands and clays of the Lafayette, being a part of the weathered product of this extensive Coastal Plain formation. Subsequent erosion has also been an active agent in the formation of the type. The occurrence of a pinkish-red, yellow or drab, rotten, chalk-like substratum, below 5 to 6 feet, and the outcropping occasionally of shell rock, would suggest that some limestone, probably the St. Stephens formation, has entered somewhat into the formation or influenced portions of the type. This was more noticeable with the shallow phase, especially where it occurred upon the knolls. The subsoil associated with the outcroppings of this formation was quite stiff and plastic or waxy. If any lime is present in this soil, however, the percentage is very low, and doubtless has had but little if any effect upon its fertility.

The original timber growth on the Norfolk sandy loam was principally longleaf yellow pine, from which it, like the Greenville soils, receives the name of "piny-woods land." A scattering growth of shortleaf pine, oak, hickory, and dogwood also occurs, chiefly along the streams, but in recent years the greater part of the merchantable timber has been cut and the land cleared for cultivation. The shallow phase locally referred to as "pimply or gravelly land" is generally considered a stronger soil and hence better suited to cotton than the deeper sandy phase, the latter being better suited to corn, cowpeas, and velvet beans. During seasons of heavy rainfall it becomes "soggy" and runs together, while in dry weather it becomes stiff and hard, making it sometimes quite difficult to cultivate. Crops frequently suffer from drought, which can be largely avoided by better cultural methods. The turning under of refuse matter (including green manure), deeper plowing, and the growing of such winter cover crops as oats, rye, or rye and vetch should be practiced. These can either be harvested for forage, pastured, or turned back into the soil to replenish its humus supply.

Naturally the Norfolk sandy loam is fairly productive for the staples, cotton, corn, and forage crops, and is also well adapted to many special crops, including English peas, beans, cucumbers, lettuce, radishes, cabbage, cantaloupes, watermelons, and sugar cane. The last crop, where grown upon this type, yields a sirup of light color and mild flavor, which is highly prized in the markets. If provision could be made for irrigating the sugar cane much larger yields could be obtained, as this crop frequently suffers from drought and becomes

pithy, thus lowering its yield. Cotton seed and cotton-seed meal, together with acid phosphate, are used in varying proportions and amounts as a fertilizer for sugar cane. The higher grade fertilizers are preferable and should be mixed to suit the local conditions. If some leguminous crop precedes the cane, the nitrogen supply will be increased, and more phosphoric acid should be included with the mixed fertilizer. The general practice is to supply all the fertilizers before seeding, but the better method seems to be to divide it and make a second application near the stalks about the first of June. The time of making the second application is of course conditional upon the season. It is a common practice to follow sweet potatoes with cane. Corn and watermelons should follow cane instead of cotton.

Systematic crop rotation is not generally observed upon this soil, but the more progressive owners are adopting it gradually. Corn and cotton generally follow each other in a two-year rotation, but a winter cover crop is rarely ever included. The importance of following cotton with a cover crop of oats, rye or rye and vetch can not be too strongly emphasized. Where peanuts or cowpeas are sown in the corn middles the winter cover crop is not so necessary, but even then it is a better practice to include it in the rotation.

No attention has thus far been given to trucking on an extensive scale in this county, and hence this soil has been used largely for corn and cotton, which ordinarily produce from one-third to one-half bale and from 15 to 30 bushels per acre, respectively. In growing these crops an average application of 200 to 300 pounds per acre of 10–2–2 fertilizer is commonly used.

Besides its adaptation to truck crops certain areas of the type with the subsoil from 10 to 20 inches below the surface and with a medium to fine textured top soil should give a fairly good grade of wrapper tobacco. No attempt to grow this crop has as yet been made.

Land of the Norfolk sandy loam type is generally valued at from $10 to $20 an acre. In the intermediate vicinity of Enterprise it is held at much higher prices.

The average results of mechanical analyses of this type are given in the following table:

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.*
21300, 22327, 22333.	Soil.....	1.6	13.8	17.6	34.9	15.1	8.5	8.3
21301, 22328, 22334.	Subsoil.....	1.2	12.7	13.4	27.8	11.4	9.3	23.9

NORFOLK FINE SANDY LOAM.

