SOIL SURVEY OF TALLAPOOSA COUNTY, ALABAMA

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DESCRIPTION OF THE AREA.

Tallapoosa County is situated in the east-central part of Alabama and is bounded on the north by Clay and Randolph counties, on the east by Chambers, Lee, and Macon counties, on the south by Macon and Elmore counties, and on the west by Coosa County and the Tallapoosa River, which separates it from Elmore County. The included territory lies between parallels 33° 8′ and 32° 30′ north latitude and 85° 30′ and 86° west longitude.

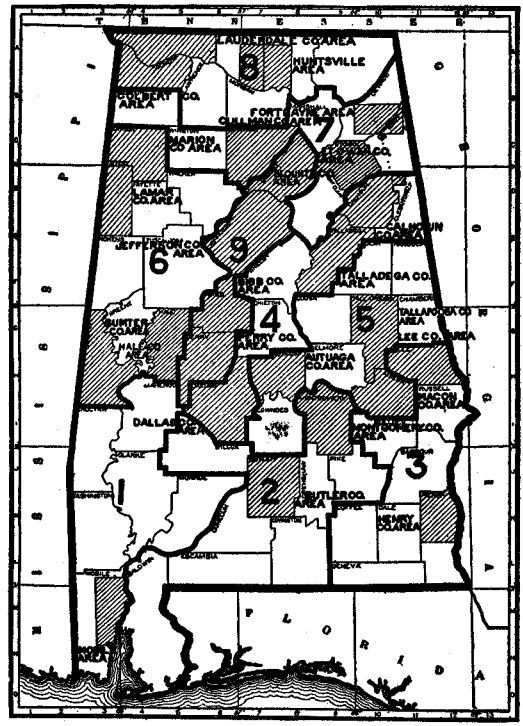

FIG. 23.—Sketch map showing location of the Tallapoosa County area, Alabama.

The county is irregular in shape, has a maximum length of 37 miles from north to south, and a maximum width of 24 miles east to west. The boundary, with the exception of the southwestern portion formed by the Tallapoosa River, is formed by right lines. The area comprises 492,800 acres, or 770 square miles.

The county lies almost entirely within the Piedmont Plateau province, the northern boundary being but a few miles distant from the Appalachian Plateau province. About 36 square miles of the southern portion lies in the Coastal Plain region.

In surface features the county exhibits the widest variation from the rolling, uneroded country of the Coastal Plain to the rolling hilly

to mountainous country in the extreme northern portion. There have been pronounced crustal movements over the Piedmont section and the rocks are now tilted at all angles, although weathering has smoothed the ancient more rugged surface and only indistinct remnants of former ridges remain, with irregular rounded and often elongated knobs skirting valleys with gradually sloping sides.

Probably the highest point in the county is the summit of Hog Mountain, in the extreme northern part of the county near the Clay County line. There are many hills and knobs with elevations ranging from 500 to 750 feet above sea level and from 100 to 200 feet above the adjacent valleys. There are some elevations, locally termed mountains, that are simply hills of denudation. A notable example is a hill 5 miles northwest of Dadeville, where an intrusive mass of diorite rises to an elevation of 950 feet. The stream divides are generally narrow and sharp, and the declivities steep.

In the southern part of the county the topography is not so rough, the former uneven surface having been covered by Coastal Plain deposits varying in thickness from a few to many feet. In many places much of this material has been removed by rapid-flowing streams. The surface in this section ranges from gently rolling to hilly.

The drainage systems are complex and mature, and there are no swamp areas in the county. The main stream is the Tallapoosa River, which flows in a general southwest direction through the county for nearly 70 miles, and with its many tributaries drains the entire area.

The streams of the county are becoming important in the production of power. Dadeville is supplied with electricity for light and power from a plant on Sandy Creek, and a plant is about to be installed on Big Hillabee Creek to supply Alexander City. Two miles above Tallassee the Tallapoosa is impounded by a 45-foot dam, by which means several thousand horsepower is produced for use in Montgomery. At Tallassee many hundred horsepower are developed by the large cotton mills and to supply electric power for that city. The river and smaller streams have many places where power can be developed economically. Owing to the falls at Tallassee the river is not navigable through the county.

Prior to the Creek war of 1814 but few had come to this section. Dudleyville was founded at the beginning of the nineteenth century. The pioneers were from the Carolinas, Virginia, and Georgia. Early settlements were made also at Youngville, later called Alexander City, Dadeville, and Emuckfaw. The present population consists of native whites and negroes, no immigration of the foreign elements so numerous in certain parts of the country having found their way into

this part of Alabama. The opportunity for the farmer of small means is excellent, and this class, it would seem, will ultimately be attracted thither, to the advantage of the present citizen as well as of the county and the State at large.

Alexander City is the seat of a large knitting and cotton mill, and electric-power plants are located at Tallassee. Aside from this the county is almost exclusively an agricultural region. It is quite thickly settled. There is an excellent system of schools, good high schools being located at Dadeville, Camp Hill, and Alexander City and the Southern Industrial College at Camp Hill. Classes in agriculture are maintained in all schools.

Nearly all farms are reached by the rural free delivery, and a majority have local telephone service which reaches all parts of the county.

Transportation is afforded by the Central of Georgia Railroad, whose direct line from Birmingham to Columbus passes diagonally across the county. Another railroad is being projected. The present wagon roads are not especially well maintained, but may be readily improved with the excellent road materials at hand.

A good local market for a part of the cotton is afforded by the spinning mills. The remainder is shipped to outside markets. The towns in the county also furnish a limited market for vegetables and fruit, and enough of these products are grown for home and local use. Although Birmingham is but 100 miles distant, Montgomery about 30, and Atlanta 160 miles, no effort is made to supply these excellent markets with any form of produce save cotton and a few beef cattle. In fact, the local merchants sell corn, meat, and hay to the farmers, who in general raise but a small part of the foodstuffs consumed on the farm. Cotton is the money crop here as in many other parts of the South.

CLIMATE.

The climate of Tallapoosa County is pleasant and free from extremes of temperature, the Gulf of Mexico exercising a moderating influence both in winter and summer. As the highest point in the county is only 1,100 feet and the lowest about 230 feet above sea level, there are no marked differences in climate due to differences in elevation, except as regards the occurrence of frost, a climatic feature very susceptible to local influences. In the valleys cotton may fail to ripen the last bolls because of early frost. For this reason corn and sugar cane are the favorite crops on the bottom land.

The following tables are compiled from records of the weather bureau stations at Opelika, in Lee County, 15 miles from the southern boundary of the county, and at Goodwater, in Coosa County, 7 miles north of the area. Although not in the county, these stations are fairly representative of the local conditions.

On only one occasion in many years has the temperature fallen below zero and then for only a short time. The records show also that the temperature has exceeded 100° on a few occasions, with a maximum of 105° F. The average temperature for the months of December, January, and February for the two stations is 45° F. This means that the days have an average maximum of about 55° F. at the warmest hour and the nights of about 35° F., which gives conditions favoring occasional frosts or light freezes. In the winter there is usually a succession of clear days with cool nights, sometimes with frost, and sunny days, usually free from clouds, and periods of rainfall. The cool, frosty periods may persist for several days. There are other periods of pleasant weather with daily temperatures ranging from 50° to 65° F. The winter months are also the season of greatest precipitation, an average of nearly 15 inches falling, February being the wettest month. During March, April, and May the bulk of the plowing and sowing is completed. The days are then warmer, with an average temperature of 63° F. The extremes range from 100° to below freezing, but frosts are not of ordinary occurrence and do little harm to crops. The precipitation in spring is usually well distributed, although often coming in sudden showers. At Goodwater the latest killing frost in spring ever recorded occurred on April 8, while the average date is March 20. The corresponding dates for Opelika are April 1 and March 17, respectively. The average date of the first killing frost in fall is November 9 for both stations. This gives average growing seasons of 233 days at Goodwater and 237 at Opelika.

High winds are rare and do little damage; only one tornado, causing slight loss, has been reported. This visited the northern end of the county. In the summer there are frequent thunder showers, usually coming from the west, but the wind accompanying these storms seldom causes any injury to crops. The prevailing wind direction is west or southwest.

There is a conspicuous absence of damp, foggy weather and a maximum of bright, sunshiny days. Owing to the absence of swamps or other stagnant bodies of water mosquitoes are rare and the section is not malarial. Water of excellent quality for domestic use is easily procurable.

