

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
In cooperation with the Georgia State College of Agriculture

SOIL SURVEY

FANNIN COUNTY, GEORGIA

BY

S. W. PHILLIPS, in Charge, and J. W. STEPHENSON
Georgia State College of Agriculture



Beginning with the 1923 Series, Soil Survey Reports will be issued separately. These reports of the individual areas will be sent to libraries as soon as they are available and should be filed, preserved, and ultimately bound to take the place of the bound volumes of the Field Operations which have previously been supplied by the department. The reports for each year will be consecutively numbered, the last report for a particular year bearing the conspicuous notice: "This number is the final and last Soil Survey Report for the Year 192-."



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON

1928

CONTENTS

	Page
Description of the area.....	177
Climate	179
Agriculture.....	181
Soils.....	186
Talladega slate loam.....	189
Talladega silt loam.....	189
Fannin stony loam.....	191
Fannin fine sandy loam.....	191
Fannin silt loam.....	192
Porters stony loam.....	193
Porters loam.....	194
Ashe silt loam.....	195
Habersham silt loam.....	195
Ranger silt loam.....	196
Wickham silt loam.....	197
Congaree silt loam.....	198
Toxaway silt loam.....	198
Rough stony land.....	199
Summary	199

SOIL SURVEY OF FANNIN COUNTY, GEORGIA

By S. W. PHILLIPS, in Charge, and J. W. STEPHENSON, of the Georgia State College of Agriculture

DESCRIPTION OF THE AREA

Fannin County is located in the extreme northern part of Georgia, about midway along the northern margin. The State boundary line, which comprises the north line of Fannin County, separates it from the States of Tennessee and North Carolina. The county boundaries consist of survey lines which for the most part follow high mountain ridges or knobs. The county is therefore irregular in outline. It has an area of 395 square miles, or 252,800 acres.

Fannin County lies within the Appalachian Mountain physiographic province. The western, southern, and southeastern parts of the county are distinguished by their high mountains and knobs, and intervening steep-sided, narrow valleys. The Blue Ridge, Cohutta, and Wilscot Mountains, Duncan Ridge, and ridges and knobs extending out from these, form a fringe around the western and southern parts of the county. Cowpen Mountain, in the Cohutta Range, is the highest point in the county, attaining an elevation of 4,137 feet. It is a long, narrow-crested, steep-sided mountain, from which extend numerous hog-backed spurs characterized by rocky crests, steep ravines, and coves. The narrow tortuous valley of Jacks River lies between Cowpen Mountain and the Blue Ridge. Hemp Top, with an elevation of 3,600 feet, and Flat Top, rising above 3,700 feet, are the highest points along the crest of the Blue Ridge in the western part of the county. Springer Mountain is the highest point in the southern part, rising to 3,820 feet above sea level.

The county is crossed in a northeasterly direction from near Blue Ridge toward Sweetgum by a double valley that follows the outcrop of marble veins. This valley is split by a narrow ridge. Beyond Mineralbluff these secondary valleys diverge until they are about 2 miles apart at the county line near Sweetgum.

The north-central part of the county has a much more subdued topography. It is a dissected plateau and is characterized by steeply rolling to hilly topography, the slopes being prevailingly steep and the valleys narrow. It is traversed by the Toccoa River, which has

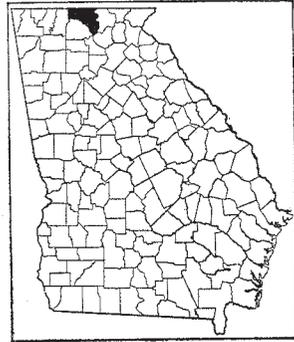


FIG. 7.—Sketch map showing location of the Fannin County area, Georgia

cut a valley that lies 200 to 300 feet below the adjacent uplands. The smoothest topography is found near Epworth, Pierceville, and Fry, where the ridge tops are wider and the slopes somewhat less steep than in other parts of the county. The general elevation of this plateau section is between 1,600 and 1,700 feet. Some of the ridges and knobs rise several hundred feet above the general level. The prevailing slope, as shown by the direction of flow of the principal streams, is to the northwest. In general the stream valleys are narrow and V-shaped, but here and there along the courses of some of the larger streams the bottoms widen out for a space, particularly where tributary streams enter the main valley.

Terraces are developed in several places along the larger streams. In some cases these stream deposits are very old and have been dissected and eroded so that they closely resemble the residual uplands.

