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Soil Survey
of
Cook County, Georgia

By

J. W. MOON, in Charge
and A. L. Gray

Bureau of Chemistry and Soils
In cooperation with the
Georgia State College of Agriculture

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CONTENTS

SOIL SURVEY OF COOK COUNTY, GEORGIA

BY J. W. MOON, In Charge, and A. L. GRAY

COUNTY SURVEYED

Cook County is in the southern part of Georgia, about midway between the eastern and western State boundaries, and 27 miles north of the Georgia-Florida State line. (Fig. 1.) Adel, the county seat, is about 125 miles south of Macon. New and Withlacoochee Rivers form the eastern boundary and Little River the western and part of the southern boundaries. The maximum distance across the county from north to south is 22 miles and from east to west is 16 miles. The total area of the county is 230 square miles, or 147,200 acres.

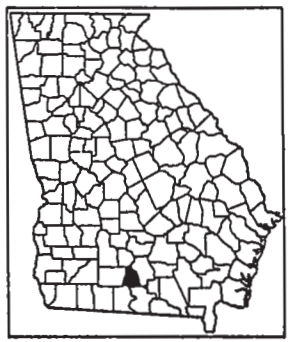

FIGURE 1.—Sketch map showing location of Cook County, Ga.

Physiographically Cook County lies within the coastal plain. The surface configuration over the greater part of the county is that of a comparatively smooth plain modified by shallow valleys and a few so-called lime sinks. The county occupies a position intermediate between the moderately hilly wire-grass belt on the northwest and the flatwoods sandy plain on the southeast, and partakes of the characteristics of both belts.

The physiographic divisions include two gently rolling slope areas, one in the eastern half of the county paralleling the lowland of Withlacoochee and New Rivers, and the other in the western half bordering the flood plains of Little River; the undulating or nearly flat plateau roughly following the Southern Railway and lying between the rolling slopes; and the nearly level or flat low-lying plains (including the terraces and swamps) which occupy the flood plains and depressions.

The characteristic relief of the first division, which represents probably two-thirds of the county, is that of a broad undulating or gently rolling plain marked by low hills, gentle slopes, and shallow saucer-shaped depressions. The two belts of this division lie parallel to the larger streams of the county. The belt in the western part of the county extends in a general north and south direction parallel to the Southern Railway and roughly between this railroad and Little River. The other belt, in the eastern half of the county, follows the same general direction and occupies a similar position between the railroad on the west and Withlacoochee and New Rivers on the east. These belts vary considerably in width, in places being less than 2 miles wide and in other places more than 7. The average width is perhaps slightly more than 5 miles. In the southwestern part of the county, in what is known as the river bend, is a moderately dissected sand plain,

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roughly resembling a half-moon in shape, which occupies an area of some 12 square miles between the bottom land of Little River and the gently rolling belt.

The second topographic division, characterized by a very gently undulating or nearly flat imperfectly drained plain, represents probably 20 per cent of the total area of the county. This division is locally referred to as flatwoods, and nearly all of it is included in a plateau following the broad water divide in the general direction of the Southern Railway, although smaller isolated areas occur in all parts of the county. This belt of flatwoods follows a direction parallel to, and lies between, the two gently rolling belts described. The width of this belt varies considerably, being at places less than 1 mile, at others more than 5 miles. Though flat and poorly drained, the flatwoods belt occupies a plateau including the highest points in the county, and it slowly sheds its run-off waters down the slopes of the more rolling belts both west to Little River and east to Withlacoochee and New Rivers.

A third topographic division includes the low-lying plains, terraces, land periodically flooded, and swamps, or continuously wet areas. This division includes flood plains along the rivers and larger creeks, swamps along the smaller streams, and so-called bays or swampy depressions which occur throughout nearly all parts of the county, especially in the central and southern parts. The land included in this division is almost flat and covers nearly 20 per cent of the area of the county.

Surface drainage ranges, according to the relief, from very poor to excellent. Probably 60 per cent of the county is naturally drained adequately for agriculture. The general slope is from north to south following New, Withlacoochee, and Little Rivers which receive all the drainage waters of the county. The central flatwoods plateau divides the county into two drainage slopes, the western slope having a general southwest direction and the eastern slope having a general southeast direction. These slopes are characterized by good or excellent natural surface drainage. The flatwoods plateau is, in general, poorly drained, and the remainder of the land is swampy, occurring along streams and in depressions.

The general elevation of the county ranges from about 100 feet, where Little River crosses the southern border of the county, to slightly more than 300 feet along the northern boundary line. The elevation at Cecil is 225 feet, at Adel is 240 feet, and 2 miles north of Lenox about 303 feet.[1] Points of elevation furnished by the Georgia & Florida Railway which traverses the county, at right angles to the Southern, in an east-west direction, indicate, as does drainage, that the county slopes both east and west from a central plateau following roughly north and south along the Southern Railway.

Springs are very uncommon in the county, and wells supply most of the drinking water. Many surface wells are in use, but deep wells are becoming more common as they afford the most healthful drinking water. In most parts of the county, wells furnish water for the

[1] Elevations were obtained from the Southern Railway and the Georgia & Florida Railway.

livestock during the drier seasons of the year, and during the wetter seasons natural supplies are available in the pastures.

Cook County was formed from part of Berrien County in 1919, and in the same year a part of Lowndes County was annexed. The earliest permanent white settlers came into what is now Cook County about 100 years ago and settled in various parts of the area, some near Cecil, others a few miles east and southeast of Adel, and some in the vicinities of Lenox and Sparks. The early settlers, who were native-born Americans of Anglo-Saxon stock, came mainly from the Carolinas, with a few families from Tennessee and northern Georgia. Later immigrants to the county came mainly from the same sources.

The 1930 census gives the total population of the county as 11,311, all of which is classed as rural. The average density of the population is 46.5 persons to the square mile. Settlement is more dense in the vicinities of the towns and villages, especially near Adel and Sparks and east and west of these towns. The southwestern and northeastern corners are but sparsely settled. A recent official school census shows that there are 2,770 white children and 1,048 negro children in the county between the ages of 6 and 18 years.

The county is served by three railroads, the Georgia & Florida, South Georgia, and a branch line of the Southern which traverses the county in an almost north and south direction connecting the principal villages with larger outside markets, including Jacksonville, Valdosta, Tifton, Macon, and Atlanta.

Adel, the county seat, with a population of 1,796, and Sparks, with 635, afford local markets for the central and southern parts of the county. These towns, only 2 miles apart, are excellent shipping points, being accommodated by the three railroads and a paved highway, United States Highway No. 41. Lenox, a local trading point of the northern part of the county, is situated on the Southern Railway and on the national highway. Other smaller trading points include Massee in the eastern, Greggs in the southwestern, and Cecil in the extreme southern part of the county. With the exception of a part of the surplus dairy, poultry, and truck products grown in the immediate vicinity of Sparks and Adel, practically all farm produce for sale is shipped to outside markets.

In addition to the hard-surfaced national highway which traverses the length of the county connecting all the principal towns and villages, the county is accommodated with a network of well-maintained county roads penetrating nearly all parts. New roads are being constantly added to the present system. Rural mail routes are within easy access of practically every farm.

Cook County has a splendid system of schools, and churches are numerous. The villages have school buildings of modern construction, and the county has recently been divided into districts for a system of consolidated schools.

CLIMATE

Climatic conditions in Cook County are very favorable to a widely diversified type of agriculture. The long summers, short mild winters, and ample, well-distributed rainfall invite the growing of a number of crops during all seasons of the year.

The rainfall is heavy, and evaporation is high. The usual weather cycle during the winter is rain followed by a few cool days which give way to a period of pleasant, warm, balmy days followed by another rain.

As there is no Weather Bureau station in Cook County, the records of Alapaha, Berrien County, which is about 25 miles northeast of Adel, are used as representative of climatic conditions in the county. These records indicate the mean annual rainfall to be 47.22 inches, more than one-third of which falls in the summer months when the demands of growing crops for moisture are greatest, and only about one-sixth during the fall months, affording good conditions for ripening and harvesting of the principal field crops.

The nights are usually tempered by Gulf breezes. Although during winter short periods of damp, chilly weather occur, and frequently a thin crust of ice accompanied by killing frosts forms, snow is exceedingly rare and hard freezes are almost unknown.

The average date of the last killing frost is March 12 and of the first is November 15. This gives a normal frost-free season of 248 days. However, killing frosts have been recorded as late as April 15 and as early as October 21. Because of the long growing season two or more crops of certain combinations may be successfully grown on the same land in one season. Either corn, peanuts, sorgo, potatoes, hay, or peas may be grown following a crop of small grain, or any of these and even cotton and many truck crops may be seeded after a crop of Austrian winter peas or winter cabbage has been harvested. With a carefully planned combination three crops of vegetables can be grown in the same season on the same land.

Wild-grass pastures are grazed for an average of nine months a year, and good sods of carpet and Bermuda grasses, together with white clover and Lespedeza, may be expected to afford good grazing throughout the year when winters are mild. With the use of oats, rye, wheat, clovers, winter field peas, or rape during the winter, grazing can be had throughout the entire year in normal years.

Oats, rye, wheat, and other small grains; clovers, especially Tifton Bur; vetches, including the Monantha, Hairy, Woolly-podded and Purple varieties; and winter field peas, including the Austrian and Gray Winter varieties, are among the field crops which are successfully grown during the winter. Such vegetables as cabbage, collards, onions, radishes, turnips, and lettuce may be grown during the winter. Less hardy vegetables, such as peas, beans, and potatoes, are planted the last of February with little danger of being frost killed. Roses bloom profusely until after December 1, and resume blooming in March. Japonicas, violets, jonquils, and hyacinths bloom in early February, and wild azalea and dogwood are conspicuous among the wild flowers of the woods in March.