The Norfolk fine sandy loam, like the Norfolk sandy loam, occurs in two phases, a deep sandy soil and a lighter gravelly soil locally called "pimply land." The average depth of the soil is about 10 inches, with a range in depth from 4 to 20 or more inches, although the depth rarely exceeds 20 inches. The color is usually dark gray or brownish at the surface, but changes to yellow a few inches below. Where the vegetation is heavy the surface color may be a very dark gray or almost black.

The subsoil is a bright yellow sandy clay, usually of fine texture, which below 24 to 30 inches becomes slightly mottled and lighter in color, varying from creamish-yellow to drab. The subsoil of the shallow or "pimply" phase of the type is generally quite stiff and plastic in the lower depths and the mottling is more noticeable. Where eroded areas occur in which the subsoil is exposed in "spots," the land is locally called "hard pimply land." Such areas usually occur about the heads of gullies and are thickly strewn with iron concretions and quartz pebbles. The "pimply" areas occurring throughout this type were too small to be shown separately in the map. The main body of the type consists of a fine sandy loam with an average depth of about 10 to 12 inches, comparatively free from iron concretions or quartz pebbles.

Only a small acreage of this type is found in Coffee County, and most of this is comprised in a single body in the southwestern corner, where it extends over the line into Covington and Geneva counties. A large proportion of the type is still in native timber, consisting mostly of longleaf and shortleaf pine, with a scattering growth of oak, dogwood, persimmon, and other hardwood species.

The Norfolk fine sandy loam has an undulating to ridgy surface, which insures fairly good natural drainage except in a few depressions. The latter can usually be drained by the use of a few open or tile drains leading to near-by spring heads and gullies. This type is derived from the finer sands and clays of the Lafayette formation. Subsequent erosion has given rise to the different phases of the type. The occurrence of a pinkish-red, yellow, and drab rotten chalklike substratum, as well as the occurrence of occasional outcrops of shell rock, suggests that materials of a calcareous nature have entered somewhat into its formation, but if lime is present at all the percentage is very low and doubtless has had little if any effect upon the soil. In other sections of the South this soil is used extensively for truck growing, and where the yellow sandy clay subsoil is more than 10 inches and less than 20 inches below the surface and the drainage is adequate it produces a good grade of Sumatra wrapper leaf tobacco when grown under shade. The best results are obtained upon the finer textured areas.

This soil is well suited to cotton and corn. Under ordinary culture, yields of one-third to one-half bale of cotton and from 10 to 25 bushels of corn are secured. Applications of 200 to 400 pounds of fertilizer per acre are used to secure these yields. A light-colored mild-flavored sirup can be produced with profit upon this soil, the average yield being from 200 to 300 gallons per acre.

Sweet potatoes yield from 100 to 200 bushels per acre. Cut-over land of the Norfolk fine sandy loam is offered for sale for $7 to $10, and well-improved land sells for $15 to $20 an acre.

The results of mechanical analyses of the soil and subsoil are given in the following table:

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.*
20930	Soil	0.9	9.1	12.9	44.1	14.0	10.0	9.1
20931	Subsoil	.7	6.4	9.6	31.4	11.6	8.0	32.4

KALMIA SAND.

The surface soil of the Kalmia sand consists of a light-gray, dark-gray, or brownish, loose, loamy sand of medium to coarse texture, and 3 or 4 inches deep. The subsoil is usually loose or incoherent and of a yellowish color, and has a texture similar to that of the surface soil. In a few instances a yellow sandy clay is encountered at depths ranging from 18 to 30 inches, but usually the loose sand extends to a depth of 3 feet or more.

This type is not very extensively developed in Coffee County. Most of it is found on better-drained terraces of the bottom lands along Pea River. The largest continuous bodies occur south of Elba, in the vicinity of Churchwells and Pages bridges. Smaller areas occur in the vicinity of Elba, and as isolated bodies throughout the bottom lands of the area.