All the drainage waters from Fannin County are carried into the Gulf of Mexico, but by two different routes. Most of the county drains into the Toccoa River, and thence by the Tennessee, Ohio, and Mississippi Rivers into the Gulf. Those portions of the county west and south of the Blue Ridge are drained by Jacks River and other streams into the Conasauga or Ellijay Rivers and finally through the Alabama River into the Gulf. The northeastern part of the county is drained by Papermill and Rapier Creeks into Nottely River, thence by the Hiwassee into the Tennessee.

The small tributaries of these main streams ramify into all portions of the county, and all farms are connected with one or more of them, so that the surface drainage is well established and water for stock is plentiful throughout the county. Some of the stream bottoms, such as portions along Hothouse, Weaver, Hemptown and other creeks, are somewhat imperfectly drained, but there are no true swamp areas in the county.

All of the larger streams are swift flowing, as they head in the mountains and descend rapidly, over falls and cascades, to the main river valleys. Water power is being developed to some extent from many of the larger streams to turn gristmills and sawmills. Electric power for the city of Blue Ridge is developed from Fightingtown Creek several miles distant. Extensive water power development projects are planned for the Toccoa River. Electricity sufficient for farm needs could be readily developed from many of the smaller streams.

Fannin County was formed in 1850 from territory originally included in the old Cherokee County. The country had been settled in the early nineteenth century by immigrants from North Carolina and Tennessee, who had followed up the main stream courses and occupied the main valleys. Afterwards many of the coves and mountain valleys and some of the ridges were cleared and settled. However, many of these original clearings were later abandoned, at least for use in crops, on account of their inaccessibility to markets or the unprofitableness of farming them. At the present time large areas in the Blue Ridge and Cohutta Mountains in the western part of the county are practically uninhabited and a large part of the mountain section in the southeastern part is included in a Government forest reserve, the Cherokee National Forest. The central and northern parts of the county, including the towns of Blue Ridge,

Mineralbluff, and McCaysville, are more thickly settled. According to the 1920 census the population of the county is 12,103.

Blue Ridge, the county seat, situated on the Louisville & Nashville Railroad, is the principal trading and shipping point in the county. It is the site of the Willingham School for Girls and the State Baptist assembly grounds. Situated as it is in a low gap on the crest of the Blue Ridge, with an elevation of about 1,800 feet, it has a delightful summer climate and is becoming popular as a summering place. The population, according to the 1920 census, is 904. McCaysville, with 2,166 inhabitants, is the largest town in the county. It is situated on the Knoxville branch of the Louisville & Nashville Railroad at the Georgia-Tennessee boundary line. It is inhabited principally by people employed at the copper mines and acid plant just across the State line in Copperhill, Tenn. It is an important local market for farm produce. Mineralbluff, on the Murphy branch of the same railroad, is a trading and shipping point for the eastern and southeastern parts of the county. Other smaller towns and locally important trading centers are Fry, Morganton, Epworth, and Sweetgum.

The Marietta-Knoxville branch of the Louisville & Nashville Railroad crosses the county and affords good shipping facilities. Connections with the main line are made at Etowah, Tenn., north to Knoxville and Cincinnati, and at Marietta, for Atlanta and points south. The Murphy branch of this railroad extends from Blue Ridge to Murphy, N. C., where connection is made with the Southern Railway for Asheville.

The principal country roads are fairly well maintained, but the rough topography of much of the county renders road construction expensive and the maintenance very difficult during the winter. Many of the roads become impassable to automobiles at this time of the year. A hard-surfaced road has been constructed eastward from Blue Ridge almost to the Union County line, and graded routes have been built from this road to Dial and Hurst. An intercounty highway is under construction between Blue Ridge and Copperhill. Rural telephone lines are maintained in most of the more thickly populated valleys and ridges.

Copperhill, Etowah, Knoxville, and Atlanta are the principal outside markets.

Lumbering, cutting crossties and veneer logs, and various other lines of work at the mines and plants at Copperhill, afford occupation for those not engaged in agriculture.

CLIMATE

The climate of Fannin County is characterized by long cool summers and mild open winters. The Weather Bureau station in Blue Ridge has been in existence for only a short time and the data collected there are not as yet considered a satisfactory basis upon which to establish means. In the following table, therefore, data from the station at Dahlonega, Lumpkin County, have been used. These are fairly representative of climatic conditions in the plateau section of Fannin County. Blue Ridge lies about 200 feet higher than Dahlonega, and it is possible that the average frost-free season there is a few days shorter.