Table 1 gives the normal monthly, seasonal, and annual temperature and precipitation, as compiled from the records of the Weather Bureau station at Alapaha.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Alapaha, Berrien County, Ga.*

[Elevation, 293 feet]

Month	Temperature			Precipitation		
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1909)	Total amount for the wettest year (1912)
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*
December	50.7	84	11	3.78	2.41	1.76
January	50.4	83	15	3.63	.35	7.61
February	52.0	86	0	4.48	3.20	4.35
Winter	51.0	86	0	11.89	5.96	13.72
March	59.8	91	22	4.10	3.86	6.50
April	66.2	95	30	3.05	2.80	11.69
May	74.1	101	42	3.39	3.01	2.91
Spring	66.7	101	22	10.54	9.67	21.10
June	79.7	107	46	4.99	3.92	3.95
July	81.3	104	57	5.78	3.31	5.01
August	80.9	103	58	5.46	3.69	6.18
Summer	80.6	107	46	16.23	10.92	15.14
September	76.9	101	41	4.03	6.61	6.96
October	67.4	97	30	2.47	.80	3.22
November	57.5	89	20	2.06	.47	1.75
Fall	67.3	101	20	8.56	7.88	11.93
Year	66.4	107	0	47.22	34.43	61.89

AGRICULTURE

As in most pioneer farming of the United States, the early settlers in this part of the country were concerned primarily with subsistence crops, although a cash income was realized from the sale of cattle and wool. A few years later short-staple cotton became established in the agricultural scheme, and the production of this commodity afforded suitable employment for the slaves, as well as a material additional cash income for the farmers. The agricultural history until about 1887, when the first railroad was extended through the area, shows a sturdy growing population and a persistent increase of cotton acreage at the expense of the original sheep and cattle raising. The extension of the railroad through the county about 40 years ago gave birth to the turpentine and lumbering industries. Large sawmills were located at several points throughout the county, and for nearly 20 years lumbering was the major industry, followed closely by turpentining which became a permanent industry and even at the present time is an important source of income.

Following the removal of the original timber, agriculture resumed its place as the leading industry of the county with cotton, both short and long staple, as the principal money crop. Until the last decade, cotton was grown as practically the only money crop to such an extent that feed and general sustenance crops were somewhat neglected. This scheme was upset by the appearance of the cotton-boll weevil a little more than 10 years ago, which eliminated the growing of long-staple cotton, restricted that of short-staple cotton to a narrow range of soil conditions, and reduced the yield. This pest wrought an

abrupt upheaval of the very foundations of agriculture, and, for the time being, threw the county's main industry into a state of chaos. During the last decade the agriculture of the county has been rapidly moving through a stage of evolution, probably second in importance to no other decade in its economic history.

With cotton partly replaced by bright tobacco, hogs, melons, and other less important sources of cash income, the present agriculture, emerging from the depressed state resulting from the ravages of the boll weevil, follows a new system. More home supplies are being grown, and many surplus crops are offered for market. Proper diversification and rotation, necessary both to soils and crops, are more carefully maintained. The farm income is distributed over a greater part of the year, which tends to encourage cash operations and eliminate risks of failure.

The present agriculture consists principally of general farming, although some specialized crops are grown. General farming includes the growing of cotton, corn, peanuts, leguminous hays, oats, and a less amount of wheat, rye, beans, and peas. Along with the general crops, usually on the same farm, one or more special crops are grown for market. Tobacco is the most important of these, and sweetpotatoes, sugarcane, and watermelons are rather common. Very little fruit is grown for market, and this consists mainly of peaches, figs, and strawberries. Truck or dairy farms are unusual. A number of farms produce pecans for sale. Practically all the corn, oats, hay, vegetables, fruits, and a large proportion of the sugarcane, poultry products, and dairy products are consumed on the farm, although $32,039 worth of dairy products, and $28,773 worth of poultry products were put on the market in 1919.

Although cotton has been to a great extent replaced by other crops, it is and will probably continue to be one of the principal cash crops of the county. In 1919, 10,222 acres were devoted to this crop, and the production was 2,738 bales which was an unusually low yield caused by abnormal conditions. The growing of this crop is now almost entirely confined to the sandy loam or fine sandy loam members of the Norfolk, Tifton, Ruston, and Greenville series. Strains of the Cook and Toole varieties are popular. The cotton acreage has been reduced somewhat, and tobacco, peanuts, and some other crops have increased in acreage during the last eight years.

Corn occupies a larger acreage than any other crop in the county. In 1919, 15,980 acres, producing 275,302 bushels, were devoted to this crop. This is an average of about 17 bushels to the acre. At that time corn probably occupied more than half the cultivated acreage of the county. Whatley's Prolific and Hastings' Prolific are the most popular varieties of corn and are highly recommended by the Georgia Coastal Plain Experiment Station. Corn is not restricted to a narrow range of soil conditions.

According to the 1920 census, 1,656 acres were devoted to oats, 57 to wheat, and 18 to rye in 1919. Practically no wheat and a very small acreage of rye was seen growing in the county during the field work of the soil survey in 1928. Oats constitute more than 95 per cent of the small-grain crops, and the average yield in 1919 was about 18 bushels to the acre. For oats, an application of 400 pounds of an 0-10-4[2] mixture at the date of seeding, and a top-dressing of nitrate

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

of soda about the first of February are recommended by the Georgia Coastal Plain Experiment Station. Oats respond readily to fertilizer. Rustproof varieties are very popular, and seem to return the best yields over a period of years. Hundred Bushel is highly recommended, and Red Rustproof (Red Texas) is popular.

In 1919, of the hay grown in the county, 458 acres were devoted to tame grasses, yielding 272 tons; 425 acres to grains cut green, yielding 769 tons; and 1,958 acres to legumes for hay which returned a total yield of 1,799 tons. The principal hay crop is cowpeas which follow oats in the rotation. Immediately following the harvesting of the oat crop in May, peas, and sometimes soybeans or velvetbeans, are seeded either by means of plows or disk harrows. The hay is harvested in late summer just before the plants are ready to shed their foliage.

Peanuts were reported as occupying 3,222 acres in 1919, and the total yield was 79,781 bushels, approximately 25 bushels to the acre. Both the Spanish and North Carolina (runner) peanuts are grown, principally the runner variety which is grown only for seed and hog feed. Peanuts are usually interplanted with corn to be hogged off after the corn has been harvested. Utilized in this way, they have proved to be a very profitable and economical crop for fattening hogs. Spanish peanuts, grown alone and harvested for market, are an important cash crop but not nearly so important as cotton, tobacco, and watermelons. Superphosphate (acid phosphate), in light applications of about 200 pounds to the acre, is used by some growers, but usually no fertilizers are used on peanuts. Further investigations as to fertilizer requirements are necessary, but experiments indicate a 2-10-4 mixture to be profitable.

Bright tobacco is the leading cash crop of the county. In 1919 the acreage in tobacco was 343, and the yield was 179,389 pounds which is an average of 523 pounds to the acre. Tobacco is a comparatively new crop, and has taken its prominent place as a cash crop during the last five years. Judging from tobacco warehouse records, which are the most reliable records available, slightly more than 4,300 acres were devoted to this crop in 1927, producing a yield of nearly 1,000 pounds to the acre. The average price received at the Adel warehouse was 18¼ cents a pound, and the total cash income was around $775,000. The acreage for 1928 has increased approximately 20 per cent over that of 1927. The lighter-type varieties are most popular, although Warne, which is a heavy type, has been grown to some extent. Bonanza, Yellow Pryor, Cash, and Jamaica are among the popular varieties.

An income of more than $30,000 was realized in 1927 from 935 acres devoted to watermelons, according to information furnished by the office of the Sowega Melon Growers' Association at Adel. Watermelons are well adapted to such light-textured soils as Norfolk loamy fine sand and the deep phases of Tifton and Norfolk fine sandy loams, although the Irish Grey variety does well on the heavier soils or the well-drained fine sandy loams. A splendid crop of legume hay is grown on the same land following melons.

Less important crops grown either for home use, for market, or for both consist of sweetpotatoes, cane sirup, broomcorn, sorgo, fruits,

including peaches, pears, figs, strawberries, and a number of truck crops. Sweetpotatoes are grown for market by a few farmers throughout the county. The 1920 census reported 602 acres in 1919 producing 53,722 bushels, or an average of approximately 89 bushels to the acre. Several carloads were shipped to distant markets in 1928. One progressive farmer planted a considerable acreage which produced an average yield of 175 bushels to the acre. Curing has not proved very successful, and the crop is now being shipped uncured. The Porto Rico and strains of that variety are in demand.

An important Cuban sugarcane, Cyanna, is being grown in the county with apparent success, and on one farm 18 acres devoted to this variety produced 7,500 gallons of excellent sirup. Three carloads of sirup were shipped from Adel in 1927, and considerable quantities were trucked to Florida cities. In 1919, 413 acres of sugarcane produced 81,964 gallous of sirup, or nearly 200 gallons to the acre. Broomcorn is a crop which has recently come into favor with a number of farmers. Sorgo is grown principally for forage, very little being manufactured into sirup.