The Kalmia sand, being a river-terrace soil, is of alluvial origin. It is formed from the coarser materials transported and laid down by the various stream courses during periods of overflow. Small areas are in process of formation with each overflow; flooding of these terraces occurs only at intervals of several years.

Owing to the loose, open structure of both the soil and subsoil the rainfall percolates rapidly to lower depths, which, in addition to the slightly elevated position of the areas, insures fairly good natural drainage.

The native forest growth consists of longleaf and shortleaf pine, water oak, persimmon, ash, hickory, poplar, and other deciduous

trees and shrubs. During the early settlement of the county this soil type was extensively cultivated, and was rated as one of the best soils in the area, but in recent years some of the type has been abandoned and allowed to grow up in scrub oak and field pine.

This type represents the best drained and warmest bottom-land soil in the area. It is easy to cultivate and if suitable market facilities were available it would be especially valuable for light trucking where it is desired to produce crops for the earliest markets. Watermelons, cantaloupes, cucumbers, potatoes, and strawberries do well. Pecans have been grown successfully upon similar river-terrace soils in other sections of the South.

Of the staple crops this type is best suited to corn and cowpeas. The average yield of corn under ordinary methods of culture is about 10 bushels per acre, but much larger yields are obtained where better methods including deepening of the soil bed, plowing under of vegetable matter, and crop rotation as well as seed selection are employed. The yields of cotton are usually light, seldom exceeding one-third bale per acre. The beneficial effect of humus in the soil is especially noticeable with cotton, for the best crops are secured the first year or two after this type is cleared and put under cultivation. After the second or third crop the yield is generally maintained by the use of commercial fertilizers, which are generally applied at the rate of about 200 pounds per acre. Very little after effect is realized from the use of fertilizers upon this type, as the rapid movement of the soil moisture through the loose subsoil readily leaches out any excess of soluble material.

Very few permanent improvements have thus far been made upon the Kalmia sand and a large percentage of it is leased. The usual rental ranges from $2 to $3 an acre. Land of this type is generally held at $10 to $15 an acre, but in recent years not many transfers have been made.

The results of mechanical analyses of the soil and subsoil of this type are given in the following table:

Mechanical analyses of Kalmia 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.*
21290	Soil	1.2	28.5	20.9	34.2	8.9	3.6	2.3
21291	Subsoil	2.0	28.0	22.0	32.6	8.4	3.4	2.9

KALMIA FINE SAND.

The Kalmia fine sand is one of the most extensively developed bottom-land types in the county. The surface soil is usually a grayish

colored to light-brown fine sand with an average depth of about 5 or 6 inches. The subsoil consists of a yellowish fine sand becoming lighter in color below 30 to 36 inches. Both soil and subsoil contain a relatively high content of very fine sand, which imparts a close, compact structure.

The Kalmia fine sand occurs as the principal bottom-land type along the upper course of Pea River and the larger creeks in the northern part of the county. This type, like the Kalmia sand, usually occupies the better drained higher terraces or bottoms and is not so subject to overflow as the Myatt soils or the Kalmia fine sandy loam. Its open structure and ample natural drainage insures an early planting season, as well as ease of cultivation. This type owes its origin to the accumulation of fine sand, which has from time to time been deposited by the streams along which it occurs. It is one of the most recent soils in the area, and although it is not subject to frequent overflow, there are periods of extreme high water when additional alluvium is added. In most cases this increases its natural fertility, but it sometimes happens that coarse sand is deposited over the fine sand, with a consequent lowering of its agricultural value.

The Kalmia fine sand is less readily affected by the wet and dry seasons than the heavier soils. The light texture and consequent open structure of the subsoil permits the rapid movement of the moisture, whether for the removal of the excess of water from the surface or in furnishing from below an adequate supply of moisture to the growing of crops.

Longleaf and shortleaf pine, water oak, persimmon, hickory, ash, poplar and dogwood are the leading species of trees naturally found upon this soil. A large part of the original growth has been removed.