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

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	47	78	9	4.4	1.3	7.2	0.6
January	46	74	10	4.7	6.5	3.5	.3
February	46	78	− 7	5.3	3.9	10.9	1.5
Winter	46			14.4	11.7	21.6	2.4
March	56	88	16	5.2	2.5	6.1	T.
April	63	92	32	3.6	1.3	4.5	.0
May	72	98	39	3.4	1.6	.1	.0
Spring	64			12.2	5.4	10.7	T.
June	78	100	49	3.8	1.9	9.9	.0
July	80	101	60	5.3	5.5	4.6	.0
August	79	104	58	4.4	1.4	4.0	.0
Summer	79			13.5	8.8	18.5	.0
September	74	98	46	2.8	1.9	6.2	.0
October	64	94	32	3.1	1.0	8.3	T.
November	54	81	20	3.1	5.1	7.8	T.
Fall	64			9.0	8.0	22.3	T.
Year	63	104	− 7	49.1	33.9	73.1	2.4

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

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	45	76	9	3.8	1.0	3.1	0.1
January	45	84	9	4.1	3.2	3.3	.1
February	43	77	− 8	6.8	4.3	16.7	1.5
Winter	44			14.7	8.5	23.1	1.7
March	56	87	14	6.5	8.4	6.9	.0
April	63	92	26	4.2	3.9	4.4	.0
May	71	100	40	2.8	.1	7.0	.0
Spring	63			13.5	12.4	18.3	.0
June	78	103	48	3.9	3.2	4.9	.0
July	81	105	56	5.1	4.2	2.4	.0
August	80	105	59	4.6	3.6	3.4	.0
Summer	80			13.6	11.0	10.9	.0
September	76	102	37	1.8	.9	1.9	.0
October	64	97	31	2.8	.0	1.5	.0
November	53	87	22	2.5	1.8	1.1	T.
Fall	64			7.1	2.7	4.5	T.
Year	63	105	− 8	48.9	34.6	56.6	1.7

AGRICULTURE.

The pioneers first produced the food crops, corn and wheat, with other necessaries, such as wool, pork, and beef. Later cotton became a staple, especially upon the large plantations operated with slave labor. No rotation of crops was practiced, and when the naturally fertile soils failed to produce profitable crops, they were allowed to lie fallow or to become reforested. In the winter new land was cleared to replace that thrown out of cultivation. With the close of the war a new system of agriculture was gradually evolved. Farms decreased in size, and many of the tracts of 1,000 to 5,000 acres were broken up. The average size of farms in 1880 was 186 acres, and in 1890, 122 acres. In 1900 the census reported a still further decrease to 98 acres, but a change in the classification—each tenancy being reported as a farm—accounts for a part if not for all of this apparent decline in acreage. At present about 40 per cent of all farms are operated by the owners.

The old practice of abandoning land with decline of yields has about disappeared, and the planters are beginning to follow the better method of rotating crops and using fertilizers to maintain the productiveness of their fields. Crops of cowpeas and oats are being grown upon cotton and corn lands by the more progressive planters, and such soils wherever examined were producing better and appeared to be in better physical condition than those used year after year for cotton and corn. Near Hackneyville ordinary Cecil sandy loam by deep plowing, rotation, and use of cowpeas has produced 50 bushels of oats and nearly a bale of cotton per acre. On nearby fields of the same type of soil, under the old system of farming, from 10 to 15 bushels of oats and from one-fifth to one-fourth bale of cotton per acre are considered normal yields. In view of the reluctance of many farmers to adopt the modern methods of soil management, it is interesting to know that the soil giving these yields will, with such improved culture, yield crops giving a return of $30 to $50 an acre annually and at the same time constantly become more productive. Aside from this specific instance, there are many other cases, on other soil types in the area, where a careful study of the needs and nature of the soil has resulted in greater yields at less cost.

Many of the farmers do not produce the food and field crops needed for home consumption, but purchase a large part of such commodities with the proceeds of the cotton crop. More than $100,000 worth of corn is annually imported. This should be grown at the home, and could be produced without increase in the present acreage—50,052 acres—if proper methods were employed. The average yield of corn is now 11 bushels per acre. If the average could be increased 4 bushels, Tallapoosa County would produce all the corn

needed to supply present demands. Although nearly every type of soil is suited to the growing of some forage crops, the area imports nearly all of its hay. The hay shipped in consists of alfalfa, clover, timothy, and cowpea vines.

The principal crop is cotton, of which, according to the Census, 65,094 acres were planted in 1899, yielding 24,955 bales. There has no doubt been considerable increase in the acreage since the year designated, owing to the natural growth of the population and to the stimulus of high prices. The average yield per acre is about one-third bale. When it is considered that the better farmers, on several soil types, secure three-fourths to 1 bale per acre, the need for the introduction of better methods of soil management in the culture of this crop is apparent.

The acreage of oats shows a decided increase during the last thirty years. While oats can be grown profitably on all the soils, they are best adapted to the heavier soils of the Cecil series, the Cecil stony loam, and the Cecil clay loam being favorite types for oat production. The sandy soils with heavy subsoils will also produce excellent oats, and this crop should be more generally grown, not only in order to furnish forage for the work animals and other live stock, but also to make one step in a well-arranged rotation. Wheat, formerly grown to some extent, has progressively declined in acreage. This was formerly an important crop on the heavier soils, especially the Cecil clay loam. Low yields and the high price of cotton are the chief causes for the lack of interest in wheat. As the average yield is less than 5 bushels per acre on soils capable of growing 1 ton to 2 tons of cowpea hay or 200 pounds of lint cotton, the cultivation of wheat and other small grains, excepting oats and rye for forage, pasturage, or as cover crops, should be discontinued under present conditions.

On different types in the county small patches of tobacco are produced. As grown and cured it is generally too strong for chewing, as the heavy soils give a strong, thick leaf. However, heavy export tobacco could be raised if the culture and care of the crop were understood.

Some sorghum is grown on nearly every farm, either for fodder or sirup. Sugar cane is also produced, being planted on the bottom lands. Sirup is made for home use only, although its production for the market would be very profitable, as the cane grown on the Congaree sand loam gives a sirup of high quality.

The commercial production of truck has never been attempted on a large scale. A few truckers have grown supplies for the town markets, and the demand and prices are good. Strawberries, blackberries, cabbage, tomatoes, string beans, English peas, collards, okra, turnips, and Irish and sweet potatoes find a ready local sale.

A few apple orchards and many small peach orchards are seen. The Elberta is the favorite variety, but Sneeds, Greensboro, and Carmen also succeed. The first commercial orchard has recently been set out 6 miles northeast of Alexander City. The soil is the Cecil slate loam. This type gives a peach of high color and firm flesh. This soil is also adapted to grape growing, and Scuppernong, Moore's Early, Lutie, and Niagara have been produced very successfully, the vines making a particularly vigorous growth. The Concord grows well, but does not ripen evenly.

Pears do well on this and other types, but the blight is prevalent and many small orchards planted to supply the home have been nearly ruined. The Kieffer and Garber seem to be the most resistant to this disease, and especially when planted on thin, eroded slopes.

Apple trees, where proper care is given them, make a good growth and bear well, and the fruit brings high prices. Such varieties as Carolina, Red June, Yellow Transparent, Shockley, and Yates are very successful. The latest fruit normally keeps only until the holiday season. On the higher slopes of the Cecil slate loam at elevations of 750 to 1,000 feet apples should do particularly well, and their culture for market might be entered upon with assurance of reasonable profits.

Stock raising and dairying are practically undeveloped, although with the long grazing season and the variety of forage crops that do well under the local conditions of soil and climate there would seem to be every reason why more attention should be paid to these industries. A little feeding of stock purchased in the spring and pastured until fall, when it is fattened for market is done by a few of the farmers. A few hogs are kept, and grades of the better breeds are displacing the half-wild stock of earlier periods. The raising of horses and mules, which was formerly practiced to some extent, has been abandoned, notwithstanding the high price paid for the work stock brought in from other parts of the country, a good span of mules costing from $400 to $500. There is no good reason why these animals should not be produced on the farms of the county.

In a general way the farmers recognize the broad soil adaptations of the main crops they are already growing. Cane and corn are planted on the bottom lands almost exclusively, while the higher lying soils are used for cotton, oats, sorghum, and corn. Beyond this little attention is paid to soil differences.