The livestock industry of the county, principally hog raising, has been steadily increasing during the last decade, since the disturbance of the cotton industry by the boll weevil. Only two or three dairy farms are operated in the county. The 1920 census reports 2,490 head of dairy cattle and 6,049 beef cattle. The same census reports 480 sheep, 1,229 goats, and 23,739 swine. The hog industry has grown rapidly and is now one of the principal sources of farm income. Pronounced progress has been made toward improving the breeds. The leading breed is Duroc-Jersey, and a number of Hampshire and a few Poland China and Berkshire are raised. Crosses between these breeds are common, and it is not uncommon to cross purebred animals with the old native stock which has long been acclimated to conditions here.

Many of the fields are fenced, and more are rapidly being fenced for the purpose of growing such crops as peanuts, oats, velvet beans, peas, sweetpotatoes, and other crops to be hogged off. This system combined with good permanent pastures makes hog raising a very economical adjunct in the general farm system, reduces the expensive feeding of corn to a minimum, and materially aids in the solution of the harvesting problem.

According to the 1920 census there were 38,479 chickens and 3,803 other poultry in the county in that year. Only three or four poultry farms are being operated.

In a broad as well as in a more restricted sense, a relationship exists between relief, drainage, soil productivity, and crop adaptation; as relief largely determines drainage, and drainage materially affects the character of the soil and consequently its productivity and crop adaptation. Tifton fine sandy loam is the best cotton soil in the county. In the central and southern parts of the county the texture of the soils, in general, is finer than in the northern part, and this has influenced the general distribution of the tobacco crop as it is better suited to the finer-textured soils.

No definite system of crop rotation is generally practiced by the farmers of the county, although most farmers shift the various crops from field to field. The soils to which the principal crops are bes adapted are recognized by the most observing farmers. For instan c

cotton is planted on the well-drained sandy loams and fine sandy loams of the Norfolk, Tifton, Ruston, and Greenville series. Little difficulty is experienced in identifying good tobacco soils. It is generally recognized that tobacco should not immediately follow legumes or any crops susceptible to root knot. It can rarely be grown on the same land for several successive years without becoming infested with root knot. The common custom is to plant tobacco every third year, usually following corn or oats. Most of the watermelon growers are particular with regard to the place of this crop in the rotation. Such crops as corn, oats, and hay are grown indiscriminately on all fields of the farm. Most farmers grow legumes with corn and also after a small grain has been harvested, and the greater part of the legumes are either grazed off or harvested for hay.

Farmers are now plowing deeper than in former years, and more effort is also being made to plow along contours, or along a level. More diversification of crops and rotations has been practiced during the last decade. The problem of erosion is not so acute here as in the more rolling sections of the State, although the need of terracing in many parts of the county is becoming more apparent as the slopes are continually cultivated. Little terracing has as yet been done.

According to the 1920 census report $114,613 was expended for commercial fertilizers in 1919 on 81.4 per cent of the farms of the county. The use of fertilizer has doubtless increased materially during the development of the tobacco industry, or within the last six years.

The average value of all farm property in 1920 was $4,848, of which amount 64.5 per cent represented land; 16.5 per cent, buildings; 15.1 per cent, domestic animals; and 3.9 per cent, implements. Owing to the mild climate, expensive farm buildings are not essential, and this accounts largely for the small amount thus invested. The physical characteristics of the soils, which are loose, friable, and easily plowed and cultivated, together with the type of farming in vogue, account in part for the low investment in implements. Most of the work animals are mules.

The greater part of the available farm labor consists of negroes and the remainder of native-born whites, and it is fairly efficient. There is still a shortage of farm labor, although conditions have improved materially during the last three or four years. The prevailing wages range from 75 cents to $1.50 a day. A sum of $56,683 was paid out for farm labor in 1919 on the 302 farms reporting its use, representing an average of $187.69 for each farm.

Generally speaking, farming in Cook County is of a somewhat more conservative type than is that in many other counties of southwest Georgia, that is, the individual land holdings, in general, are not so large, and a greater proportion of farms are operated by owners. In 1920 the percentage was 41.8, which is three or four times that of many counties. The 1930 census preliminary reports show 1,296 farms in the county. The average size in 1920 was 93.1 acres, 41.2 acres of which was improved land. In 1920, 73.9 per cent of the area of the county was in farms, and 57.8 per cent of the farms were operated by tenants. Various systems of share rental are prevalent. Either the landowner supplies the work animals, implements, the seed for planting, and half the fertilizer and assumes the upkeep of all farm

improvements, and receives half the proceeds of the crop; or he furnishes only the land, the upkeep, and one-fourth of the fertilizer and receives one-fourth of the crops. Certain variations of these standard systems are made, for instance, in the growing of intensive crops, such as tobacco, when the landowner may supply all the fertilizer to compensate for the extra labor required per unit of land area; or when the principal crops to be grown are tobacco, sweetpotatoes, or watermelons, which require heavy applications of commercial fertilizer, the landowner may supply all the fertilizer and the tenant furnish the work animals and implements.

The prevailing prices of farm lands are as follows: The sandy loams of the Tifton, Norfolk, Ruston, and Greenville series, from $20 to $50 an acre; the Plummer, Leon, Grady, Myatt soils, and swamp, from $8 to $12 an acre.

SOIL SERIES AND TYPES

In classifying and mapping the soils of Cook County, they have been divided into series, according to certain characteristics, such as color, structure, and consistence. On a basis of textural differences, or the proportions of sand, silt, and clay constituting the soil, the series have been further divided into soil types. The soil type is the unit of soil classification. The soils of Cook County are grouped into 11 series which are subdivided into 17 soil types and 3 phases, the phases representing separations of slight though consistent variations from their respective soil types. Two miscellaneous classes of material, peaty muck and swamp, are mapped. In the following pages of this report detailed descriptions of the soils of Cook County are given, together with a discussion of the agricultural relation of each. The accompanying soil map shows their distribution, and Table 2 gives the acreage and proportionate extent of each soil mapped.

TABLE 2.—*Acreage and proportionate extent of the soils mapped in Cook County, Ga.*

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Tifton fine sandy loam	14,144	15.6	Blanton loamy fine sand	6,720	4.6
Deep phase	8,768		Plummer loamy fine sand	33,984	23.1
Tifton sandy loam	1,600	2.0	Plummer fine sand	7,296	5.0
Deep phase	1,344		Leon fine sand	2,688	1.8
Norfolk fine sandy loam	3,328	14.2	Grady fine sandy loam	4,672	3.2
Deep phase	17,600		Kalmia fine sandy loam	1,792	1.2
Norfolk loamy fine sand	8,064	5.5	Kalmia fine sand	1,472	1.0
Norfolk fine sand	2,368	1.6	Myatt fine sandy loam	1,472	1.0
Ruston sandy loam	1,408	.9	Peaty muck	8,320	5.6
Greenville fine sandy loam	256	.2	Swamp	16,448	11.2
Cuthbert sandy loam	448	.3			
Blanton fine sand	3,008	2.0	Total	147,200	

TIFTON FINE SANDY LOAM

Tifton fine sandy loam is locally called "pebbly clay soil." In wooded areas the surface soil to a depth of 3 or 4 inches is grayish-brown loose loamy fine sand containing pebbles and a small amount of organic matter. The subsurface soil is pale yellowish-brown loose loamy fine sand, containing pebbles but very low in organic matter, which extends downward to a depth of about 16 inches. The subsoil consists of bright-yellow or slightly reddish-yellow fine sandy clay which is sticky when wet, though friable when dry, and contains a

high proportion of pebbles. At a depth ranging from 30 to 40 inches this layer grades into an underlying compact but brittle fine sandy clay material of mottled whitish-gray, yellow, rust-brown, and purplish-red colors. At a depth ranging from 5 to 7 feet the purple colors are more noticeable.

In cultivated fields the surface soil, to a depth of 5 or 6 inches is yellowish-gray or brownish-gray loamy fine sand. The presence of numerous pebbles scattered over the surface and throughout the soil and subsoil is a conspicuous characteristic of this soil. Many fields which have not been plowed since heavy rains appear somewhat brown on the surface in places owing to an abundance of iron oxide pebbles which constitute a considerable proportion of the soil mass, in most places ranging from a little less than 10 per cent to as much as 40 per cent. They are composed largely of fine sand cemented by iron, are rounded or smooth, and range in size from one-eighth to one-half inch in diameter and from brown to almost black in color. The amount of pebbles varies considerably within short distances, especially in the surface layers.

This soil is closely associated with Norfolk fine sandy loam, and lines separating the two soils on the map could not everywhere be drawn with precision. In the north-central part of the county the texture of this soil merges into that of Tifton sandy loam very gradually. In a few places west and southwest of Adel the lower subsoil layer was observed to be considerably heavier than typical.

This is one of the more extensive soils of the county, occupying, with its deep phase, an aggregate of 35.8 square miles. It has developed only on the gently rolling belts of the broad slopes or interstream areas. It occurs in all the well-drained parts of the county, although it is not so extensive in the extreme northwestern part.

Surface drainage ranges from good to excellent and is even excessive in a few places. Probably 20 per cent of the land is materially affected by erosion, although gullies across the fields are not common. Terraces are almost unknown, but their need is becoming more apparent in many places as the more sloping fields become washed or eroded.

Probably 95 per cent of this soil has been cleared and put under cultivation. About 90 per cent of the cleared land is devoted to the production of general field crops including cotton, corn, beans, peas, oats, hay, and peanuts. Such special crops as tobacco, potatoes, pecans, and many vegetables are produced on the remaining 10 per cent. Most of the widely scattered patches which are not cultivated are in a cut-over condition and support a rather scrubby second growth of longleaf and slash pines mixed with young oaks of various species. A very few areas, which have been reserved as wood lots, still support a magnificent stand of longleaf pine, remnants of the original forest growth.