*Normal monthly, seasonal, and annual temperature and precipitation at
Dahlonega, Lumpkin County*

[Elevation, 1,519 feet]

Month	Temperature			Precipitation			
	Mean	Absolute maximum	Absolute minimum	Mean	Total amount for the driest year (1904)	Total amount for the wettest year (1920)	Snow, average depth
	° F.	° F.	° F.	Inches	Inches	Inches	Inches
December.....	41.5	69	1	6.24	5.45	8.64	0.7
January.....	40.9	70	0	5.59	3.25	8.03	1.4
February.....	41.8	73	-11	5.81	4.43	4.69	2.3
Winter.....	41.4	73	-11	17.64	13.13	21.36	4.4
March.....	50.9	85	0	6.28	3.96	10.00	.3
April.....	58.3	91	23	4.40	2.55	8.63	T.
May.....	66.6	94	30	4.67	3.96	5.50	-----
Spring.....	58.6	94	0	15.35	10.47	24.13	.3
June.....	73.2	97	39	5.47	1.32	5.13	-----
July.....	75.5	100	50	6.13	2.32	9.10	-----
August.....	74.9	98	52	5.79	8.76	14.59	-----
Summer.....	74.5	100	39	17.39	12.40	28.82	-----
September.....	70.0	94	34	4.24	.51	4.76	-----
October.....	60.4	87	21	3.89	T.	.42	T.
November.....	49.6	78	12	3.44	2.71	5.42	.3
Fall.....	60.0	94	12	11.57	3.22	10.60	.3
Year.....	58.6	100	-11	61.95	39.22	84.91	5.0

The average annual temperature is about 58° F. July and August are the warmest months, but the temperature rarely reaches 95° F. The days are long and warm and the nights are delightfully cool and refreshing. The coldest spells are of short duration and zero weather is rare. There is usually little snow, but considerable rainy and disagreeable chilly weather occurs during the winter. Sometimes warm spells in early spring cause the first buds to swell prematurely, thus exposing them to danger from subsequent cold spells. There is considerable difference between the climate in the mountain section and that in the lower ridges and valleys. On the high mountain tops and upper slopes the temperature is considerably lower and rainfall is much heavier than at lower altitudes. Snow frequently falls and remains for considerable periods on the mountain tops.

The average date of the last killing frost in the spring at Dahlonega is April 13, and of the first in the fall October 24, giving an average growing season of about 193 days. Frosts have been recorded as late as May 13 and as early as October 10. In the higher parts and in some of the coves on the north slopes frosts occur much earlier and are reported to have occurred frequently in early September.

The average annual precipitation is about 62 inches, although in the wettest year on record it was nearly 85 inches. The rainfall is heavier than is necessary for crop production in this section. The average rainfall in the winter and summer is practically the same. There is an abundance during the summer growing period and in

some seasons a shower falls almost daily. The lighter rainfall is during the fall, which is favorable to the work of harvesting crops.

The climate is especially well adapted to the production of vegetables and apples. The delightful cool nights of summer and fall and the healthful water found in such abundance in this section, render it an ideal place in summer. Numbers of tourists from southern Georgia spend their vacations here and some maintain summer homes.

AGRICULTURE

Agriculture has been the principal industry since the settlement of this region. The pioneers cleared and farmed the fertile bottom lands along the stream courses, and settlement gradually extended from these centers to the adjoining slopes and smoother ridges. The early type of farming consisted of the production of subsistence crops, such as corn, rye, flax, and potatoes, and the grazing of cattle and sheep in the near-by mountain belts to supply the home with meat and wool. Most of the clothing was homespun, and such supplies as could not be produced at home were obtained at the stores by barter. Butter, hides, meat, and various medicinal roots were exchanged for tea, sugar, salt, and other necessities. Tobacco was introduced, but this crop has never been grown except for home consumption. The butter, meat, and other products that the merchants received in exchange for supplies were hauled overland to Marietta, Dalton, and Cartersville, and occasionally as far as Atlanta. The Civil War retarded development of this section. Previous to the war the copper mines in the northern part of the county had been opened. These mines employed a considerable number of persons and gave a local market for some surplus produce. During and for a while after the war development of these mines was halted.

The railroad from Marietta reached Blue Ridge about 1886. Later it was built to Murphy, and about 1890 was extended to Knoxville. This railroad provided an outlet to market and stimulated the lumbering industry. The mines at Copperhill were further developed, and the railroad shops located at Blue Ridge furnished a market for much of the surplus farm produce. These shops later were removed.

At the present time the agriculture of Fannin County consists of general farming, including the production of corn, hay, rye, wheat, vegetables, and fruit, the grazing of considerable numbers of cattle and hogs, and some sheep, and the raising of poultry.