The heavier soils are known to produce larger crops and to be more durable than the sandier lands; the lighter soils need heavier and more frequent applications of fertilizer in order to keep up the yield. Experience has shown that not more than three crops of the same kind can be grown in succession on the same land without the yield

being seriously diminished. Contrary to popular opinion, this is not due to exhaustion of plant food, for if a different crop be raised the land may respond as well as ever. To whatever cause the deterioration may be ascribed the remedy is found in a proper rotation of crops and better methods of culture. A rotation that has been tried locally with some beneficial results is cotton one or two years, corn with cowpeas between the rows one year, oats following the same fall, and back to cotton the following spring. Fair yields of cotton and corn have been maintained by this system, using fertilizer on the cotton land. A better plan, tried by a few farmers, is to place the cotton rows at wide intervals and sow bunch cowpeas between the rows when the cotton is laid by. Next year plant corn with cowpeas at last cultivation, and after the corn is removed the cowpeas should be plowed under and the land sowed to fall oats. The oats may be allowed to mature, in which case they will be cut in June, and cowpeas or cowpeas mixed with millet or sorghum are sown for hay. This plan gives four crops in three years. Some use the same rotation, except that planting the cotton closer they omit the first cowpea crop. The rotation has been found to include all the features needed in a system designed to renovate the soil, to increase the yields, to make diversified farming possible, and to increase the income. The present one-crop system has failed to maintain the soil in a productive state, and has resulted in the evils attendant upon the unfortunate credit system, which affects tenant and owner alike.

The beneficial effects of humus, a product of decaying organic matter, as a source of nitrogen, as an element increasing the capacity of soils to hold water, and as a factor in promoting proper physical conditions, are being understood more clearly every day. In the rotations outlined provision is made for the plowing under of a catch crop of cowpeas, which will be sufficient in the case of many fields. On lands badly "run down" it will be well to increase the number of green manuring crops in the rotation at first, using cowpeas, clover, vetch, or some other legume. The legumes are best for this purpose, because in addition to supplying organic matter to the soil they also add nitrogen collected from the air. In following any rotation the full benefits will be secured only where the most careful cultural methods are practiced. This includes deep plowing in preparing the seed bed, especially on the heavier soils; fertilization, using organic manures wherever available and properly formulated commercial mixtures where their need is indicated; and frequent cultivation of the intertilled crops to keep down the weeds and to prevent the loss of moisture by evaporation. With the frequent use of green manuring crops a considerable part of the expenditures for fertilizer materials may be saved.

The labor is almost exclusively drawn from the negro race. There is no scarcity of farm hands, but wages are somewhat higher than formerly. From $12 to $15 a month is the average wage for labor hired for the season, and from 75 cents to $1 a day for day labor. Most of the farming is done by tenants upon some share basis. The usual rent is a "third of the cotton and a fourth of the corn." It is not unusual for the landowner to advance a part of the food and other supplies needed while the crop is being grown. When the renter has tools and work animals of his own, cash rent, which ranges from $2 to $3 an acre, may be asked. The custom of renting a farm for a stipulated amount of cotton is not generally practiced.

The value of farm land is increasing. Near Dadeville, Camp Hill, Agricola, and Alexander City, well-improved land in good state of cultivation brings as high as $65 an acre. There are other lands valued chiefly for forestry that may be held for less than $10 an acre. There is also a small area of unentered State land.

In the local fertilizer practice fertilizers relatively high in nitrogen and phosphoric acid are used. A favorite mixture is cotton-seed meal and ground or acidulated phosphate rock, which is applied to cotton with good results. With the use of legumes in rotation, as recommended, less of the expensive nitrogen carriers need be bought. At present farmers sell their cotton seed to the local oil mills outright or exchange it for cotton-seed meal. On the Cecil clay loam, as well as some other types, fertilizer is often applied, part at the time of planting and part later in the growing season. The crops seem to do better than when all the fertilizer is applied at once. The majority of farmers use from 100 to 200 pounds of fertilizer per acre, spreading it in the drill at or before the time of planting. Cotton-seed meal is often applied to the soil from ten to twenty days before planting time. In 1899 the value of fertilizers used amounted to more than $100,000. It is evident, judging from data gathered from farmers on several different soil types, that a part of this money is wasted, as the fertilizers may sometimes fail to produce an appreciable increase in the crops. On the other hand, with the present farm practices, the less fertile soils will not produce profitable crops unless commercial fertilizer or cotton-seed meal are applied.

SOILS.

Owing to a diversity of soil-forming materials and modifying agencies, Tallapoosa County embraces a range of soil conditions adequate for the profitable development of an intensive and varied agriculture. Fourteen distinct soil types were recognized in the survey. The classification and separation of these was based mainly upon differences in origin, texture, or relative content of sand, silt, and clay, and upon structure or arrangement of the soil particles as

affecting properties of compactness, plasticity, etc. These determining characteristics, along with other important features, as topography and drainage conditions, materially affect the crop value of the several types, governing in a large measure soil-moisture conditions and cultural operations. For convenience of discussion those types, as sandy loams, clay loams, etc., that are closely related in origin and general physical characteristics, have been grouped into series. Occasionally a type of soil, as shown in the map, may include small patches of other types too small to map on the scale used (1 inch to the mile).

Tallapoosa County embraces three well-defined soil divisions or provinces: (1) The Piedmont province, including those soils which have been derived in place through the weathering of the varied igneous and metamorphic rocks; (2) the Coastal Plain province, including soils that were deposited in or influenced by an ancient sea that covered a small strip in the southern part of the county; and (3) the flood plains or recently deposited soils of stream bottoms.

That the great variety of rocks occurring in the Piedmont portion of the county have given rise to only nine distinct soil types exemplifies the tendency of weathering processes throughout this great physiographic region, the Piedmont Plateau, extending from New Jersey into Alabama, to bring about uniformity in the general character of the residual products of rock decay. A number of rocks differing considerably in mineralogical, chemical, and structural composition have broken down under the influence of weather and given rise to the same soil—as, for instance, the Cecil sandy loam—which is derived from granite, gneiss, and syenite; while, on the other hand, rocks very similar in character have given rise in some instances to more than one type as the result of variations in the degree of weathering or the effect of erosion or drainage conditions upon the soil-forming material left upon the breaking down of the parent rock. In places along slopes the fine particles have been washed out of the original material, leaving a sandy mantle over clayey material, while in other places the superficial portion has been removed bodily as the result of excessive erosion induced by careless soil management, as for example the failure to provide hillside terraces or to keep the soil properly supplied with organic matter. Again, lower slope soils frequently have been considerably altered by a surface accumulation of material washed from above.

The Cecil group of soils is characterized by the red color of their clay subsoils, their usual good drainage conditions, and the common origin of the component materials from place weathering of igneous and metamorphic rocks, as granites, gneisses, syenites, schists, semicrystalline slates, and phyllites. In the surface portion of the several members of this series there is a range from red clay through sandy

loams to slate loam and stony loam. Fragments of rocks that have withstood weathering processes, especially the hard quartz rock coming from the veins of quartz that occur through the various formations, are of very common occurrence over the surface of the Cecil soils—often in amounts sufficient to interfere materially with cultivation. The exact characteristics and agricultural values of these, as well as of the other soils mapped, are brought out under the discussion of the several types in the succeeding chapters.

Only one member of the Durham series, the coarse sandy loam, is developed in the area. This is derived through the weathering of biotite granite. The Durham soils differ in physical characteristics from the Cecil mainly in the yellow color of the subsoil. The Iredell stony sandy loam, derived from intrusive rocks like diorite, is characterized by the dense, plastic, adhesive character of its subsoil. The Worsham sandy loam, a rather poorly drained variable type, is derived principally from hornblende schist and micaceous, imperfectly crystalline rocks.

In places along slopes there are encountered permanently wet or "spouty" areas resulting from seepage water or water following along the line of dip or slope of tilted rock formations underlying contiguous territory.

In the southern or Coastal Plain portion of the county the upland soils fall into two groups, the Norfolk and Orangeburg. The Norfolk soils are characterized by their yellowish friable sandy clay subsoils, while the members of the Orangeburg series are characterized by the reddish color and friable structure of their sandy clay subsoils. All these are derived from materials washed down from land areas when the sea stood at a higher level relative to this region. The Norfolk material was probably deposited in the ocean, while at a later period the material giving rise to the Orangeburg soils was laid down in shallower fresh water. The latter very likely was derived largely from the Cecil soils. These soils are not as typically developed here as they are farther away from the Piedmont or in the more typical Coastal Plain region of southern Alabama. Their development here represents more properly a gradational soil zone lying between the Piedmont and the Coastal Plain soil-provinces.