Tifton fine sandy loam is probably the most desirable all-around or general-purpose soil in the county. Chemical analyses indicate it to be well above the average in fertility, and experiments and field observations show that it is one of the most productive, if not the most productive, soil in the county. It has a very wide range of crop adaptation. It is slightly too strong for tobacco, although increased yields usually more than offset the lack of quality, and a greater sum is realized to the acre than from the lighter-textured soils which produce a

leaf of better quality. Watermelons are not very well adapted for a similar reason, although the Irish Grey variety does well. This is probably the best cotton soil of the county. It is well suited to corn, oats, legumes, hay, peanuts, sweetpotatoes, and practically all truck crops grown in this section of the State. Yields of tobacco range from 1,000 to 1,400 pounds to the acre; cotton yields two-thirds bale; corn, 20 bushels where planted with velvetbeans which yield 1 ton. Forty bushels of oats followed by 1½ tons of cowpea hay are common, although considerably more and less have been reported. Yields of the less important crops are in proportion.

Little stable manure is applied on this soil as little is available, but its use has proved very beneficial. Cotton, tobacco, and other special crops receive heavy applications of complete high-grade commercial fertilizers. Fertilizers used vary so widely both as to amount and composition, not only with different crops but among different farmers, that not even a general statement can be made regarding them. The only uniform rule for fertilization is with the tobacco crop, to which nearly all growers apply 1,000 pounds of a 3-8-5 mixture regardless of soil type. The tendency is, however, to reduce this amount to 800 pounds on the heavier-textured soils. In addition, 3 or 4 tons of well-rotted stable manure is applied if it is available. Acre applications of a complete high-grade fertilizer to cotton, corn, sweetpotatoes, and watermelons range from 200 to 800 pounds.

The farmers who are most successful in the management of this soil take steps to prevent erosion on the steeper slopes and employ such a scheme of rotation as will allow the growing of legume crops, a part of which are left on the land to be plowed under. The soil is easy to till and responds favorably to fertilization and good treatment. It can be built up to a fair or even a high state of productivity.

Tifton fine sandy loam, deep phase.—Tifton fine sandy loam, deep phase, differs from typical Tifton fine sandy loam principally in having a deeper pale-yellow loose loamy fine sand layer over the fine sandy clay subsoil which is reached at a depth ranging from 20 to 28 inches.

Areas of this soil occur in very close association with typical Tifton fine sandy loam. The land occupies gentle slopes or flat-topped ridges, and drainage is good.

Probably 80 per cent of the land has been cleared and put under cultivation. It is a good soil and has a very wide crop adaptation, although it is not quite so productive as Tifton fine sandy loam. The tobacco produced is of better quality than on the typical soil, but cotton does not do so well. Yields of the general farm crops are slightly lower on the deep phase than on typical Tifton fine sandy loam. However, it is an early trucking soil and is well suited for this purpose. It is also ideal for watermelons and returns good yields of potatoes. Pecans do well.

TIFTON SANDY LOAM

Tifton sandy loam differs from Tifton fine sandy loam in texture. Both soils are locally spoken of as "pebbly clay soils." They are distinguished, however, by the descriptive terms "gravelly," referring to the sandy loam, and "velvety," designating the fine sandy loam.

In places this soil, especially where closely associated with Tifton fine sandy loam in the north-central part of the county, has a very shallow surface layer of material which is slightly finer in texture than typical. Directly west of Lenox a few areas are noticeably coarse in texture and contain considerable grit and fine flinty gravel. A small area southwest of Adel has a heavier subsoil than typical.

Areas of Tifton sandy loam occur on the undulating and gently rolling belts. With the exception of a few small scattered areas in the central part of the county, this soil occurs only in the northern part. It is not an extensive soil.

This soil is very similar to Tifton fine sandy loam in drainage conditions, in utilization and proportion of cleared land, in methods of management, and in recommendations for improvement, including fertilizer requirements. There seems to be a slight difference in productivity in favor of the fine sandy loam. The only significant difference as to the adaptability of the two soils to crops seems to be with tobacco, the fine sandy loam, or "velvety soil," producing a somewhat better quality.

Tifton sandy loam, deep phase.—Tifton sandy loam, deep phase, differs from Tifton sandy loam in having a deeper subsurface layer of loose light-yellow loamy sand which extends to a depth ranging from 20 to 28 inches.

Soil of the deep phase is not very extensive. It occurs only in the gently rolling belts with Tifton sandy loam, and the two soils are very closely associated. Drainage is good.

The proportion of land under cultivation, methods of soil management, and fertilizer requirements are very similar to those of the deep phase of Tifton fine sandy loam.

This soil is not quite so susceptible to erosion as is the typical Tifton sandy loam. It is not so well adapted to cotton, but better suited to watermelons than the sandy loam. It produces a slightly better quality of tobacco but is somewhat less productive of general field crops, owing to the deeper surface layers of open, loose, light-textured materials which reduce its capacity for retaining moisture.

NORFOLK FINE SANDY LOAM

In wooded areas the surface soil of Norfolk fine sandy loam consists of a 3 or 4 inch surface layer of gray loose loamy fine sand containing a small amount of organic matter, underlain by a pale-yellow or grayish-yellow loose loamy fine sand subsurface layer which continues to a depth ranging from 12 to 18 inches. The subsoil is yellow friable fine sandy clay which extends to a depth ranging from 34 to 48 inches. It grades into the underlying slightly compact, though friable, highly mottled fine sandy clay material which contains conspicuous splotches, streaks, and specks of whitish gray, yellow, and brownish red. In cultivated fields the surface soil to a depth of 5 or 6 inches is gray or yellowish-gray loamy fine sand, the color varying somewhat according to the character and amount of organic matter present. A small content of pebbles is common.

This soil occurs in close association with Tifton fine sandy loam, and small areas of the Tifton soil are included in mapping. A few small areas mapped as Norfolk fine sandy loam in the north-central and northern parts of the county are somewhat coarser in texture

than typical and would have been separated as medium sandy loam if they had been more extensive.

This is not a very extensive soil, only 3,328 acres being mapped in the county. It occurs, however, in nearly all the well-drained parts of the county, in undulating or gently rolling areas. Drainage is fair or good and is only slightly inferior to drainage in the Tifton soils.

About 80 per cent of the land is in cultivation and is devoted to the growing of all general field crops and many special crops including tobacco, sweetpotatoes, and practically all truck crops commonly grown in this section. The part not cultivated supports a second growth of longleaf and slash pines together with scattered scrubby oaks and wild grasses.

Yields of cotton and corn are slightly lower than on Tifton fine sandy loam, although yields of other field crops compare favorably. The following acre yields may reasonably be expected when the land is properly farmed under average seasonal conditions: Cotton, one-half bale; corn, interplanted with beans, 18 bushels; tobacco, from 800 to 1,200 pounds; oats, 35 bushels; and cowpea hay, 1¼ tons. Special crops yield accordingly. This soil is somewhat too heavy in texture to produce the best quality of tobacco, but the increase in yields over tobacco grown on the light sandy soils often more than compensates for the lack of quality so far as the acre value of the crop is concerned. The soil is also slightly heavy for watermelons of the type best suited for shipping.

This is one of the most productive soils of the county. It has a very wide range of crop adaptability, and its physical character is such that it is easily plowed and cultivated over a wide range of moisture conditions. It responds well to fertilization and local methods of soil improvement. Stable manure is especially beneficial; commercial fertilizers are indispensable to maximum profits; and cover crops are essential in maintaining productivity. Heavy applications of commercial fertilizers are made to cotton and tobacco. Commonly 1,000 pounds of a 3–8–5 mixture is applied to tobacco. Sometimes the amount is reduced to 800 pounds. Cotton usually receives from 200 to 400 pounds of a high-grade complete fertilizer which varies considerably as to composition.

The essential steps employed by the best farmers in the management of this soil include terracing where necessary to check erosion, a practical rotation of crops which will allow the growing of legume cover crops, and liberal applications of stable manure and commercial fertilizers.

Norfolk fine sandy loam, deep phase.—The deep phase of Norfolk fine sandy loam differs essentially from typical Norfolk fine sandy loam in having a deeper loose loamy fine sand surface soil. The underlying fine sandy clay is reached at a depth ranging from 20 to 28 inches. Under cultivation, the surface soil to plow depth is yellowish-gray or light-gray loamy fine sand. A few pebbles are scattered over the surface in places.

Several areas of this deep soil, occurring in the northern part of the county, are somewhat coarser in texture. That part of the soil developed around the foot of slopes is variable as to the character of the surface materials and in depth to the subsoil. This is owing to deposition of material washed from the slopes.

Soil of the deep phase of Norfolk fine sandy loam is very extensive and occurs in all parts of the county, being closely associated with Norfolk fine sandy loam and the Tifton soils.

The land occupied by the phase is not quite so sloping as that occupied by the typical soil, and subsurface drainage is slightly better.

About 65 per cent of the land of this phase is under cultivation to the same crops as those grown on the typical soil. A better quality of tobacco is grown although yields are a trifle less. The deep phase soil is much better adapted to watermelons but not nearly so well suited to cotton. Crop yields, in general, are lower than on Norfolk fine sandy loam.

The treatment, fertilizer requirements, and tillage methods of Norfolk fine sandy loam and its deep phase are very similar.