Like the Kalmia sand, this type was rated by the earlier settlers as far superior to the uplands. However, in recent years, by the use of commercial fertilizers, the better soils of the uplands have in some instances surpassed the bottom lands in their yields, though the natural fertility of the bottom lands is probably greater. Under the usual one-crop system the productiveness of this soil is soon reduced so low that it is no longer profitable to cultivate it and it is allowed to grow up in field pine. Inability to obtain efficient labor after the war also caused large tracts of this land to be abandoned. In recent years some of these areas have been reclaimed and put under cultivation.

Where this type is so situated as to command a ready market for such products, it is especially desirable for small fruits and vegetables. It is probably best adapted to watermelons, cantaloupes, cucumbers, and potatoes, to supply the demand of an early market. Of the staple crops the soil gives the best results with corn and cowpeas, but fairly good yields of cotton are also obtained, the yields under ordi-

nary culture ranging from one-fourth to one-half bale per acre. By the Williamson and other methods of high fertilization as much as 60 to 70 bushels of corn per acre has been obtained. The usual yields, however, range from 10 to 30 bushels per acre. Rye, oats, barley, and the legumes should be grown in connection with the present crops. With more systematic cropping the yields could in many instances be doubled. The beneficial effects of a suitable content of organic matter in the soil is apparent from the results obtained upon newly cleared land and this condition might easily be maintained. As it is the yields decline and the only steps taken to prevent this is to apply commercial fertilizers, which at most have only a temporary effect. The price of the Kalmia fine sand depends upon improvements and proximity to market. It ranges from $5 to $10 up to $40 or $50 an acre.

The average results of mechanical analyses of representative samples of the soil and subsoil are given in the following table:

Mechanical analyses of Kalmia 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.*
20816, 22309.....	Soil.....	0.1	2.6	4.8	50.1	28.4	10.3	3.6
20817, 22310.....	Subsoil.....	.0	2.2	4.5	50.3	30.8	8.8	3.3

KALMIA FINE SANDY LOAM.

The Kalmia fine sandy loam, particularly in the better drained areas, is probably the best bottom-land soil in the county. The soil to a depth of 8 to 18 or 20 inches, with an average depth of 10 or 12 inches, is a grayish to brown fine sandy loam, changing in the lower depths to lighter yellowish color similar to that of the upper portion of the subsoil. The subsoil is a yellowish sandy clay to a depth of 24 to 30 inches, where it becomes stiffer, lighter in color, and frequently mottled. The presence of finely divided mica in the lower depths of the subsoil is also common in this type.

The Kalmia fine sandy loam is largely confined to the high first terraces along Pea River and its tributaries. It also occurs along Boles Creek in the eastern portion of the county, as well as along the smaller streams in other sections of the county. The largest continuous body occurs in the vicinity of McGees Bridge. Within this body are narrow ridges and knolls of Kalmia fine sand, but they were too small to admit of their separation and mapping on the scale of 1 inch to the mile.

The terraces upon which much of the type occurs, while mainly first terraces, stand at a higher elevation, are overflowed less, and

the soils here are more thoroughly weathered than in the case of true first bottoms. The type as mapped along the smaller streams might be considered a phase of the Kalmia fine sandy loam, the same being true with the other members of the series.

This soil, occupying as it does the river terraces, is generally flat, but is naturally fairly well drained. However, during the rainy season it is frequently partially inundated, so that in order to obtain the best results it is necessary to assist the natural drainage by the use of drains. Open ditches are used almost exclusively for this purpose, but in many cases this interferes with the cultivation of the land in large tracts and such ditches should be supplanted by tile drains. The latter, on account of the added expense, should never be laid without drawing up plans for a well-defined, permanent system of drainage.

The native growth upon this soil is longleaf and shortleaf pine, water oak, hickory, sweet gum, post oak, elm, live oak, and other deciduous trees and shrubs. Most of the native timber has been removed and the land cleared for cultivation.

Like the other river terrace soils the Kalmia fine sandy loam is of alluvial origin. It generally occupies a position below the lighter deep sandy soils and doubtless was formed by the deposition of the finer silt and clay originally held in suspension in standing water. The coarser materials are usually laid down in line with the swifter currents.