The soils of the flood plains province represent stream bottom land recently deposited from overflow water. This soil material has been washed from contiguous upland areas, each heavy rain bringing down an additional load to be spread out over the bottoms. There is considerable textural variation in these bottom soils, and owing to the difficulty of separating the many small patches the whole has been classed as Meadow.

An interesting feature in connection with the soils of the Tallapoosa area is the fact that crops suffer less on the heavier soils in wet seasons

than upon the sandy types. One of the greatest problems confronting the farmers in this rolling country is the protection of the slope soils against destructive erosion. The loosened portion of shallow-plowed slopes is sometimes swept away almost bodily during heavy downpours. This can be prevented cheaply and easily by terracing, deeper plowing, and by the incorporation of vegetable matter. While affording protection against erosion, deeper plowing and the incorporation of vegetable matter will also improve the moisture holding capacity of the soils and at the same time their productivity.

The following table gives the names and areas of the several soil types shown in the accompanying map:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Per cent.
Cecil stony sandy loam	140,864	28.6	Orangeburg sandy loam	5,504	1.1
Cecil stony loam	89,216	18.1	Orangeburg gravelly sandy loam	5,248	1.1
Cecil slate loam	79,424	16.1	Iredell stony sandy loam	3,840	.8
Cecil sandy loam	76,672	15.5	Cecil stony clay	2,944	.6
Cecil clay loam	33,536	6.8	Durham coarse sandy loam	2,752	.6
Meadow	28,800	5.8	Worsham sandy loam	2,432	.5
Norfolk gravelly sandy loam	11,520	2.4			
Norfolk sandy loam	10,048	2.0	Total	492,800	

CECIL SANDY LOAM.

The soil of the Cecil sandy loam, to an average depth of 8 inches, is a light-gray sandy loam, which when moistened assumes a darker gray color. In places the surface may be entirely free from stones, while in other places a small quantity of grayish or iron-stained quartz granite or other rock fragments may occur scattered over the surface and mingled with the soil. A conspicuous feature is seen in the occurrence of large granitic bowlders over an area of this soil lying 4 miles north of Alexander City. Some of these are of such size that blasting would be necessary for their removal. There are also occasional rounded or elliptical knobs or ridges of from 1 to 5 acres in extent where the parent rock has resisted weathering to such an extent that the soil covering is too thin for profitable cultivation.

The surface soil, owing to its open, porous character, is fairly resistant to erosion. It can be plowed soon after heavy rains, and when kept well supplied with organic matter it is quite retentive of moisture and little inclined to bake.

The subsoil to a depth of 36 inches is a red sandy clay loam to clay. Sharp angular quartz grains and fragments are conspicuous.

The transition from the light-textured surface soil to the heavy subsoil is usually very abrupt. On the steep slopes where the soil has been largely removed by erosion the red subsoil clay may be exposed as unproductive "gall spots" the soil of which, under cultivation, usually corresponds to a loam or clay loam. Some of the hilly or rolling areas of formerly typical sandy loam that have been under clean cultivation have suffered from erosion to such a degree and have had so many of the included stones exposed that it is difficult to decide whether to map them as sandy loam or stony loam. Some areas that now represent true sandy loams under present methods of management will, through erosional processes, be changed to clay loam, clay, or stony loam. It is almost impossible to stop all erosion, but with deep plowing, careful terracing, and maintenance of humus the disastrous effects of washing can be lessened.

The rolling to hilly topography is favorable to good surface drainage, while the porous soil material, underlain as it is with a retentive subsoil, is capable under proper methods of management of conserving in normal seasons adequate supplies of moisture for the needs of a variety of crops.

This type has a wide distribution in the county, and much of it is within easy hauling distance of railroad stations. It is derived mainly from granite and gneiss.

Uncleared areas support a growth of pine, oak, gum, and tulip. Areas under cultivation are used for general farming. This is a favorite cotton soil, although the average yields are much below the capabilities of the type. This is also true of the other commonly grown crops corn and oats. About 20 bushels of oats, 10 to 15 bushels of corn, and 200 to 250 pounds of lint cotton represent closely the acreage yields. Under the best management 40 to 50 bushels of oats, and three-fourths to 1 bale of cotton per acre have been obtained. Where this has been done the soil has been plowed deep with a disk plow and a rotation of crops, consisting of corn, with cowpeas between the rows, cotton, and oats systematically followed. These yields are at least three times those on equally promising portions of the type elsewhere.

The increased yield can only be accounted for by the better condition of the soil due to deeper plowing, to the increase of nitrogen and humus due to the cowpeas and oat stubble, and to the regular rotation, as no more fertilizer was used where the large yields were secured than upon many farms giving the low yields. There was probably a better fertilizer effect in the former case owing to the improved physical and chemical condition of the soil due to better tillage.

The cultural methods on this type of soil should include deeper plowing and shallow surface culture at dry periods in order to give in

the first instance a deeper zone for root development and in the second to conserve the capillary moisture. It is a common belief among the farmers that fertilizers high in potash are not needed. Those having a high phosphoric acid and nitrogen content are used with good results. The type has a value of $8 to $75 an acre, depending upon location and the character of buildings and other improvements.

The soil is naturally a good soil for truck. Sweet and Irish potatoes do well, as do strawberries, blackberries, turnips, and beets.

The necessity of rotation and conservation of humus is very evident on this type as the open structure favors the rapid destruction of organic matter with the resulting unprofitable yields. On account of the ease with which it can be plowed at all times, even when very wet, it finds favor with farmers. It is usually referred to as "gray land."

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

Mechanical analyses of Cecil 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.*
21067	Soil	2.7	14.0	10.1	26.3	12.7	21.7	12.3
21068	Subsoil	2.1	10.1	7.5	19.8	8.0	23.8	28.4

CECIL STONY SANDY LOAM.

The soil of the Cecil stony sandy loam, from 0 to 7 inches, is a grayish to grayish-brown sandy loam. The soil has an open structure and the surface is covered with a large number of subangular rounded stones, varying in size from pebbles to cobbles. The subsoil from 7 to 36 inches is a red heavy sandy loam to clay loam. Occasionally imperfectly drained areas too small to map are encountered, the subsoil of which is of a yellowish color. Such poorly drained spots are less productive than the more typical areas having a red and somewhat heavier subsoil.

The Cecil stony sandy loam is an easy soil to till, although rocks on the surface sometimes hinder cultivation to a limited extent. These could be easily moved from the surface. This type can be plowed much quicker after rains than the heavier members of the series—the clay and sandy loam—without causing the soil to clod or bake with subsequent dry weather. It erodes easily and in many places is badly scarred with steep-sided gullies. The effect of wash seems to be more disastrous where the subsoil content of mica is greatest. The type should be terraced carefully and all furrows run with the

contours of the slopes. Natural drainage is good and in some cases even excessive, causing crops to suffer in dry seasons. With deep plowing and the turning under of green manures the water-holding capacity is greatly increased.

The surface configuration of the Cecil stony sandy loam varies from rolling to hilly. In some cases it is quite steep and broken. Granites and mica schists are the important parent rocks. The original growth consisted principally of oak and longleaf pine. Most of the latter has been cut. The most conspicuous trees now are persimmon and black-jack and other oaks of scrubby growth.

The Cecil stony sandy loam occurs usually in large bodies, although a number of small areas are scattered throughout the county. One of the most important areas occurs near Hams Cut. Other large areas occur west of the Tallapoosa River.

This is a fairly good soil for peaches, pears, and plums. Truck would also do well, the loose structure of the soil and its warm nature promoting an early and rapid growth. The type needs humus very badly. Deep plowing is recommended. Plowing in the fall would also prove advantageous. Deeper plowing, which enables the soil to absorb more water, will tend to prevent erosion. The turning under of cowpeas or any leguminous crops will be found very beneficial, adding humus and increasing the water-holding power of the soil. Barnyard manures act in the same way, in addition to their fertilizing value. Cotton, yielding from one-fourth to one-third bale, and corn, yielding 10 to 12 bushels per acre, are the principal crops. Some small patches of oats are grown.