NORFOLK LOAMY FINE SAND

In wooded areas of Norfolk loamy fine sand the 3-inch surface layer is gray loamy fine sand, stained dark with organic matter. The subsurface layer is yellowish-gray loamy fine sand or fine sand which extends to a depth of 18 or 20 inches, at which depth it grades into yellow fine sandy loam, faintly mottled with splotches of whitish gray and brown streaks. Beneath this is highly mottled, whitish-gray, yellowish-brown, and rust-brown sandy clay. Under cultivation the color of the surface soil becomes light gray. A small number of soft iron pebbles occur in much of this soil. In the northern part of the county and in a few areas in the east-central part, the texture is slightly coarser than typical.

Norfolk loamy fine sand is widely distributed over those parts of the county where drainage conditions are fair or good. It usually occupies the tops of broad ridges, gentle slopes, low ridges and knolls, and areas around the foot of slopes. The surface is characteristically undulating or gently sloping. Surface drainage is fair, but the open character of the soil allows ready downward movement of water. This is an extensive soil, occupying 12.6 square miles of the county.

About 50 per cent of the land is under cultivation and is devoted, for the greater part, to general farm crops, including corn, oats, hay, peanuts, and beans. Tobacco is especially well suited to this soil, the best quality being grown, although yields are somewhat lighter during years of normal rainfall than on heavier-textured soils. Watermelons, of especially good quality, do well. This is a fairly good sweetpotato soil. It is poorly adapted to cotton growing under prevailing weevil conditions, although it was an ideal soil for the growing of sea-island cotton previous to the coming of the boll weevil. It is an early truck soil, but yields of truck crops are usually lower than on the heavier soils.

The open character of the soil results in heavy leaching of organic matter and other plant-food materials, and also makes this soil rather sensitive to seasonal conditions. Crop yields on this soil seem to vary more widely than on any other soil of the county, depending on management and treatment. They are probably 30 per cent lower than on Norfolk fine sandy loam, and the soil requires more attention than does the fine sandy loam. It is essential to grow as many legume crops to be plowed under as practical and to make heavy applications

of complete commercial fertilizers containing a high proportion of nitrogen, especially where green-manure crops are not grown frequently.

NORFOLK FINE SAND

Norfolk fine sand consists of loose open incoherent fine sand to a depth of several feet. In wooded areas the 3-inch surface layer is gray and the material beneath is yellow fine sand which extends to a depth ranging from 40 to 50 inches. This material grades into fine sand which is predominantly whitish gray or cream colored with faint splotches or distinct streaks of yellow and which may extend to a depth of 6 or 7 feet. When the land is cultivated the organic matter disappears in a very short time, and the surface soil assumes a light-gray color. A small area just east of No Mans Friend Pond and one along Little River northeast of McConnell Bridge are somewhat coarse in texture.

This is a very inextensive soil in Cook County. With the exception of a few small areas in the west-central part and along the west border of the Withlacoochee and New River swamps, the soil occurs only along the east border of the Little River swamp. The accumulation or occurrence of Norfolk fine sand bears a close relationship to the larger streams.

Drainage, to a depth of several feet, is excellent. A rather scrubby growth, predominantly oaks, together with a few scattered longleaf pines, covers practically all this soil. The land is very low in fertility, is unproductive, and has an extremely poor moisture-retaining capacity. It should remain as it is, devoted to forestry.

RUSTON SANDY LOAM

In forested areas the 2 or 3 inch surface layer of Ruston sandy loam is gray loamy sand containing a small amount of organic matter, and the subsurface layer is brownish-yellow or reddish-yellow loamy sand which continues to a depth of 12 or 14 inches. The subsoil is reddish-brown or yellowish-red friable sandy clay or fine sandy clay which extends to a depth ranging from 30 to 36 inches and grades into the underlying substratum of compact, but brittle, sandy clay material which is predominantly yellow mottled with pink, whitish-gray, and red splotches and streaks. In cultivated fields the surface soil to plow depth is slightly brownish gray or yellowish gray. Iron pebbles in varying quantities are common in this soil, both in the subsoil and throughout the surface soil.

Areas of the soil occurring in the central and southern parts of the county have a somewhat finer-textured surface soil than do the areas west and southwest of Lenox. The subsoil also varies as to degree of heaviness.

This is an inextensive soil in Cook County. Several small areas occur in the southeastern corner, in the southern part, west and southwest of Lenox and scattered elsewhere in the more rolling sections. The soil occurs only on the steeper slopes near the larger streams where erosion has been most active for a long time. Drainage ranges from good to excessive, and erosion is very much in evidence over a greater part of the land.

About 80 per cent of the land is cleared and is under cultivation to such field crops as cotton, corn, beans, oats, peanuts, and hay.

The remainder supports a forest consisting of a second growth, principally of pines but with varying proportions of oaks.

In areas where erosion has not been very active, yields compare favorably with those on the best soils of the county, but in places where nearly all the surface soil has been carried away, the productivity is materially impaired. Acre yields, however, under average conditions may be as much as two-fifths bale of cotton; from 12 to 18 bushels of corn, which is interplanted with velvetbeans or peanuts; and from 18 to 25 bushels of oats followed by 1 ton of cowpea hay. Only rarely is fertilizer applied to land in corn, oats, peanuts, or hay. Applications ranging from 200 to 400 pounds of a 4–8–4 or a 5–15–5 mixture are made to the cotton land.

This soil is in urgent need of terracing. Deep plowing along contours and the addition of more organic matter will also assist in checking erosion.

GREENVILLE FINE SANDY LOAM

To a depth of 4 inches the surface soil of Greenville fine sandy loam, in wooded areas, is brown loose light fine sandy loam which contains a high proportion of organic matter. Just beneath this is a layer of reddish-brown light fine sandy loam which extends to a depth ranging from 12 to 16 inches. The subsoil is red fine sandy clay which is friable when dry but sticky when wet. The depth to which it extends varies considerably, but in most places it ranges from 36 to 50 inches from the surface. Below this is a compact, but brittle, fine sandy clay material which is highly mottled with yellow, brown, and red. In cultivated fields the surface soil to a depth of 5 or 7 inches is brownish-red fine sandy loam. Iron pebbles are rather conspicuous over the surface of plowed fields and throughout the soil and subsoil.

This is a very inextensive soil and it occurs only on the eroded slopes along Wells Mill Creek where the original forest has been cleared off and the earliest farms of the county were established. Drainage ranges from good to excessive, and erosion is active.

More than 50 per cent of this soil, which was cleared and cultivated nearly a century ago, was long since abandoned to reforest itself, largely to pine. The pines have been harvested, and the third crop of trees is growing. That part of the land in cultivation is devoted to such crops as cotton, corn, peanuts, velvetbeans, oats, and hay. Soil management, fertilizer practices, and methods of farming on Greenville fine sandy loam are similar to those on Ruston sandy loam.

CUTHBERT SANDY LOAM

In wooded areas the surface soil of Cuthbert sandy loam consists of a 2-inch surface layer of loose gray loamy sand, grading into a subsurface layer of yellowish-gray light loose loamy sand which extends to a depth of 8 or 10 inches. The subsoil is tough compact reddish-brown heavy clay or fine sandy clay which extends to a depth ranging from 14 to 20 inches. The substratum is compact, impervious sandy clay material characterized by conspicuous splotches, streaks, and mottlings of whitish gray, yellow, reddish brown, and purple. Under cultivation the surface soil is dull whitish gray. A few iron pebbles

occur in places. A few very small areas southwest of Adel are slightly finer in texture than typical.

This is a very inextensive soil. With the exception of a very few small areas in the eastern half of the county and south of No Mans Friend Pond it occurs only in the northwestern corner of the county west and northwest of Lenox. It occupies rolling land, where natural surface drainage is excessive and erosion is active. Surface run-off is increased, owing to the slow movement of water downward through the tight impervious subsoil and substratum.

A very small part of the land is cultivated. General farm crops are grown and low yields are obtained.

Forest growth, sedges, and wild grasses afford the only means of checking erosion on this soil, and it is best suited to forestry.

BLANTON FINE SAND

Blanton fine sand consists of loose open incoherent fine sand to a depth of several feet. The 3-inch surface layer, in wooded areas, is gray fine sand, owing to the presence of a small amount of organic matter. Beneath this layer is whitish-gray or cream-colored fine sand which extends to a depth of nearly 3 feet where it grades into fine sand mottled with whitish gray, yellow, and brown. Under cultivation the surface soil appears pale whitish gray in color. Near Burney Bridge and near Whitehurst Bridge this soil grades imperceptibly into Norfolk fine sand, and in other places a stained layer occurs in the sand.

A few small areas of this soil occur in the south-central and southeastern parts of the county, but most of it is in the river bend west of Greggs. The land occupies nearly flat positions, and is characterized by very little run-off, as the open sandy character of the soil allows rapid downward movement of water. Drainage is not perfect, although it is adequate for the growing of most crops under average rainfall conditions.

It is estimated that about 50 per cent of the land is under cultivation, largely to corn, oats, peanuts, beans, hay, and tobacco. It is said that a very good quality of sea-island cotton was produced on this soil prior to the advent of the boll weevil, but it is by no means a cotton soil under weevil conditions. Watermelons do well but sweetpotatoes only fairly well. Sirup from cane grown on this soil is of good quality and flavor, though yields are usually low.