Corn is the most widely grown crop and is planted on all types of soils. It is grown very extensively on the bottom lands along the Toccoa River and the larger creeks, where it yields well, but it is also the principal cultivated crop through the ridges and mountain valleys. In 1919 it occupied 14,817 acres and yielded 234,192 bushels, or an average of about 16 bushels per acre. Although the census shows this low average return, yields as large as 60 to 75 bushels per acre are reported from some of the bottom lands, and fields on the ridges, with proper cultural methods including the use of fertilizers, yield in many seasons 25 to 35 bushels per acre. On some of the newly cleared ridge and mountain lands, on steep hill-

sides as well as level areas, excellent corn, ranging in height from 10 to 15 feet, is common, and here yields of 25 to 45 bushels may be obtained for several years. The heavy rainfall during the growing season and long warm summer days is especially favorable to the growth of corn.

The available supply of barnyard manure is usually applied to the corn land. When fertilizers are used they are distributed in the row before planting the seed. The use of fertilizers with corn is increasing. Acid phosphate at the rate of 200 pounds per acre, or mixed fertilizers analyzing 10-2-2,¹ 8-2-2, or 8-3-3, are most commonly used, but an effort is being made to introduce a higher grade analyzing about 8-4-4. On many of the bottom fields no fertilizer or manure is applied.

The white dent varieties of corn are preferred, as much of it is used for bread. Hickory King is a common variety, and several semihard and "shoe-peg" varieties also are grown. It is the common practice to pull the fodder about the 1st of September. This is tied in bundles and carefully saved and stored to be used for forage. After the ears are thoroughly matured they are gathered, and cattle are turned into the fields.

The hay crop occupies an acreage second to corn. Many of the narrow stream bottoms are allowed to remain in mowings for a number of years. In 1919 there were about 2,500 acres mowed for hay, the average yield being slightly more than 1 ton per acre. Many of the hayfields include such wild grasses as broom sedge, Bermuda grass, and crab grass. The principal tame grass is herd's grass or redbud, which is particularly well adapted to this section, as it does fairly well on somewhat acid soils. A few patches of alfalfa have been successfully established and some clover is grown. Cowpeas and soy beans are being grown as a summer hay crop following a winter small-grain crop; they also are sown in corn at the last cultivation. Lespedeza and white clover grow wild in places and afford good pasturage. Orchard grass and timothy grow well, and when the land is limed sweet clover and red clover can be grown successfully. The hay is cut during August and September and the surplus is stored in the field in small stacks built around poles. Hay, fodder, and soy beans and cowpea vines comprise the winter forage upon which farmers depend to feed their stock. Very little attention is given to the pastures, but bluegrass grows fairly well if the weeds and brush are kept cleared off, and it will do very well if the fields are limed occasionally.

Rye was grown on 2,570 acres, according to the 1920 census, and yielded an average of 4.2 bushels per acre. This low yield is in part due to the custom of grazing the rye and to its use as a cover crop in orchards. Wheat occupied 1,211 acres, the yield being 6,586 bushels, or about 5½ bushels per acre. Individual yields as high as 20 to 25 bushels per acre are reported. Leap Prolific and Blue Stem are the varieties commonly grown. Wheat is grown on all the soils in the county, but principally on the terrace and upland types. Wheat was formerly planted more extensively than at present, but the average yields reported by the census have always been low. The oat crop formerly was of considerable im-

¹ Percentages, respectively, of phosphoric acid, nitrogen, and potash.

portance, but in recent years the acreage has been considerably reduced and the latest census reported but 64 acres in this crop.

The small-grain crops usually are sown and handled one much like another. If seeded after the corn is gathered, the land is disked and the grain drilled in or sown broadcast. If seeded after a small-grain crop or after the land has lain several years in meadow or pasture, the practice is to plow during the late summer or early fall and carefully prepare the seed bed before planting. Wheat and rye can be grown successfully if lime is applied and acid phosphate is applied liberally at the time of sowing. A top-dressing of nitrate of soda in the spring is added by some farmers with good results. The crop must be harvested by hand over a large part of the hilly and mountainous sections, but binders are in common use in the valleys and the smooth ridge country. The grain is ground in the local mills, and the production is entirely absorbed by the local demand.

Vegetables are second to the cereals in value of production. The climatic conditions of the region make it particularly well adapted to the growing of vegetables. All farmers produce a quantity of such vegetables as potatoes, sweet potatoes, beans, cabbage, and tomatoes for their own use, and in some seasons have a surplus for sale in the local markets, at the lumber camps, and at Copperhill.