No crop rotation is practiced upon this type. A practical rotation is cotton with bunch cowpeas between the rows in the spring, oats in the fall, cowpeas and corn in the spring, oats as a cover crop in the fall, turning under in the spring in time to plant cotton. The cost of the seed oats will be more than recompensed by the amount of humus added. This type when sold in connection with other soils brings $10 to $15 an acre.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Cecil stony 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.*
20961	Soil	0.8	13.2	13.3	25.5	8.9	21.9	16.3
20962	Subsoil	1.0	13.9	10.6	19.3	7.0	17.0	31.0

CECIL CLAY LOAM.

The Cecil clay loam to an average depth of 6 or 8 inches is a reddish brown loam to clay loam. The first 2 or 3 inches may be somewhat sandy, and in places where erosion has been active, the red subsoil reaches the surface, such areas being called "gall spots." Below 8 inches the soil gradually becomes heavier with increase in depth until at about 30 inches it is a heavy clay of a solid red color. Usually a small amount of mica is present in both soil and subsoil, sometimes in sufficient quantity to impart a greasy feel to the subsoil. Such areas are apt to be particularly subject to destructive erosion. Usually the subsoil is crumbly, although with an excess of moisture both soil and subsoil become very tenacious.

Cultivation should not be attempted while the soil is sufficiently wet to be sticky, as puddling would likely follow. Handled under proper moisture conditions excellent tilth can be maintained. The outcropping of occasional veins of quartz has given rise to limited stony areas, and on the slopes fragments of partly decomposed granite, gneiss, and mica schist are often seen. While these stones are a noticeable feature, they are not sufficiently abundant to offer serious interference to cultivation. Small iron concretions are conspicuous upon the surface and throughout the soil mass in some of the poorer-drained areas.

A phase of limited extent carrying considerable mica is below the average of the type in productiveness, being less retentive of moisture and less resistant to erosion. The beds of roads passing through this phase are usually from 10 to 15 feet below the general level of the land. This is a common feature throughout the Piedmont region, particularly with the Cecil soils, which are mostly rather easily eroded.

The rolling topography promotes thorough surface drainage. Underdrainage also is very good though not excessive.

The type is located in a broad belt in the central-eastern part of the county, extending from Agricola to about 8 miles northeast of Dadeville. It comprises some of the best farming land in the county. No portion is more than a few miles from shipping stations.

With the cutting of the heavy virgin growth of longleaf pine and the scattering oaks and hickory, there springs up a growth of old-field pine, black and sweet gum, persimmon, and several species of oaks.

Because of its heavy texture the soil is well adapted to oats and corn. Wheat was formerly a good crop, but owing to declining yields and to the high price of cotton it is seldom grown. Cotton produces well, but unless picked before the fall rains set in it is liable to stain. Native clovers and cowpeas grow luxuriantly.

In the past no systematic rotation has been followed on this naturally strong soil. From 15 to 18 bushels of corn, 18 to 25 bushels of

oats, and one-half to two-thirds bale of cotton per acre are the usual yields. Skilled planters near Dadeville who fertilize liberally, plow deep, and rotate their crops have produced more than 100 bushels of oats per acre, with an average in one instance of over 50 bushels on large fields three years in succession. Their average yields of cotton are more than a bale per acre, and still increasing, while the yields of cowpea hay and corn are very large. These fields when seen were darker in color and of looser structure than adjoining areas farmed according to the prevailing methods. The above comparison shows clearly that this type can be made to produce from two to three times its present yields.

The prevalent custom is to apply fertilizers to the cotton, a 10–2–2 mixture being most popular. A few farmers have reported gratifying results from applying in the spring nitrate of soda, in amounts varying from 100 to 200 pounds per acre on oats sown the previous fall. In cases where 400 pounds of complete fertilizer are applied to cotton it is customary to apply 200 pounds at least two weeks before planting, and the remainder when the cotton is well started. This practice is commended by many who have tried it.

The type ranges in price from $25 to $100 an acre, with probably an average value of $40 an acre.

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

Mechanical analyses of Cecil 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.*
20959	Soil	1.6	7.5	7.5	23.4	10.6	17.6	31.7
20960	Subsoil	.4	5.2	5.2	13.6	7.1	16.2	52.2

CECIL SLATE LOAM.

The soil of the Cecil slate loam to an average depth of 6 inches is a light-brown or occasionally grayish-yellow silt loam of loose open structure. The friability is due to the presence of a large quantity of small particles of mica schist, mica flakes, small quartz fragments, or in limited areas to flat chips of argillaceous slate, known as phyllite. Where rain has fallen on the soil sufficiently to dislodge the finer particles, the surface of the areas is frequently covered with such fragments, usually a fraction of an inch in diameter.

The subsoil from 6 to 24 inches consists of a yellowish-red to red micaceous loam containing from 50 to 60 per cent of micaceous slate fragments similar to those found in the soil. This may be thinly laminated or in irregular flaky pieces from a fraction of an inch to 2 inches in length. The soil particles surrounding the slate chips are

very often a silty clay, but the relatively large amount of stony material gives both the subsoil and soil an open structure. It is often impossible to bore more than 24 inches before encountering a disintegrated mass of rock fragments. The rock has a lustrous black, grayish-black, or dark-bluish color, and in all cases a greasy feel.

Both soil and subsoil are very permeable and much of the surface water passes downward. The loose stratified rock gives good subsurface drainage.

Owing to the structural weakness of the rock the formation is tilted, faulted, and bent to a greater extent than any of the other formations in the area. This gives a rugged, hilly topography, which tends to lessen the value of the type for cultivated crops. Another cause for the roughness is the ease with which the disintegrating rock erodes. The soil is light and easily carried away. The parent rock is soft enough to crumble easily and is so laminated, fissile, and micaceous that water readily enters it.

The Cecil slate loam is easily distinguished by the topography, which is characterized by steep cuts, sharp divides, irregular ridges, and knoblike hills. The type forms a long curved ridge, from 1 to 3 miles wide, extending with interruptions from Cherokee Bluffs and Double Bridge Ferry in a general northeastward direction by Youngs Ferry, Jacksons Gap, Tohopeka, and Griffin Ferry to Bishops Ferry. To the north of this lie considerable detached areas near Dyke, east of Alexander City, on Hog Mountain, Goldville, and Cowpens. Much of it is readily accessible to railroads, a fact of importance when its adaptability to fruit is considered.

The type is derived mainly from the decomposition of the Ocoee or Talladega slate of Cambrian age.[a] This formation varies somewhat but in general is either a semicrystalline slate or a hydromica schist, containing many quartz veins. Near Jacksons Gap the slate has a dark graphitic luster and greasy feel, resembling a graphitic schist or slate. Northeast of Jacksons Gap is a small area where the rock is split into thin elongated fragments of slate called phyllite.

The virgin forests were largely longleaf pine. Where they have been cut oaks and gums come in, with old-field pine in abandoned fields. Some of the type, especially in the northern part of the county, is steep and inaccessible and best adapted to forestry.

Under ordinary cultivation the soil yields about 10 bushels of corn, 8 bushels of oats, and 200 pounds of lint cotton to the acre. In very wet seasons the yields are proportionately better than on the lower-lying sandy soils, owing to better conditions of drainage. In dry seasons crops are apt to suffer from drought, especially in those areas that carry an excess of mica. In some instances the rock has weathered so perfectly that the subsoil contains but few fragments until

[a] See p. 17, 2d paragraph, Bul. 5, Ala. Geol. Report on Upper Gold Regions.

the bed rock is approached. Here the interstitial material is heavier and more retentive of fertilizer and moisture. The formation is intersected by many quartz veins and numerous fragments of this rock are mingled with the slate.

The yields on the Cecil slate loam are unprofitable at present, except where commercial fertilizers are used. Careless methods of farming are in the main responsible for the low productiveness. When modern cultural methods are used the type responds readily and produces profitable crops. On the whole the soil appears to be too light for corn and cotton, although fair crops of these as well as of oats may be expected. The texture, structure, slope, and drainage are favorable for tree, bush, and vine fruits. Wherever observed fruit of all kinds has succeeded. On an area of this type 5 miles northeast of Alexander City standard varieties of pears, apples, peaches, and grapes are being produced with marked success. When visited by the surveying party the large commercial orchards at this place were in a healthy growing condition and bearing large yields of firm-fleshed highly colored fruit. The produce is all absorbed in the local markets at very profitable prices.