Tobacco is the principal crop. Yields vary considerably, but from 600 to 900 pounds of a very good quality are not uncommon. One thousand pounds of a 3-8-5 commercial fertilizer is applied to the tobacco land. Watermelons usually receive from 600 to 800 pounds of a 4-8-4, 4-8-6, or more commonly a 5-7-5 fertilizer. Other crops receive little fertilizer. Yields ranging from 10 to 15 bushels of corn are produced, being grown with a fair crop of velvetbeans or peanuts. Fifteen bushels of oats, followed by three-fourths ton of pea-vine hay to the acre, are an average yield.

Blanton fine sand is very deficient in organic matter, and this can be added by growing and turning under legume crops. Owing to the leached character of the soil, such additions of organic matter should be made frequently. Heavy and frequent applications of commercial fertilizers are advisable, and stable manure is very beneficial.

BLANTON LOAMY FINE SAND

In wooded areas the 4-inch surface layer of Blanton loamy fine sand is gray loamy fine sand containing a small amount of organic matter. The subsurface layer is loose gray or whitish-gray loamy fine sand which extends to a depth ranging from 16 to 20 inches. It grades into dull-yellow friable loamy fine sand or light fine sandy loam which is slightly heavier in texture than the above layers and contains sufficient fine material to render the mass slightly sticky. This grades into the highly mottled whitish-gray, yellow, and rust-brown sandy clay substratum at a depth ranging from 30 to 40 inches. Under cultivation the surface soil, to plow depth, loses considerable of the organic matter, and, on becoming mixed with the upper subsurface layer, assumes a dull-gray color.

This soil occupies a position between Norfolk loamy fine sand on the slopes and the Plummer or Leon soils in flatter positions, and small areas of these soils are included in mapping.

This is not one of the extensive soils of the county although it occupies an aggregate of 6,720 acres. Its distribution over the county and its relief differ considerably from Blanton fine sand, and the two soils are not very closely associated. The loamy fine sand is developed in all parts of the county, occurring between the better-drained soils of the slopes and the low-lying soils of the larger depressions and swampy areas along the streams. The larger and more typical areas occur on the poorly drained plateau which follows roughly along the Southern Railway.

Natural drainage is only fair. The greater part of the land could be drained by ditches which could be cut at a moderate cost. It is estimated that about 25 per cent of the land is in cultivation, practically all of which is devoted to such field crops as corn, beans, peanuts, oats, and hay. A few attempts are being made to grow truck crops. The greater part of this soil is devoted to the growing of forest consisting principally of longleaf and slash pines. The areas in wild grasses are used for grazing. Many tobacco plant beds are on this soil.

The land is very sensitive to low temperatures in late spring. Crop yields vary widely according to the amount of fertilizer used and distribution of rainfall. Yields of 10 or 12 bushels of corn to the acre and a good crop of beans, or from 15 to 20 bushels of oats followed by 1 ton of cowpea hay may reasonably be expected, providing normal seasonal conditions prevail. This is an ideal soil for the planting of tobacco beds. Such pasture grasses as carpet grass, Dallis grass, and Lespedeza thrive, and the land should be devoted largely to pasture.

PLUMMER LOAMY FINE SAND

The 3 to 5 inch surface layer of Plummer loamy fine sand is dark-gray loamy fine sand. It is underlain by a gray or drabbish-gray light loamy fine sand subsurface layer which extends to a depth ranging from 16 to 20 inches. Beneath this is the gray loamy fine sand subsoil, faintly splotched with whitish gray and yellowish brown, which grades downward into light sandy clay material at a depth of about 30 inches. The substratum is highly mottled with whitish-gray, yellow, brown, and red spots. Under cultivation the material in the topmost 4 or 5 inches assumes a lighter steel-gray color.

This soil is very closely associated with both the Leon and the Blanton soils, and small areas are included which resemble these soils.

This is the most extensive soil in the county, including an area of 53.1 square miles. It occurs in all parts of the county, and has developed under conditions of poor drainage. Large bodies occur on the almost level plateau which follows roughly the Southern Railway, and numerous strips are scattered throughout the county along the foot of slopes where seepage waters from the higher land are brought to the surface of the slope by outcrops of the underlying comparatively impervious substrata. In the last-mentioned position areas of this poorly drained soil extend up the slopes for considerable distances and are in a saturated condition much of the time. Poor natural drainage prevails, and artificial drainage would in most places be difficult and unprofitable.

The crop yields on a few small areas in cultivation fluctuate widely with seasonal conditions. The land supports a fair stand of longleaf and slash pines and is well adapted to the growing of such pasture grasses as carpet grass, Dallis grass, and Lespedeza. The Georgia Coastal Plain Experimental Station at Tifton is now successfully utilizing this soil for grazing. Its most profitable use is for forest and pasture.

PLUMMER FINE SAND

To a depth ranging from 4 to 6 inches the surface soil of Plummer fine sand is gray fine sand containing a small amount of organic matter. It is underlain by gray or whitish-gray water-logged fine sand, or quicksand, which extends to a depth of 3 or more feet. At a depth ranging from 4 to 5 feet a compact substratum of highly mottled light sandy clay material occurs. In a few small areas in the south-central part of the county, the quicksand layer has settled to a compact mass, which apparently accounts for the accumulation of organic matter in the surface soil to a depth of several inches.

This soil is not so extensive as Plummer loamy fine sand. It occurs in flat areas, and is confined largely to the flatwoods sandy plains, although small scattered areas occur in nearly all parts of the county in close association with Plummer loamy fine sand. Plummer fine sand is a very poorly drained soil, considerably more so than Plummer loamy fine sand. The land is best suited for forestry.

LEON FINE SAND

Leon fine sand, as typically developed in wooded areas, has a 3 or 4 inch surface layer of a "pepper-and-salt" mixture of gray fine sand which grades into a subsurface layer of heavily leached almost white fine sand extending to a depth ranging from 10 to 18 inches. This material is abruptly underlain by a coffee-brown hardpan which is a brittle cemented layer consisting principally of fine sand cemented by organic matter. In most places it ranges in thickness from 3 to 5 inches. A concentration of roots occurs in this layer. The material below is dingy-gray fine sand faintly splotched with brown, and conspicuous brown streaks follow the root channels. This layer becomes lighter in color downward to the water table which lies at a depth of about 30 inches. At a depth ranging from 40 to 50 inches

the tight compact highly mottled gray, yellow, and brown sandy clay substratum occurs.

In some places the soil approaches the Plummer soils in characteristics and in other places the Blanton soils, and in both variations the hardpan is not quite so well developed as in typical Leon fine sand. Exposures in road cuts show the hardpan to be rather irregular in occurrence, both as regards thickness, depth from the surface, and degree of hardness.

This is one of the less extensive soils of the county. It is very closely associated with the Plummer soils, but its occurrence is restricted to the flatwoods plains, and the land is nearly flat. The principal areas are south and east of Lenox, near Adel, and in the south-central part of the county.

Surface drainage is sluggish, although areas of this soil lie slightly higher than areas of Plummer fine sand. The hardpan layer apparently restricts the rate of water movement either upward or downward, as the layer beneath the hardpan may be very moist at the same time the layers above are dry.

Practically none of the land is under cultivation. Only narrow strips and small patches adjacent to better-drained and more productive soils are being used for crops. This is not an agricultural soil, and yields are uncertain.

Practically all the land of this kind is devoted to grazing and to the growth of longleaf and slash pines for turpentining and lumbering. Saw palmetto is a characteristic growth. The soil is best suited to forestry.

GRADY FINE SANDY LOAM

The surface soil of Grady fine sandy loam ranges from dark-gray to very dark-brown heavy fine sandy loam from 4 to 10 inches thick, underlain by a light-colored subsurface layer of lighter texture which extends to a depth ranging from 12 to 15 inches. The subsoil consists of drabbish-gray fine sandy clay or clay which is conspicuously splotched or mottled with whitish gray, yellow, brown, and red. This layer is tough and impervious, becoming more sticky and plastic when wet, and it grades imperceptibly into the substratum at a depth of 2 feet or, in places, less.

Local variations in the surface soil, in which there is a covering of organic material ranging up to 6 inches in thickness, are not uncommon. In places where this soil is closely associated with the Plummer soils, the texture of the subsoil is somewhat lighter.

Areas of this soil are scattered throughout the county, occupying lime-sink depressions.

Drainage is exceedingly poor, and water stands over a considerable part of the land much of the time. Some areas can be artificially drained at a reasonable cost, but others could be drained only at considerable trouble and expense. Practically none of the soil is cultivated. Cypress, some water-loving oaks, and a few pines grow. That part over which water rarely stands or for only a short time, is well suited to the growing of carpet grass, Dallis grass, and Lespedeza, which afford excellent pasturage. The best use for this soil is as pasture or forest.

KALMIA FINE SANDY LOAM

The 4 to 6 inch surface layer of Kalmia fine sandy loam in wooded areas consists of smooth mellow gray loamy fine sand which is stained dark with organic matter. It grades into mellow pale-yellow loamy fine sand which continues to a depth ranging from 14 to 18 inches. The subsoil, to a depth ranging from 30 to 40 inches, is yellow friable fine sandy clay which grades into mottled whitish-gray, yellow, and orange-red moderately tight firm fine sandy clay material. This soil is essentially similar to the yellow fine sandy loam soils of the uplands from which it is largely derived. The soil is very closely associated with Kalmia fine sand and Myatt fine sandy loam, and variations approaching these soils in characteristics are included where only somewhat arbitrary lines of separation could be made in mapping.

Kalmia fine sandy loam is inextensive in Cook County. It occurs only on the second bottoms of Withlacoochee and Little Rivers in nearly flat, low-lying terrace areas which are flooded during very high waters, but which are fairly well drained to a depth of 30 or more inches most of the time.