According to the 1920 census there were 372 acres planted in potatoes in 1919, with a yield of 27,369 bushels, and sweet potatoes were set on 224 acres. Potatoes do particularly well under the climatic and soil conditions that exist in Fannin County. A tuber of superior quality can be produced and good markets are available at Copperhill, McCaysville, Atlanta, and Knoxville. Two crops of potatoes can be grown in a single season. The early crop usually is of the Irish Cobbler variety. This is dug in July. Planting of the fall crop follows immediately. Lookout Mountain, Green Mountain, and Spalding Rose No. 4 are the varieties preferred for this planting. Fertilizers are used with potatoes, about 400 pounds of a fertilizer analyzing about 8-3-5 being recommended for this crop. Fannin County ought to be one of the leading producers of potatoes in Georgia. To obtain and maintain a steady market it will probably be necessary for several farms to ship their potatoes together, in car lots, after carefully grading and packing them in standard barrels or sacks.

Snap beans are a very important item of diet among the people of the mountains during the summer; they are produced on all farms and any surplus finds a ready market.

Sorgo is grown on most farms to supply sirup for home needs. In 1919 it occupied 497 acres. Many farmers grow a small patch of tobacco for their own use, but none is grown commercially. Melons are grown on a number of farms. Red raspberries and strawberries are produced for the Atlanta market by several farmers, and this specialty has been found very profitable. Grapes do well.

A few hogs are raised on all farms to supply the home with pork. They are allowed to range the mountains and forests, where an abundance of mast is normally available annually, so that the cost of producing pork is comparatively low. The 1920 census re-

ported 8,728 hogs in the county. They are mainly Duroc-Jersey and Poland-China grades.

Beef cattle consist of grade Shorthorn and grade Hereford animals. They are allowed to graze over the mountains and woods during the summer and require little attention. They are gathered together in the fall and brought down to be sold or for feeding during the winter. Their number in 1920 was reported to be 2,089.

Dairy cattle to the number of 3,823 were reported in 1920. They consist chiefly of purebred and grade Jerseys. Milk is sold to a small extent around Blue Ridge and more extensively at McCaysville and Copperhill. Many farmers make butter, which is readily disposed of at the country stores and itinerant buyers for cash or trade. Dairy products to the value of \$11,023 were reported sold in 1920.

With the excellent possibilities for the maintenance of permanent pastures and the favorable soil and climatic conditions, cheap land, and excellent water, stock raising and dairying should be an extensive industry in the county.

Early in the development of this section it was discovered that apples were well adapted to the soil and climatic conditions and they have always constituted the principal kind of fruit grown for home use. In most years a surplus over the home needs has been produced, which has been disposed of in near-by towns or hauled to some of the larger cities farther south. During the last 20 years several commercial orchards have been set out and their success has induced a number of other plantings to be made recently. Where air drainage is sufficient to protect the trees from frost injury, apples are successfully grown throughout this section on most of the upland soil types. The Talladega silt loam and slate loam, Fannin silt loam, and Porters loam are the principal types included in the present orchards. Rolling and hilly land has better air drainage, but steep hillsides render the gathering of fruit somewhat more difficult. The orchards located on slaty soils are likely to be affected by drought and uprooting of trees by strong winds, particularly where the slate strata lie near the surface. There seems to be no pronounced difference in orchards with respect to exposure, except that some varieties of apples seem to be more subject to winter injury on southern exposures.

Since most of the orchards are set out on slopes or hillsides, the usual methods of planting can not always be followed. The trees are generally set on contours or terraces, as this aids in preventing washing away of the soil and makes spraying, tillage, and gathering fruit much easier than when the rows run straight across the slopes.

After the orchard has been set out, summer and winter cover crops are grown and plowed under for several years. This helps to maintain the supply of organic matter in the soil, makes it more capable of sustaining a sod, and assists in clearing the land of weeds, brush, or vines. The land is then seeded to grass and allowed to remain so for a number of years. This aids in preventing erosion and improves the condition of the land. Winter vetch and rye are the most commonly used winter cover crops and cowpeas or soy beans the summer cover crops. Fertilizers are applied when the young trees are set and again after the trees begin to bear. Nitrate

of soda or sulphate of ammonia is applied usually in the spring. Some acid phosphate is used. The trees are sprayed from five to eight times during the year. A spray of lime-sulphur for scale is applied during the winter, followed by a "pink spray" when the buds are pink. A third or "calyx spray" of lime-sulphur is applied when the petals have dropped, for the codling moth and scale. Two summer sprays of Bordeaux mixture are applied, the first about one month after the calyx spray, for the codling moth and scale, and the second about four to six weeks later for the bitter rot and scale and later brood of codling moth. Pruning is done any time after the foliage drops in the fall and while the trees are dormant. A modified-leader type of pruning, which keeps the trees low but tends to produce a sturdy frame, is usually followed.