The peach, apple, and pear trees were planted the usual distance apart and cotton was grown between the rows in order to insure clean cultivation. Sneeds, Greensboro, Carmen, and Elberta peaches are the varieties grown. Among grapes the Scuppernong, Moores Early, Lutie, and Niagara are successful. The Concord has not ripened evenly with this grower. Keiffer and Garber pears would do well were it not for the blight. Of all the varieties tried these seem to be the most resistant to the disease. The favorite early apples are Carolina, June, and Yellow Transparent. The latter requires a rather infertile soil, because of a tendency to blight when grown on rich soils. Yates Early and Terrys Winter also do well on the Cecil slate loam. The thrifty growth and high color of the fruit is attributed in part to the supply of iron and potash liberated by and through the decomposition of hornblende, feldspar, and mica.

There are several thousand acres of this soil conveniently located to shipping points, and with roads sufficiently smooth to permit the safe delivery of the fruit to the railroad the soil will find its most profitable use in the production of fruit and vegetables.

Land composed of the Cecil slate loam has an average value of from $6 to $15 an acre, according to location and improvement.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Cecil slate 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.*
22287	Soil	4.5	7.8	3.0	12.2	26.3	26.1	20.0
22288	Subsoil	2.4	5.6	2.4	10.0	19.8	25.4	33.8

CECIL STONY LOAM.

The soil of the Cecil stony loam is a red or brownish-red heavy sandy loam to loam 5 to 7 inches deep. On the surface there usually occurs a variable amount of white or yellow quartz fragments mingled with partially decomposed granite. The type is found on steep valley slopes and highlands and is largely the result of erosion. Because of the loss of surface material the soil is no longer a stony sandy loam, as much of it orginally was but a true stony loam. In other places the Cecil clay has been so eroded that the resultant exposure of stones has given rise to stony loam or stony clay. The surface soil tends to crack badly in dry seasons. Some fields of considerable size are composed almost entirely of washed land known as gall spots.

The subsoil to a depth of 30 to 36 inches is a red clay loam to clay, which usually becomes heavier with increase in depth. It carries varying amounts of prominent angular quartz grains and subangular granite stones from 2 to 10 inches in diameter. Mica schists and other rocks of a somewhat slaty structure, as hornblende schist, in a smaller measure enter into the composition of the type. Both soil and subsoil frequently contain variable amounts of finely divided mica. The micaceous phase, which is generally much lighter in the subsoil, occurs only in streaks of limited extent. It is better drained than the heavier phase and likewise more susceptible to drought. In various places small rock fragments are quite numerous, giving rise to small gravelly patches.

The surface and subsurface drainage are both good. On account of the vertical dip of the parent rocks the water sometimes drains away rapidly between weathered joints or into the spongy rock. Many strips of bottom land occur throughout the type that could not be shown on the soil map on account of their small size. Much of this bottom land has been reclaimed and made to produce good crops of corn and sugar cane.

The largest area of the Cecil stony loam is found north of Sougahatchee Creek. Doubtless all of the stony loam south of the creek was originally covered by a mantle of Coastal Plain material that has since been washed from this southern edge of the Piedmont. A number of smaller bodies of the type occurring throughout the county were not mapped, owing to their limited extent.

The soil is residual, being derived from the underlying rocks, principally granite, gneiss, syenite, and mica schist. Along some of the lower slopes and in occasional depressions material washed from above has given rise to soil of a colluvial nature, which has a more friable structure and slightly higher agricultural value. The type was originally densely covered with a growth of longleaf pine and some oak. At present many abandoned fields support old-field pine and scrub oak. Some areas are so rough and steep that they should be used either for pasturage or forestry. The soil is adapted to cotton, corn, and oats, and on the higher areas apples and peaches do fairly well.

The type has suffered in the past from excessive erosion, which has been aided by shallow plowing. The incorporation of vegetable matter in conjunction with deep fall plowing will effect rapid improvement of eroded, stiff land, making it more granular and retentive of moisture, and at the same time very much more productive. Fall-plowed land should be seeded to oats, which may be turned under and the field planted to cotton, corn, or peas the following year. Experience has shown that cotton fruits very poorly while corn gives only very low yields. Cowpeas are very helpful to such land.

The use of fertilizers is very common, a low-grade mixture of 10–2–2 composition being very popular. No home mixtures are used nor is any attempt made to adapt the fertilizer to the requirements of the particular soil or crop. It is a common belief that the soil does not need large amounts of potash. Judging from its appearance a fertilizer higher in nitrogen should be used. The growing of legumes, with the consequent increase in humus content, would bring greater gains from the fertilizers applied and make the need for purchasing nitrogen less urgent. When careful tillage is practiced yields are very satisfactory. Corn yields 15 to 20 bushels per acre, with occasionally much larger yields, and cotton one-fourth to one-third bale per acre. As much as a bale to the acre has been grown where good rotation was practiced.

The type ranges in value from $10 to $30 an acre, depending on location, state of cultivation, and character of improvements. The value is gradually increasing.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Cecil stony 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.*
21063	Soil	2.1	8.8	6.2	24.1	10.8	27.1	20.5
21064	Subsoil	2.0	7.6	5.2	14.8	6.1	20.4	43.5

CECIL STONY CLAY.

The surface soil of the Cecil stony clay, to a depth of 4 to 6 inches, is a red or slightly brownish red clay loam to clay. Owing to the tendency of the clay particles to collect with the sand grains as a nucleus, the soil often possesses a granular structure that gives it the appearance of being more sandy than is the case. Over the surface is usually strewn a large quantity of quartz and greenish hornblende-schist fragments. On eroded knolls the stones are a noticeable feature, occurring in such abundance as to interfere with cultivation unless removed.

So much of the soil has been removed from a number of badly eroded patches that decomposed rock may be encountered within 20 inches or less of the surface. This "rotten rock" often consists of reddish-brown light porous material, representing a skeleton of the former rock, that is, the insoluble silicious portion holding the structure of the original rock.

The Cecil stony clay is not an extensive soil type and is confined to areas in southern portions of the county near the Lee County line. Because of its hilly topography the drainage is good. The soil is naturally strong and productive. It is said to respond quickly to fertilizers and to hold them well. It is adapted first to corn, then to cotton and all ordinary leguminous crops. Oats do especially well.

Owing to the heavy nature of the soil it is not plowed deeply and consequently erodes readily. A deeper plowing and terracing, with conservation of humus, would result in increased productivity. The steeper portions should be forested to hardwoods.

The Cecil stony clay is a residual soil derived mainly from the weathering of hornblende gneiss and schists.

The yields are slightly above the Cecil stony loam and clay loam. The shallow plowing and lack of rotation keep the yields lower than natural productiveness would indicate. With treatment the same as outlined in the case of the Cecil stony loam much greater yields could be secured. As but a small area of the type is found in the county the average yields are difficult to determine; probably one-half bale of cotton, 25 bushels of corn, and 25 bushels of oats per acre would be a liberal estimate. It is a common practice to use some fertilizer, usually a complete mixture of 10–2–2 grade.

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

Mechanical analyses of Cecil stony clay.

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.*
21065.....	Soil.....	1.7	6.3	5.6	18.9	8.9	23.8	34.6
21066.....	Subsoil.....	1.0	4.2	3.0	10.0	6.2	19.6	55.8

WORSHAM SANDY LOAM.

The soil of the Worsham sandy loam to an average depth of 8 inches is a gray gravelly sandy loam, which takes on a greenish cast when moistened. The surface soil is rather loose and porous, and there is usually present a moderate to large proportion of quartz or other gravel fragments of less than 2 inches in diameter, and considerable sharp, angular, coarse sand. The soil gradually becomes heavier until at a depth of about 8 inches the subsoil proper is encountered. This consists of a heavy, yellow, sandy, plastic loam to clay loam, sometimes mottled with light drab.

The type is derived mainly from crystalline intrusives. It occupies rather low areas and, as a rule, is not well drained. Much of it is locally called "spouty land," on account of its seepy wet condition. It is found typically developed at Hams Cut. There are several small isolated areas, but the total area is quite limited.

In agricultural value as well as general characteristics the Worsham sandy loam holds somewhat the same position in the Piedmont region as does the Susquehanna clay in the Coastal Plain region. Its agricultural value is low, being based upon yields of 5 to 8 bushels of corn and less than one-half bale of cotton per acre. On the higher, better drained areas, where better cultural methods are employed, higher yields are secured. Cotton, corn, and grass are the best crops to grow upon this soil. With thorough ditching and the incorporation of coarse barnyard manure and heavy growths of vegetation, preferably cowpeas, the type can be materially improved. Liberal applications of lime would also likely prove of much benefit.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Worsham 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.*
21069	Soil	3.4	8.9	8.3	30.9	10.9	25.5	11.8
21070	Subsoil	1.6	8.1	8.1	21.6	5.0	25.4	29.9

DURHAM COARSE SANDY LOAM.