None of this soil is cultivated. It supports a comparatively open forest cover consisting largely of pines and various species of oaks, although clumps of haw and other shrubs occur, especially along sloughs. Under existing conditions it is suited to pasture grasses, such as carpet grass, and to timber production.

KALMIA FINE SAND

The surface soil of Kalmia fine sand consists of a 4 or 5 inch layer of smooth mellow gray fine sand more or less stained with organic matter, underlain by the subsoil of pale-yellow mellow fine sand which continues to a depth ranging from 30 to 36 inches. The subsoil is faintly splotched with white and yellow materials in the lower part. The substratum is variable, but in most places it is somewhat compact fine sandy clay material mottled with whitish gray, yellow, and rust brown.

A part of the soil occupies a natural levee position near the river bank, and it usually has a deeper covering of sand above the substratum than typical.

This soil occurs only on the second bottoms along the rivers. It is closely associated with Kalmia fine sandy loam, and very similar drainage conditions exist in the two soils. Kalmia fine sand is subject to overflow during extremely high waters. It supports a similar forest cover to that on Kalmia fine sandy loam.

MYATT FINE SANDY LOAM

The surface soil of Myatt fine sandy loam to a depth of 4 or 6 inches consists of dark-gray fine sandy loam, passing into a predominantly drabbish-gray fine sandy loam, fainty mottled with whitish gray, which extends to a depth of 10 or 12 inches. Beneath this is sticky moderately tough fine sandy clay material mottled with whitish gray, yellow, and reddish brown. In places the subsoil is friable especially where areas border the Kalmia soils. The accumulation of organic matter in the surface layer varies with drainage conditions. Those areas occurring along Little River are generally more poorly

drained than those along New and Withlacoochee Rivers, and the forest cover of the former areas is predominately hardwood, whereas that of the latter is principally pine.

This is an inextensive soil in the county. It occurs in close association with the Kalmia soils, in positions slightly lower, being restricted to low terraces along the rivers. It has developed under very poor drainage.

None of the land is cultivated but is devoted to forest and open range for grazing. Profitable pastures could be had if the land were cleared and seeded to carpet grass. As the soil is flooded during very high waters, it is recommended only for pasture and forest.

PEATY MUCK

Peaty muck is characterized by a surface layer of brown or dark-colored vegetable matter which is, for the greater part, only partly decomposed. This material ranges in depth from 12 inches to more than 4 feet and in most places is underlain by a rather heavy-textured slowly pervious substratum. The topmost few inches of the mineral substratum is predominately fine sand and it grades downward into sandy clay or clay material.

Areas of peaty muck are variable in many respects. The organic accumulation varies considerably in thickness, stage of decomposition, and content of mineral matter, owing largely to various degrees of drainage and to fires. The water table fluctuates considerably with the amount of rainfall. Places which may be saturated for months during periods of heavy rainfall, may become very dry and burn for weeks during long dry periods, consequently the amout of ash and mineral matter varies widely in different parts of the same area.

Peaty muck is rather extensive, 13 square miles being mapped in the county. The material occurs only in large depressions, locally termed bays and ponds, including No Mans Friend Pond, Giddens Pond, Heart Pine Bay, Big Pond, and Cecil Bay. Smaller areas occur in similar positions, scattered throughout the central and southern parts of the county. Although the water table fluctuates considerably with seasonal conditions, drainage is consistently poor or very poor, and artificial drainage under present economic conditions would probably be impractical.

The land is covered with a rather dense growth of vegetation consisting of a wide variety of trees including bay, cypress, ash, gum, some pine and magnolia, and oaks of various water-loving species. A dense undergrowth, including various shrubs, briers, palmetto, and ferns, renders penetration into these bays extremely difficult. The land is utilized to some extent for open-range grazing for cattle, goats, sheep, and hogs, but the production of timber is the principal source of income derived from peaty muck.

SWAMP

Swamp includes areas of alluvial material deposited along the rivers, creeks, and small streams which are subjected to frequent overflow and remain in a wet condition most of the time. There is no uniformity in areas of swamp as regards texture, color, compactness, or character of material, but most of the material remains largely as deposited by the flooded streams. The material is derived mainly

from local upland soils and has been deposited on the bottom lands along the streams under varying conditions—in part by comparatively swift-moving water depositing the coarser materials; in part by slow-moving water leaving the finer materials; and in part by standing waters which have deposited the clayey material. In most places recent accumulation of organic matter has given the surface soil a darker color than the soil at greater depths, the color of the latter in many places being predominantly gray or drabbish gray with conspicuous splotches and streaks of yellow and rust brown.

Swamp is extensive in Cook County, 25.7 square miles being mapped. It occurs only in low bottoms along streams where natural drainage is extremely poor, and the land remains saturated most of the time. The strips range in width from 200 feet to more than one-half mile. Artificial drainage is possible at heavy cost, but it is impractical under existing economic conditions.

Swamp in its natural condition is strictly nonagricultural and is used only in a small way for open grazing. It supports a growth of gum, oaks of various lowland species, ash, bay, cypress, and scattered magnolia and pine, together with a dense undergrowth of water-loving shrubs, briers, ferns, and some palmetto. It is best adapted to forestry.

MANAGEMENT AND IMPROVEMENT OF COOK COUNTY SOILS

Chemical analyses of soils in various parts of southwest Georgia which are similar to those in Cook County, have been made by the Georgia State College of Agriculture. Persons interested in the chemical composition of the soils of Cook County and their improvement, should consult the various bulletins issued by the college. These bulletins may be obtained free by applying to that institution.

The soils of Cook County are for the most part light colored, indicating a general lack of organic matter and consequently of nitrogen. In attempting to build up the soil, the first step should be to increase the supply of nitrogen, as this is the most important constituent needed in the production of general farm crops. Barnyard manure is perhaps the best form in which nitrogen can be supplied, but since there are not sufficient cattle in the county to produce enough manure to improve very much of the soil, it is necessary to resort to other means. The most economical and most efficient method of obtaining nitrogen for the soils under present agricultural methods is the growing of leguminous crops, such as velvetbeans, cowpeas, soybeans, vetches, bur clover, and winter field peas, all of which are highly recommended for the purpose of incorporating organic matter in the soils. These crops when turned under will decay and humus will be formed. The result of turning under a crop of cowpeas or velvetbeans is seen in the increased production over a period of several years. The vegetable matter not only supplies the nitrogen but enables the soil to take up and hold a greater amount of soil moisture for the plants. It is also beneficial when large amouts of fertilizer are applied. The phosphoric acid and potash can be supplied through the application of mineral fertilizers.

Most of the soils of Cook County are slightly acid or acid. They show a requirement ranging from one-half to 1½ tons of ground limestone to the acre, or about one-half this quantity of burnt lime. The

leaching that has gone on for such a long period has removed practically all the soluble lime carbonate from the soils. Legumes and corn naturally grow best in a soil that is "sweet," or has an abundance of lime, and lime is essential in obtaining a stand of clover and alfalfa.

Many of the soils, especially the light sandy soils of the county, require only shallow and frequent cultivation. The heavier soils, however, can be improved by deeper plowing, especially the Greenville and Tifton soils. Subsequent frequent and shallow cultivations and the use of light farming implements seem to meet every demand.

The best soils in the county for general-farming purposes are the sandy loams and fine sandy loams of the Tifton, Norfolk, Ruston, and Greenville series. Some of the deep phases of these soils are especially adapted to bright-leaf tobacco, watermelons, sweetpotatoes, and asparagus. Some of the poorly drained soils, or those not especially adapted to general-farming purposes, should be devoted to the growing of Lespedeza and carpet grass for pasturage. Experiments at the Tifton experiment station indicate that carpet grass and like grasses make an excellent sod on Plummer loamy fine sand, also on drained areas of Grady fine sandy loam and the Myatt and Kalmia soils. Leon fine sand, peaty muck, swamp, Plummer fine sand, and other sand areas, are perhaps best suited to forestry under existing economic conditions.

SOILS AND THEIR INTERPRETATION

Cook County is situated in the lower south-central part of the coastal-plain region of Georgia. The greater part of the county lies in what is known as the high part of the coastal plain, and there are smaller areas of flatwoods. The more rolling part of the county is naturally well drained but the flatter part is poorly drained. The county is included in what is known as the "wire-grass region" of Georgia.

The soils of Cook County are prevailingly light in color, the surface soils ranging from light gray to red, the light color indicating that they are poorly supplied with organic matter. The darkest soils, ranging in color from dark gray to black, occur in the rather swampy depressions or sinks. As the county was forested until it was reclaimed for agriculture, it lacked the grass cover which favors the accumulation of organic matter in the soils. In the wooded areas there is a noticeable quantity of rather coarse vegetable matter in the soil near the surface, but the plant remains have not become incorporated in the soil, as in areas originally covered with grass.

The soils have been strongly leached, owing to the prevailingly heavy rainfall and comparatively high temperatures. The original carbonates in the parent geologic materials from which many of the soils have developed have been almost entirely removed to a depth of many feet. All the soils range from slightly acid to strongly acid. The latter condition prevails in the poorly drained soils, particularly in the Grady, Myatt, Leon, and Plummer soils, and peaty muck. All of these soils respond to liberal applications of lime.

No extensive continuous belts of any particular soil occur in the county, but the Tifton soils occupy large areas in the eastern, northeastern, northwestern, and southwestern parts. The Norfolk soils

are well distributed over the county and aggregate a larger total area than the Tifton soils. The Leon soils occur mainly in the southern part and to some extent through the central part. The Plummer soils are developed mainly along the Southern Railway in the central part of the county.