This soil is best suited for corn, but where it has been well drained it is also highly prized for growing cotton. It is inclined to be late, and frequently the full crop is not matured before frost. If this type is plowed deep there is less danger from drought than with any other soil type in the county. It also holds fertilizer well and responds readily to its use. On account of its equal adaptation to both corn and cotton these crops are generally included in a two-year system of rotation. Leguminous crops, such as vetch, peas, velvet beans, and peanuts, should be included in rotation with the staples. The suggested three-year rotation outlined in the discussion of agriculture will be found well fitted for use here.

The Kalmia fine sandy loam has been used extensively for trucking purposes in other counties of the State where it occurs. It should be well suited to tomatoes, Irish potatoes, cabbage, collards, beets, onions, carrots, strawberries, blackberries, cucumbers, and cantaloupes. However, very little of this type is so situated at the present time as to be conveniently used for trucking. It is used exclusively for general farming purposes. It is one of the best soils in the county for dairying or stock raising, on account of its marked adaptation to Bermuda grass, crab grass, Johnson grass, and other forage crops. They furnish ample pasturage, and if cut for hay

will yield equally as good returns as from either cotton or corn. Almost no attention is given to the production of Johnson or Bermuda grass hay for market. It is generally so mixed with wild grasses, weeds, etc., as to command a low price where offered for sale. Properly handled, the land would give a hay of high quality. Land of this character ranges in price from $10 to $50 an acre.

The average results of mechanical analyses of the soil and subsoil are given in the following table:

Mechanical analyses of Kalmia 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.*
22311, 22313.....	Soil.....	0.6	6.4	11.1	32.3	27.2	13.7	8.6
22312, 22314.....	Subsoil.....	.4	5.6	8.1	28.1	20.8	20.7	16.8

MYATT SAND.

The Myatt sand, to a depth of 4 or 5 inches, is a dark-gray loamy sand. Below this the color changes to a light-gray or whitish and the texture becomes heavier until at 18 to 20 inches it grades into a moderately stiff, plastic loam to sandy clay. The subsoil is usually mottled gray, red, and yellow, owing to the presence of iron stains, representing a variety of stages of oxidation of the iron salts.

This type occurs as low-lying, poorly-drained areas upon the higher terraces of Pea River. The largest single body occurs about 1¼ miles northeast of Alberton. Other smaller bodies are found south of Alberton and southeast of McGees Bridge.

The native growth is chiefly water oak, liveoak, bay, and such grasses and other vegetation as thrive in low, poorly drained areas.

This type represents inadequately drained areas, in which sedimentary materials, decayed vegetable matter, and other débris have collected. By proper drainage it can be reclaimed for all kinds of general farming, but it is particularly well suited to oats, corn, and hay. It sometimes happens that in seasons of wet weather the oats become so lodged as to interfere with the harvesting of the crop. Very little if any of the oats are thrashed, being cut and bound in bundles and used as feed. It is estimated that from 25 to 30 bushels of oats per acre can be grown without the use of fertilizers. Corn yields from 15 to 20 bushels per acre upon fields usually fertilized with barnyard manure or compost. The expense necessary properly to drain this land, and the abundance of cheap, better-drained bottom lands, including the Kalmia fine sandy loam, fine sand, and sand, have retarded somewhat the development of this type, but in recent years more attention has been given to the reclaim-

ing of these lands and at least 50 per cent of the type is under cultivation.

The use of lime in connection with barnyard manure is recommended for this soil, as it is generally more or less acid in nature, the result of its rich accumulation of organic matter.

This type is particularly well suited for grazing purposes on account of its adaptation to Johnson and Bermuda grasses. These can also be profitably cut for hay. As much as 2 to 3 or 4 tons per acre has been obtained in a single season from this soil in other sections of the South.

In draining this type it is best to use tile, so as not to interfere with its cultivation in large bodies. This land is usually held in conjunction with other bottom lands at from $5 to $10 an acre.

The following table gives the results of mechanical analyses of the soil and subsoil of the Myatt sand.

Mechanical analyses of Myatt 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.*
22317	Soil	1.5	15.9	17.8	30.2	11.3	17.4	5.8
22318	Subsoil	1.4	15.2	16.9	28.8	11.0	15.8	10.8

MYATT FINE SANDY LOAM.