The soil of the Durham coarse sandy loam to a depth of 10 inches is a gray to grayish-brown coarse sandy loam, carrying a considerable amount of gravel. Rock fragments are a common characteristic, sometimes occurring in sufficient abundance to interfere with cultivation. The subsoil is a yellow coarse sandy loam to coarse sandy clay.

Most of this type is located in the extreme southwestern corner of the county. Some smaller patches were found north of Alexander City. It is derived principally from the weathering of biotite gneiss. The native vegetation is black-jack oak, hickory, and longleaf and shortleaf pine.

The type is easy to cultivate on account of loose, open structure. It can be plowed under a wide range of moisture conditions. Crops on this soil, especially that with a sandy clay subsoil, suffer surprisingly little from the effects of drought. Erosion has little effect even on that occupying the steeper slopes.

The Durham coarse sandy loam is especially adapted to truck, the loose sandy texture making it a warm soil, in which the plants can get an early start. Watermelons do better than any of the crops grown at present. The melons are large and of fine quality. Tomatoes, cantaloupes, cabbage, lettuce, and all garden crops give good returns. Fruit, such as apples, peaches, plums, and berries, thrive. Cotton yields about one-half bale and corn 15 to 20 bushels per acre. Good yields of hay are obtained from crab grass and cowpeas. Peanuts give very satisfactory yields. The soil is benefited by the addition of humus, as, for instance, by turning under pea vines. Deep plowing in the fall is highly recommended, especially where there is some covering of vegetation to turn under.

This type, on account of its being so well adapted to truck and fruits, should become much more valuable in the course of time. At present it is about 14 miles from the railroad, which accounts for its limited use as a truck soil. Some of the farmers market their melons at Equality, only a few miles away, at from 10 to 20 cents each.

Land of this character ranges in value from $10 to $15 an acre. It is locally called "hominy land."

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

Mechanical analyses of Durham coarse 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.*
20818	Soil	8.8	24.4	9.9	24.4	12.3	16.1	4.1
20819	Subsoil	7.6	16.8	7.7	17.6	9.7	22.3	18.2

NORFOLK SANDY LOAM.

The surface of the Norfolk sandy loam, to an average depth of 12 to 15 inches, is a grayish to grayish-brown rather coarse sandy loam. In limited areas the texture is very close to that of coarse sand, and fine gravel is often present. Small patches of this character occur

near the Macon County line, but these were too small and scattered to be mapped as a separate type. The subsoil is a yellow sticky sandy loam or clay loam. In cuts the material resembles a clay, the sandy nature being apparent only on close examination. In fields where the land has been well farmed, with systematic rotations including cowpeas or other crops supplying much organic matter, the soil is of a darker color and more productive.

The type is derived from sedimentary material washed down from higher lying areas of soil and deposited in a shallow sea which in past geologic times covered the southern portion of the county.

In common with all light soils containing a high percentage of sand, the type is deficient in humus. The loose, open structure of the soil encourages rapid aeration, evaporation, and oxidation, processes that aid in the rapid destruction of organic matter. Consequently the soil is rather droughty and crops are apt to suffer badly in dry spells unless vegetable matter has been supplied liberally. Cowpeas or crimson clover should be sown between corn rows at the last cultivation, to be plowed under as a means of keeping up the organic-matter content and otherwise improving the soil. The land does not erode badly.

The prevailing yields are cotton, one-fifth to one-half bale; corn, 7 to 20 bushels; oats, 10 to 15 bushels. When not fertilized, the yields are much lower, and where deeper plowing and rotation are practiced the yields may be twice as great.

Improved land of this type sells for $8 to $15 an acre.

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

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.*
22291	Soil	3.4	19.6	16.7	24.3	15.5	14.1	6.4
22292	Subsoil	5.4	17.0	12.7	18.9	12.7	12.8	20.5

NORFOLK GRAVELLY SANDY LOAM.

The soil of the Norfolk gravelly sandy loam, to an average depth of 10 to 15 inches, is a gray medium to rather coarse gravelly sandy loam. The content of waterworn quartz gravel of various colors is usually sufficient to give the type a decidedly gravelly character. The quantity of stones and gravel, although never enough to interfere seriously with cultivation, is sufficient to exercise a very important physical influence on the texture of the soil. Notwithstanding that the surface soil has a loose, open structure, compacting and baking is

apt to follow cultivation under excessively moist conditions. When the soil has dried out and hardened following such treatment, it is locally referred to as "tight land."

The subsoil to a depth of 36 inches consists of a yellow or brownish-yellow sandy loam. In cuts it has the appearance of a stiff clay, but closer examination reveals its sandy texture. The amount of gravel is less than in the surface, but is sufficient to insure excellent drainage. The topography being rolling to hilly, the surface drainage is excellent. The type has the same origin as the Orangeburg gravelly sandy loam.

The Norfolk gravelly sandy loam occurs in the southern part of the county in the vicinity of Tallassee and to the north of this town as far as Coon Creek, where it joins areas of the Orangeburg gravelly sandy loam. At present much of the type is covered with forests of pine, oak, and gum. Under present farming conditions it should be used as pasture or timber lots. The average yields of corn are from 8 to 12 bushels and of cotton from one-fifth to one-fourth bale per acre. Yields much greater than these are reported with good tillage and liberal use of fertilizers.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil of this type.

Mechanical analyses of Norfolk gravelly 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.*
22293	Soil	5.6	23.2	16.2	21.4	10.8	12.5	10.3
22294	Subsoil	5.6	17.5	11.9	18.1	10.8	12.2	24.0

ORANGEBURG GRAVELLY SANDY LOAM.

The soil of the Orangeburg gravelly sandy loam is a grayish sandy loam containing from 25 to 50 per cent of rounded quartz gravel less than 2 inches in diameter. The subsoil, which is encountered at a depth of about 12 inches, is a red sticky sandy loam to sandy clay.

The type as a rule is not so easy to handle as the Orangeburg sandy loam, owing to the fact that after rains a hard crust is apt to form on the soil, which must be thoroughly broken to prevent too rapid a loss of moisture by surface evaporation. This tendency to surface crusting has given rise to the local name "tight land."

This type has originated through the deposition of material in shallow sea waters during the last stages of the submergence of the region. Some areas consist of a thin mantle of soil overlying the materials giving the Cecil soils.

The type does not erode readily, as it has a very absorbent soil and subsoil. The rolling to hilly surface, coupled with the loose open structure, favors good surface and subsurface drainage. The type has the reputation of being fairly resistant to drought. The virgin forests were of longleaf pine. Oak, hickory, and poplar are now fairly abundant.

When first cleared the Orangeburg gravelly sandy loam is fairly productive, but rotation of crops and fertilization is required to maintain the yields beyond the first two or three years of cultivation. The majority of the farmers use low-grade goods of guaranteed 10–2–2 composition, costing from $18 to $25 a ton. The yield of corn ranges from 10 to 13 bushels per acre, oats from 15 to 20 bushels, and cotton about one-third bale per acre. Yields nearly three times as large as these have been obtained by the use of modern cultural methods. The soil seems to produce better crops in wet seasons than do adjacent more sandy soils.

The land is valued at $8 to $15 an acre, depending on location and improvements.

The following table gives the results of mechanical analyses of fine-earth samples of the soil and subsoil:

Mechanical analyses of Orangeburg gravelly 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.*
20928	Soil	8.8	26.6	13.4	20.1	5.2	18.7	7.3
20929	Subsoil	3.9	16.2	9.3	16.8	6.0	18.0	30.0

ORANGEBURG SANDY LOAM.

The Orangeburg sandy loam, to an average depth of 10 to 15 inches, is a gray light sandy loam which in places approaches very closely the texture of a sand. Gravel is common near stream courses and over eroded areas. The subsoil is usually a red sandy clay, though in situations not favored with perfect drainage the color may be yellowish red. Through the action of erosion the subsoil has been exposed in occasional small areas. It is derived from a marine deposit classified as the Lafayette formation, modified by the intermingling of material from the rocks of the Piedmont, the areas occurring along the line of contact of the Coastal Plain and Piedmont provinces.