Underlying the soils of Cook County are unconsolidated sands, clays, and sandy clays. The weathering of these materials has given rise to a large number of soil types. The underlying material is characteristically mottled light-gray, yellow, and purplish-red sandy clay material which is more or less compact, but brittle and friable. The purple and purplish-red colors increase with depth, particularly in the region of Tifton soils.

The most striking features of the texture profiles of the well-developed soils in the county are a comparatively light-textured A horizon and a heavier-textured B horizon. The material which constitutes the substratum, or C horizon, varies greatly in texture and color but is usually lighter in texture than the B horizon and heavier than the A horizon.

The soils of Cook County may be classed in two main groups. The first group includes the Tifton, Norfolk, Ruston, Greenville, and Cuthbert soils. These soils have well-defined layers, or horizons.

The Tifton soils are among the most extensive and important soils in the south-central and southern parts of Georgia. They are among the oldest soils of the region and occupy an old plain which has been somewhat dissected by streams. They occupy extensive areas of smooth, gently rolling relief with broad smooth interstream areas. One of the noticeable and characteristic features of the Tifton soils is the presence of a large quantity of brown, reddish-brown, or almost black rounded and smoothly angular concretions or accretions, ranging in diameter from one-eighth to more than one-half inch, which occur on the surface, in the surface soil, and to less extent in the subsoil. On the surface and in the surface soil they are hard, but they occur as small soft aggregations or segregations of brown iron stains in the C horizon. These concretions occur not only in the Tifton soils but are distributed to a greater or less extent over practically all the soils of the county.

The outstanding differences between the Tifton soils and the Norfolk soils are the presence of the afore-mentioned concretions, better drainage throughout, browner surface soils, deeper-yellow or more reddish-yellow B horizons, slightly heavier texture, and slight stickiness in the Tifton soils. The C horizon material also is redder under the Tifton soils than under the typical Norfolk soils. Soils of both series have good physical properties, although the greater part of the alkalies and alkaline contents are leached from the soils.

The Greenville soils are characterized by brown or reddish-brown A horizons and red or dark-red B horizons. The B horizon is moderately friable heavy sandy clay of uniform color. The Ruston soils occupy an intermediate position, as regards color, between the Norfolk soils and the Greenville soils. The Cuthbert soils are not materially different from the Norfolk or Ruston in the A horizon, but in the B horizon there is a hard compact tough clay which is usually mottled with light red and yellow. The Cuthbert soils have heavier B horizons than any other soils in the county.

In addition to the soils which have well-developed profiles, there are in the county soils of the Blanton, Plummer, Leon, Grady, Kalmia, and Myatt series and two miscellaneous materials, peaty muck and swamp. The aggregate area occupied by these soils is more than one-half of the total area of the county. The Plummer soils are the most extensive soils of this group.

The Blanton soils represent fairly well-drained areas. They are distinguished by their pale-gray surface soils and creamy-white or almost white subsurface layers. These soils are open and porous to a depth of several feet and are strongly leached. The Plummer soils occupy slightly flatter positions than the Blanton soils and are poorly drained. They have gray surface soils and gray mottled with yellow or brown subsoils. In most places, at a depth ranging from 3 to 4 feet, a sandy clay material is present which constitutes a water floor and accounts for the water-logged condition of the soils.

The distinguishing characteristic of the Leon soils is the development of a brown hardpan layer at a depth ranging from 12 to 24 inches below the surface. This hardpan layer is usually from 4 to 6 inches thick and consists of fine sand cemented with organic matter. The upper inch of the hardpan is, in most areas, dark brown or black and is much harder than the material in the rest of the layer.

The Grady soils occupy depressions, or so-called lime sinks, which are lower than the surrounding soils. These serve as collecting basins for the surface run-off of the high-lying soils, and water stands on them during rainy seasons. In most areas the water table is not more than 2 feet below the surface and is held at this depth mainly on account of the stiff compact clay layer.

The Kalmia and Myatt soils are developed on terraces, or second bottoms, along the larger streams. The soil materials have been washed from the uplands, having been transported and redeposited by the streams. The Kalmia soils have gray surface soils and yellow subsoils. Most of the Kalmia areas are fairly well drained. The Myatt soils differ essentially from the Kalmia in that they are poorly drained, have darker surface soils, and mottled subsoils.

Two miscellaneous classifications of material were recognized, namely peaty muck and swamp. Peaty muck occupies the greater part of the larger bays. It consists mainly of partly decomposed organic matter. Swamp occurs only in the first bottoms and consists of alluvial material so variable in character that no separation into soil types can be made.

SUMMARY

Cook County is located in the lower south-central part of Georgia. It includes an area of 230 square miles, or 147,200 acres.

The physiographic divisions include gently rolling well-drained uplands, a nearly flat poorly drained plateau, and very poorly drained low-lying plains The highest point in the county is little more than 300 feet above sea level and the lowest, about 100 feet.

Cook is a new county, having been formed from parts of Berrien and Lowndes Counties in 1919. The earliest settlements made by white men in the area were about 100 years ago. The population of the county was 11,311 in 1930, all of which is classed as rural.

The county is served by three railroads, one hard-surfaced national highway, and a good system of sand-clay roads. Adel, the county seat, is the principal town.

The agriculture of the county has undergone a very important change during the last decade owing to the advent of the cotton-boll weevil, and it is now on a much sounder basis than formerly. Tobacco has rapidly increased in importance and is now the leading cash crop. Cotton, peanuts, sweetpotatoes, and watermelons are other cash crops. Practically all subsistence crops, except wheat, are grown in sufficient quantities for home use. Hog raising is one of the chief sources of farm income.

The soils of the county show a diversity in texture, color, and drainage conditions. A large proportion of the county is swampy; some is moderately well drained; and the rest is well drained.

The well-drained soils are grouped in the Tifton, Norfolk, Ruston, Greenville, Blanton, and Cuthbert series, and these are the dominant agricultural soils in southwest Georgia.

The poorly drained soils vary considerably as to degree of drainage and organic content, and they have been restricted in their development. Plummer fine sand, peaty muck, and swamp are devoted mainly to forest.

Cook County offers many advantages to the home seeker in the way of cheap land, mild climate, cheap farm labor, and reasonable taxes. The soils have a very wide adaptability, being especially suited to the production of such crops as tobacco, peaches, pecans, truck, watermelons, and sweetpotatoes in addition to the field crops common to this section. Natural conditions are very favorable to poultry raising, dairying, and hog raising. The mild climate reduces the necessary farm buildings to a minimum, and the field work is done throughout the year. Good improved land may be bought at prices ranging from $20 to $40 an acre. Travel and shipping facilities are good, and consolidated schools and churches are within easy reach of all parts of the county.

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[PUBLIC RESOLUTION—No. 9]

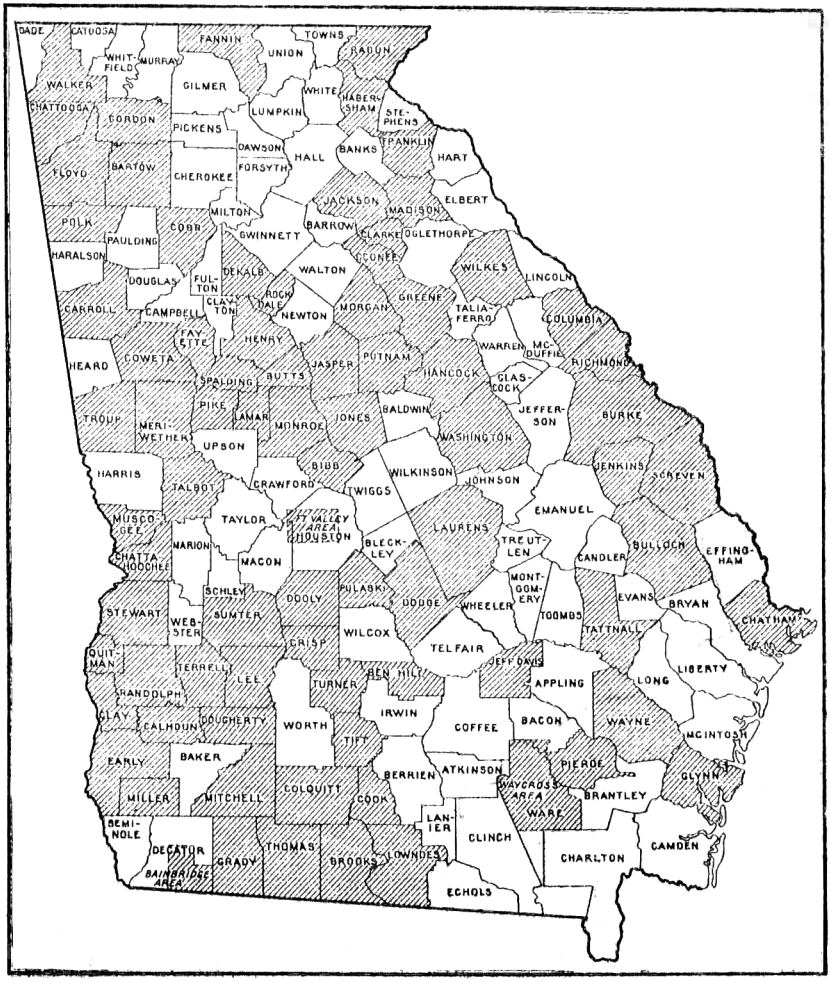
JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

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

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

Approved, March 14, 1904.

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



Areas surveyed in Georgia, shown by shading

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