Since commercial apple growing is in its early stage of development in this section, the crop has not been large enough to make it difficult to market. The best grades are sold in Georgia towns in bushel boxes. The finest grades are wrapped. Culls and dropped apples are sold in barrel lots. All fruit is marketed directly after picking.

A number of apple varieties are grown. Apples of high coloring are preferred. Two of the leading early varieties are Red June and Red Astrachan. Medium fall varieties include Delicious, Kinard, Stayman Winesap, and King David, and later varieties include Yates and Limbertwig. Other varieties grown are Rome Beauty, Arkansas (Mammoth Black Twig), Ben Davis, Gano, and Winesap. Peaches and small fruits, including grapes and raspberries, are grown in a small way.

Although many of the mountain coves and steep slopes have at one time or another been cleared and farmed, the tendency of the soil to wash on the steep slopes and the difficulties of cultivation and harvesting were so great that cultivation of many fields has been discontinued; such fields now are used for pasture or have been allowed to revert to woodland. The hilly land is used for orchards or pasture, with scattered patches of cultivated crops. The more level uplands are used for general farming, and the bottoms are almost exclusively devoted to corn and hay. This utilization is in part due to the topography and in part to the adaptation of the soil in these locations to the various crops. The Porters soils are recognized as being well adapted to fruit and potatoes; the higher ridges and slopes, including Fannin and some Talladega soils, are well suited to apples.

Through the mountain sections the houses are for the most part small cabins and the farm buildings also are very small. The machinery consists of light one-horse or two-horse plows and light one-horse tillage tools. Much of the work is done by hand. In the smoother ridge country and in the bottoms along the larger streams the houses and buildings are larger and the machinery consists of modern binders, seeders, and tillage tools. The work stock consists mainly of mules, although a number of horses and some oxen are also used. Oxen are used extensively for logging in the rough hilly sections.

Rotation of crops is not practiced extensively in Fannin County. Wheat or rye is usually seeded following corn. Recently some

farmers have been following the practice of planting a crop of cow-peas or soy beans, after the grain is cut, for hay or as a cover crop to be turned under. Late potatoes are also sometimes planted after a grain crop. Winter vetch and rye are grown as a cover crop in some of the orchards. In many of the bottom-land fields corn and hay are grown continuously for a number of years with little or no fertilizer.

According to the 1920 census, \$22,764 was spent for fertilizer the preceding year, with an average of \$24.47 for each of the 930 farms reporting its use. Mixed fertilizers are used for potatoes and vegetables, but acid phosphate is the most commonly used fertilizer. The usual application for corn and grain is 200 to 300 pounds per acre. A complete fertilizer analyzing about 8-4-4 is being used by some farmers for grain crops and small fruits. For potatoes a mixture analyzing 8-3-5 is recommended. The stable manure is usually applied just before sowing the cover crop or on land intended for vegetables.

The farm labor consists almost entirely of native-born Americans. Most of the work is done by the farmer and his family, and less than one-fourth of the farms reported a labor expense in the 1920 census. Labor is scarce, being attracted by the higher wages paid in the mines and plants at Copperhill, by the lumbermen, and in public works. General farm labor is paid about \$1 a day.

According to the 1920 census there were 1,387 farms in Fannin County. The farm land occupied 57.3 per cent of the county and the average farm consisted of 106 acres, of which 26.4 acres, or slightly less than one-fourth, was improved land. The farm holdings vary in size from a few to several hundred acres in extent. Some of the lumber and mineral holdings include thousands of acres of the mountain land, and the Cherokee National Forest contains about 30,000 acres. Nearly 71 per cent of the farms are operated by the owners, the rest being operated mainly by tenants. Unlike many other sections of the State the percentage of owner-operated farms is higher than 20 years ago. Most of the farms are in the hands of descendants of the original settlers.