The Orangeburg sandy loam is confined to the southern part of the county, occupying several small areas in the vicinity of Tallassee. Yields of one-third bale of cotton and from 5 to 20 bushels of corn are secured. The use of fertilizer is common and considered necessary. With deeper plowing and green manures the average yield should be doubled or trebled easily.

The soil is best adapted to peanuts, watermelons, sweet potatoes, and truck crops. Judging from small patches of tobacco seen growing, the soil also produces a good grade of filler tobacco.

There is no local market near the areas of this soil, but in Montgomery, 30 miles distant, there is a good demand for all products of the farms. The wagon roads in the region are fairly good, while rail transportation is afforded by the main line of the Western of Alabama and the Tallassee and Montgomery Railroad. Land of this type of soil sells for $10 to $15 an acre.

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

Mechanical analyses of Orangeburg 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.*
22295	Soil	3.8	23.4	16.7	21.2	11.4	13.7	9.9
22296	Subsoil	3.6	18.4	13.4	17.0	8.0	10.6	29.1

MEADOW.

The transportation and deposition of soil material by running water has given rise to brown and reddish-brown stream bottom soils which predominantly consist of mellow sandy loam, loam, and silt loam. On the main streams this accumulation of alluvial material has been shown in the soil map, but many strips were too narrow to show on the scale used. The nature and texture of these soils vary so within short limits, owing to the changing nature of the soil from which they are derived, that it was found impossible to map them according to textural classification; therefore a typical description is hardly possible. Sandy loam, loam, and silt loam predominate and represent the most productive areas. These areas have been mapped as Meadow, but if separation of the several classes of material had been made the resultant types would have been grouped with the Congaree soils.

In some of the bends of the Tallapoosa River there are encountered small bodies of a light-gray medium sand overlying, at a depth of 8 or 12 inches, yellowish-brown to reddish-brown loamy sand to sandy loam. This phase is rather low in agricultural value, ordinary crops suffering from drought in protracted dry spells. In several of the larger river bends there occurs a very light sandy loam underlain at variable depths by sandy loam or silty loam frequently interrupted by cross-bedded and imperfectly stratified layers of sand or other material decidedly different from the predominant subsoil. In the poorer drained areas the soil is sometimes light

gray or bluish and generally mottled yellow, bluish, reddish, and drab in the subsoil.

These lands comprise the favorite corn, cane, and sorghum soils of the county. Relatively heavy yields are secured. When kept in corn continuously for three or four years the yields are somewhat reduced, but rotation with crops like oats and cowpeas maintains the productiveness of the soil very satisfactorily. The varieties of cotton grown are inclined to produce stock and leaf growth at the expense of fruit on these soils. The crop is sometimes so late that many bolls are damaged by frost. Phosphoric acid could be used to advantage in hastening the maturity of the cotton.

On the sandier areas sweet potatoes and peanuts and a variety of vegetables would do well. Corn gives rather poor results on this lighter portion unless liberally fertilized. Truck crops like onions, cabbage, tomatoes, potatoes, and melons could be profitably grown, especially on the sandier lands. Much of the type could be irrigated at slight expense, and it is believed that such heavy yields could be secured under a system of irrigation that the practice would prove a profitable innovation. While local markets would not support any extensive development of the trucking industry, the area is by rail within a few hours of such markets as Atlanta, Montgomery, and Birmingham.

At present no fertilizers are generally used. The sandier portion needs organic matter. Either barnyard manure or vegetation should be incorporated with the soil at frequent intervals. Commercial fertilizers are also beneficial. Both phosphoric acid and potash give very good results on the heavier lands.

At present much of the area of Meadow is not cultivated and could be classed as waste land owing to the crookedness of the streams and the tangled growth of weeds and water-loving trees. In a few instances farmers have cleared the land and straightened the stream channels with good results. The construction of open ditches with tile laterals is recommended for the poorly drained more nearly level areas. Where the red, yellow, or brown colors predominate in soil and subsoil the drainage is usually sufficient. In many cases the bottoms have an abundant growth of sedges, locally called "wild grass." These grow only in wet places and are inferior for pasture except when young. With proper drainage the wet-land growths will disappear. Valuable areas of this soil series have been submerged by the building of dams on the Tallapoosa River and Buck, Big Sandy, and Hillabee creeks for the purpose of developing power.

IREDELL STONY SANDY LOAM.

The soil of the Iredell stony sandy loam to an average depth of 6 or 8 inches is a brownish or greenish-brown sand to very light sandy loam carrying a large percentage of fine gravel. Fragments of diorite, the

parent rock of the type, are scattered over the surface in many places. The subsoil is a yellowish-brown plastic, sticky clay, which usually has a greenish cast. The above description applies more particularly to the level or lower lying poorer drained areas. There is a higher lying, somewhat better drained, phase, which is more nearly red in both soil and subsoil and contains less sand and fine gravel. On some slopes hillside springs are common and the soil is very soggy. Such areas are called "spouty" or "blue land."

Neither the "spouty" areas nor the low-lying phase give satisfactory returns under prevailing methods of management. However, native grasses, including several varieties of sedges, do very well here, and all the poorly drained areas are best adapted to pasturage. In dry seasons cotton and corn do fairly well with a liberal application of fertilizers.

Six miles northeast of Dadeville there is a body of the Iredell stony sandy loam, which occurs along the slopes of a conspicuously high hill that is too steeply sloping to be of any very great agricultural value.

The better drained, higher lying phase having a reddish-brown subsoil where the stones have been removed sufficiently to allow thorough cultivation produces fair average yields of cotton and corn. The Iredell soils in more northerly portions of the Piedmont have proven admirably adapted to grain and grass, and it would seem that oats could be made a profitable crop on the Iredell stony sandy loam as developed in this area.

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

Mechanical analyses of Iredell stony 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.*
21071	Soil	4.1	11.8	7.0	29.5	13.3	25.2	8.7
21072	Subsoil	1.7	4.6	5.2	20.7	8.5	22.4	36.2

SUMMARY.

Tallapoosa County, Ala., has an area of 770 square miles, or 492,800 acres. It is situated in the east-central part of the State, at an average elevation of 650 to 750 feet.

The industries are chiefly agricultural.

The railway transportation for most of the county is excellent. The county is within a few hours freight service of Atlanta, Montgomery, and Birmingham.

The chief towns are Dadeville, Alexander City, Camp Hill, Jacksons Gap, Hackneyville, and Dudleyville.

The climate is mild and free from sudden extremes and very healthful. The growing season for tender vegetation has an average length of 233 days, which is sufficient to mature two crops of nearly all ordinary farm produce.

Nearly two-thirds of the land is farmed by tenants on a share basis. The average value of farm lands is about $15 an acre.

Water-power sites of great commercial value will doubtless be the means of developing extensive home markets when the streams are utilized for this purpose.

The soils consist of residual types in the Piedmont upland, sedimentary types in the small section of the Coastal Plain province included in the southern part of the county, and the alluvial soils mapped as Meadow. The Piedmont soils are derived from crystalline and metamorphic rocks; the Coastal Plain soils from the Lafayette, a marine sediment.

The Meadow is extensively developed along the streams throughout the county, and is best adapted to corn, sorghum, and sugar cane. Good crops of oats are also grown.

The Durham coarse sandy loam produces general farm crops, but with the development of better roads to shipping points will find its best adaptation in watermelons and other quick-growing truck crops.

The Worsham sandy loam and Iredell stony sandy loam are of limited extent and importance, but when properly managed yield good general farm crops. On the hilly slopes of the Iredell stony sandy loam, which have a deep red subsoil, tree fruits should do well.

With the exception of the Cecil slate loam the soils of the Cecil series are adapted to the great staple crops of the South, and also to a wide range of forage and hay and truck crops. They offer opportunities for stock raising; cattle and hogs for meat, and mules and horses to supply the local demand for work animals.

The lighter phases of Cecil clay loam and stony loam and also the heavier portions of the sandy loam in good years will give two crops of Irish potatoes. The markets for potatoes are unexcelled.

The Cecil slate loam has been proved to be well adapted to tree and bush fruits, as well as to scuppernong and other grapes suited to the climate. This type will doubtless some day be utilized for commercial orcharding.

The Orangeburg and Norfolk series, while not extensively developed, are good general-purpose soils, with a wide range of crop adaptation. The low yields secured at present are largely due to shallow plowing and insufficient humus. These soils, together with the Cecil sandy loam, are excellently adapted to the culture of sweet potatoes.

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