The soil of the Myatt fine sandy loam to an average depth of 8 inches is a dark-gray fine to medium sandy loam. The subsoil is a yellow and gray mottled, stiff, compact sandy clay. At depths below 20 to 24 inches the subsoil is usually saturated with water and is of a light-gray color, with little or no mottling.

Only a few small areas of the Myatt fine sandy loam were mapped. the largest being in the vicinity of Elba and southwest of Alberton. These areas occur at the base of the bluff which marks the line of separation between the second terraces or bottoms of Pea River and White Water Creek and the adjacent uplands.

Areas of this type are level and low lying and they frequently receive the drainage of small branches heading in the uplands. It is generally necessary to provide artificial drainage before this soil can be put under cultivation. The soil dries out slowly after the winter rains, which makes it late for the staple crops, corn and cotton. This type is of alluvial or sedimentary origin, being formed from sands and clays of the Lafayette formation and other materials which have been transported and reworked by the streams and deposited in their flood plains. It is in some cases undergoing modification at the present time from the accumulation of organic matter

and wash by the addition of materials from the adjacent uplands. Small shallow areas of Muck, too small to be shown upon the map, were included with the type. Water oak, gums, liveoak, poplar, pine, laurel, gallberry, and other water-loving shrubs and grasses are native to this soil and form a rank growth.

Where the Myatt fine sandy loam has been drained, yields of 25 to 30 bushels of corn and from 20 to 40 bushels of oats per acre are obtained. Only a few areas of this type are cleared and in cultivation. In other sections of the South, where this soil occurs, yields of 2 to 3 tons of Bermuda and Johnson grass per acre have been obtained. It has also been used extensively for growing cabbage, cauliflower, radishes, beets, Irish potatoes, and strawberries. Tomatoes make a rank growth, but usually shed their fruit.

The possibilities of the profitable use of this soil for hay and pasture is apparently not realized and no effort has been made to develop it for such purposes. It should be especially valuable to the stock raiser.

Cotton is likely to be affected by rust and other diseases and hence it is better suited to the production of corn and oats. To insure the best results it should be plowed deep, preferably in the fall, allowing the frost and rain to act upon it so that the soil will become loose and friable. It is also recommended that a cover crop of oats be sown early in the fall, to be turned under in the spring as green manure.

Experiments upon this soil have demonstrated that plowing under legumes, with a light application of lime, gives better results than a complete fertilizer. The best results, however, have been obtained from the use of stable manure alone, or with light applications of lime.

This soil is valued in conjunction with other surrounding types at $5 to $20 an acre, according to its improvements and access to market.

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

Mechanical analyses of Myatt 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.*
22321	Soil	0.0	0.5	0.7	42.0	38.3	11.5	7.1
22322	Subsoil	.1	.1	.3	23.0	32.1	12.0	32.4

MEADOW.

Meadow includes the low-lying, flat, rather poorly drained areas lying along the stream courses, and subject to frequent overflow; also the poorly drained "sinks" or basins in the uplands and wider valleys. These soils are too variable in texture and structure even

within small areas to admit of their correlation with any of the fixed soil types having similar origin and topographic position.

The soils vary from dark-brown heavy loams, or clay loams, to loose incoherent sands. Small areas of Muck are not of infrequent occurrence. The heavy soils are found in the basins and sinks and usually have grayish mottled subsoils; while the lighter sandy soils more often border the stream courses, forming low dikes. These soils are constantly in process of formation with each successive overflow which brings in new deposits, spreading them over the bottom lands.

The Meadow areas are ordinarily too wet for cultivation, yet are not so poorly drained as to be covered with water or to be permanently swampy.