SOILS

The soils of Fannin County are prevailingly light colored, ranging from grayish brown to reddish brown and red in the surface soils. A few exceptions to this are found in the shaded mountain coves, where the Porters soils are darker than is true of the prevailing types and in some of the less well drained bottoms where the Toxaway soils appear. This area was forested until reclaimed for agriculture and consequently there has been little chance for the accumulation and incorporation of organic matter in the soil. However, there is a considerable quantity of coarse, partially decomposed vegetable matter and plant remains on the surface where fires have not been prevalent, and in the upper inch or two of the soil, but this material has not become incorporated in the soil as it has in areas that supported a grass growth. Leaching has been going on to a considerable extent, owing to the heavy rainfall, and the steep topography of some fields encourages rapid run-off and erosion of the surface soil. There are no accumulations of carbonates in the soils,

although in some places, marble and other rocks containing lime have supplied the material for soil building, the heavy rainfall and good drainage having not only prevented their accumulation but removed what was present in the parent rock. Practically all of the soils respond to applications of lime.

The soils of the county are predominantly silt loams and loams in texture and have a friable, mellow structure. This is not only true of the soils but in the main holds good for the subsoils. All the upland soils have good drainage, and in most places it is excessive. The topography is prevailingly steep and mountainous, and the rainfall is heavy; consequently in many places erosion of the soil has kept pace so closely with the disintegration and decomposition of the rocks that only a thin covering of weathered material is found. Under such conditions a well-defined soil profile or anything like a mature soil is not developed. From this standpoint the soils of the county may be considered young, in that there is not a well-developed horizon B, in which there is an accumulation of the finer materials at some place in the soil profile. In fact in most places there is a gradual change or gradation of material from the surface soil to the parent material. The parent material, consisting of the disintegrated crystalline country rock, is near the surface over the greater part of the area and outcrops of rock are common.

In some of the soils, particularly the Habersham silt loam, Fannin silt loam, Fannin fine sandy loam, and Wickham silt loam, there is developed in some places a soil profile in which horizon B is heavier than the surface material or the parent material, but even these soils do not appear to have reached the stage of maturity that characterizes the soils of the Piedmont region. The soils included in the Porters, Talladega, Ranger, and Ashe series and the first-bottom soils represent the younger soils of the area and those which have not developed a definite profile.

The soils of Fannin County are grouped in series on the basis of origin, color, and structure of the materials that constitute the soil profile. These series are divided into soil types on the basis of differences in texture, or the proportions of sand, silt, and clay entering into their composition. The soil type is the unit of soil classification and mapping. Thirteen soil types, representing nine soil series, and Rough stony land are mapped in this county. In the uplands there are developed the soils of the Talladega, Fannin, Porters, Habersham, Ranger, and Ashe series.

The types of the Talladega series have an inch or two of brown loam underlain by light-brown or yellowish-brown, friable, silty material to a depth of 6 to 10 inches, which grades into a light-red to red, friable, micaceous material, having a slick, greasy feel and friable structure. This usually passes into the rotten mica-schist anywhere between 18 and 40 inches. The soils of this series are derived from mica schist or slates and imperfectly crystalline rocks. The silt loam and slate loam types are mapped in Fannin County.

Closely associated with the Talladega series are the soils of the Fannin series. These differ from the former primarily in that they contain a smaller quantity of finely divided mica and in some places there is developed a heavier layer in the subsoil or horizon B. This slightly heavier layer usually extends downward to a depth of 15 to

20 inches, where it grades into a very friable material, and commonly at a depth of 30 to 40 inches the disintegrated rocks such as staurolite, gneiss, and mica schist are encountered. The silt loam, fine sandy loam, and stony loam are mapped in the county.

The types of the Porters series have a shallow cover of leaf mold, and beneath this is a brown to dark-brown friable soil grading into a reddish-brown friable subsoil which continues downward to a depth of 30 to 36 inches. Below this depth the partially decomposed granite and gneiss from which the soils are derived are encountered. One of the characteristics of the Porters soils is the dominantly friable structure throughout the profile. The loam and stony loam are extensively developed in the mountainous parts of the county.

The Ashe soils differ from the Porters mainly in that the surface layer is gray or grayish brown, and the subsoil, or horizon B, is yellow. These soils are derived from crystalline rocks, such as slates, and also from granitic rocks. Only one type, the Ashe silt loam, is mapped.

The Habersham series is represented by one type, the silt loam. It has a shallow layer of grayish brown or brown, underlain by a brownish-yellow or yellow friable silt loam, which grades at about 12 to 15 inches into a yellowish-brown or reddish-yellow friable silty clay loam or clay. This extends to a depth of 30 to 50 inches, where it grades into a lighter color and more friable material or into the rotten quartzite or schist rock.