Bordering nearly every stream in the county are strips of Meadow, or soggy, poorly drained, bottom lands. Some of these were to narrow to be represented on the map. These have been included within the boundaries of other types, which also border the stream courses. A few small, isolated areas, locally called "lime sinks," were mapped throughout the uplands. Most of such areas, however, are too small to be shown on the map. The soils in these basins are variable, but the average consists of a dark-brown heavy loam, or clay loam, underlain by a grayish, mottled, plastic clay subsoil. In many instances good returns are obtained from the use of these areas for pasture and by cutting the native grasses for hay. These soils are very productive, and the returns could be greatly increased if more attention were given to proper cultivation and seeding. Most of these areas occur within the Norfolk sandy loam. The largest areas of Meadow are found along Pea River, and Double Bridges, Tight Eye, and other creeks. Not much of the Meadow is cultivated or will be reclaimed until the well-drained uplands are fully occupied and the advance in land values warrants the expenditure necessary to put these undrained lands in condition. The lighter sandy areas, which are well drained, produce a clear, high-grade, mild-flavored sirup, which meets with ready sale in local and outside markets. More of this land could be used for this purpose if proper attention was given to handling it. Where these soils can be properly drained they are especially well adapted to corn and oats. At present they are valued only for the lumber and their pasturage.

SUMMARY.

Coffee County, area 439,680 acres, or 687 square miles, is situated in southeastern Alabama and wholly within the Coastal Plain province. The population of the county is 26,119. Elba, the county seat, has a population of 1,079. The largest town is Enterprise, population over 2,322. Other towns are Pink, New Brockton, and Richburg.

Transportation is afforded by a branch line of the Atlantic Coast Line Railroad and by the Louisville and Nashville.

The climatic conditions favor a diversified agriculture. The mean annual rainfall, 51 inches, is ample for maturing all crops. A long growing season favors crop rotation.

Cotton and corn are the principal crops, with oats, sugar cane, potatoes, cowpeas, and peanuts secondary products grown chiefly for home use.

The acreage in farms has increased from 56,612 acres in 1860 to 131,093 acres in 1900. Value of farm property including live stock in 1900, $2,081,575.

Eighteen types of soil, including Meadow, are found in the county. All but one of these are derived directly or indirectly from the sands and clays of the Lafayette formation. One type, the Susquehanna fine sandy loam, is derived from a Tertiary formation underlying the Lafayette.

Members of the Orangeburg, Greenville, Kalmia, Myatt, Norfolk, and Susquehanna series occur.

Of the Orangeburg, three types are mapped, the sand, fine sand, and sandy loam. The sandy loam is the best for cotton, the sand and fine sand for corn. The last-named soil is well adapted for peach growing.

The Greenville soils are the most productive upland soils in the county. Four types of this series are found; the sandy loam, clay loam, loamy sand, and fine sand. The heavier type under the best methods of cultivation and fertilization will yield one bale of cotton per acre. The lighter types are better for corn than cotton and also give good results with cowpeas, velvet beans, and peanuts.

Of the Norfolk series, the sand and fine sand occur prominently in the northern part of the county, the sandy loam and fine sandy loam in the piny-woods or southern section. The lighter types are typical trucking soils. The sandy loam and fine sandy loam are well adapted to cotton, and certain of their phases to tobacco culture.

Of the Susquehanna series, the fine sandy loam is the only type mapped in the county, but areas of Susquehanna clay too small to map occur. The shallow phase of the fine sandy loam is well suited to cotton, but upon the deeper phase, corn, cowpeas, and velvet beans are better crops.

The Myatt sand and fine sandy loam occur as low-lying, poorly drained soils upon the first and second terraces along the larger streams, particularly along Pea River. With proper drainage these soils are capable of producing fair yields of corn, oats, and certain truck crops.

The Kalmia series is represented by the sand, fine sand, and fine sandy loam. It comprises the better drained bottom lands along

the larger streams and is most typically developed upon the second terraces along Pea River and White Water Creek. The Kalmia sand and fine sand are particularly well adapted to corn, watermelons, muskmelons, cucumbers, potatoes, and other early truck crops. The Kalmia sand is more subject to drought and in general is not considered so strong a soil as the fine sand. The fine sandy loam, if well drained, is fairly well adapted to cotton but is especially suited to Bermuda grass, Johnson grass, and other grasses and should be used more extensively for pasture land.

The price of land in Coffee County ordinarily ranges between $10 and $20 an acre. Some areas close to towns can not be bought for less than $50 to $75 an acre. Little is offered anywhere for less than $8 to $10 an acre.

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