The Ranger soil series is represented by the silt loam in this county. The surface soil has a bluish-gray color and is underlain by yellowish-gray or slate-colored, friable, greasy-feeling, silty clay loam, which grades at about 15 inches into the partially weathered, grayish, micaceous schist rock.

The second-bottom or terrace soils and also the first-bottom soils consist of materials transported from the surrounding uplands, reworked, and redeposited in the valleys by the streams.

The Wickham series includes the soils on the second bottoms. It represents the old alluvial deposits which now lie above ordinary overflow. The Wickham series has brown to grayish-brown surface soils over a reddish-brown, rather heavy to friable clay subsoil. At about 30 to 40 inches the material becomes somewhat lighter in texture and more friable in structure. Only one type, the Wickham silt loam, is mapped.

In the first bottoms the Congaree and Toxaway series are developed. The Congaree series consists of types with brown surface soils and a light-brown friable subsoil. The Toxaway series has black to dark-gray surface soils and a mottled, gray, yellow, and rusty-brown subsoil. These soils are not as well drained as the Congaree. The silt loam of each series occurs in this survey.

Rough stony land is a classification that includes nonagricultural material.

In the following pages of this report the soils of Fannin County are described in detail. Their distribution is shown on the accompanying soil map. The table following gives the actual and relative extent of each soil type.

Areas of different soils

Soil	Acres	Per cent	Soil	Acres	Per cent
Talladega silt loam.....	99, 072	39. 2	Fannin stony loam.....	3, 968	1. 6
Porters loam.....	48, 704	19. 3	Habersham silt loam.....	2, 688	1. 1
Porters stony loam.....	36, 544	14. 4	Toxaway silt loam.....	960	. 4
Fannin silt loam.....	14, 208	5. 6	Wickham silt loam.....	960	. 4
Talladega slate loam.....	12, 928	5. 1	Fannin fine sandy loam.....	768	. 3
Ashe silt loam.....	11, 712	4. 6	Ranger silt loam.....	192	. 1
Rough stony land.....	11, 008	4. 3			
Congaree silt loam.....	9, 088	3. 6	Total.....	252, 800	-----

TALLADEGA SLATE LOAM

The Talladega slate loam has a surface soil of yellowish-brown loam, 4 to 6 inches deep. In wooded areas the upper part is a dark-brown loam, rich in organic matter. The subsoil is a light-red or reddish-brown, greasy silt loam to silty clay loam which grades into a light-red, greasy, friable silty clay loam at 15 to 18 inches. Below 24 inches the partly weathered parent rock is encountered in many places. Scattered over the surface and through the soil are thin platy fragments of schist, slate, and sandstone or quartzite.

The type occupies steep slopes and narrow hog-backed ridges. It includes areas locally known as "black slate land" in which the fragments are dark colored. It occurs most extensively on the slopes of the two valleys extending northeastward from Mineral-bluff and on ridges between and adjacent to these valleys. Several areas are mapped in the vicinity of Blue Ridge and on some of the slopes along Hemptown Creek and its tributary north of Hemp.

Only a small proportion of the type is farmed or used for pasture. Corn, the principal cultivated crop, yields somewhat less than on the silt loam. The land is cultivated only with considerable difficulty, on account of its steepness and the quantity of stony fragments on the surface. Several good orchards are located on this type, although the soil has a tendency to be somewhat droughty, and in places both soil and subsoil are shallow. Most of the type is covered with a scrubby growth of shortleaf pine, oak, sassafras, gum, and poplar.

This land probably is best suited for use as woodland and incidentally furnishes some pasturage for cattle and hogs. It is well suited to apples, grapes, and berries. Care must be exercised to keep the land protected by some cover crop during the winter or it will gully badly. A grass-sod cover would be essential in orchards. Farms that include this kind of soil range in price from \$10 to \$25 an acre, the price varying chiefly with the character of improvements, the kinds of associated farm land, and the location.

TALLADEGA SILT LOAM

The surface layer of the Talladega silt loam is a light-brown or grayish-brown silt loam, 2 to 4 inches deep, with a subsurface layer consisting of a yellowish-brown silt loam that is greasy when rubbed between thumb and fingers. The subsoil below 12 to 16 inches is a

light-red to salmon-colored, slick, greasy, silty clay loam. This greasy characteristic is due to the presence of finely divided mica particles and talcose material. In road-cut exposures the subsoil has a characteristic sheen or luster on the surface. At any depth between 20 and 40 inches the soft disintegrated schist rock appears. Small fragments of partly weathered schist are common through the subsoil and to a less extent in the soil and on the surface.

The type as mapped includes eroded patches on slopes. Some included areas have a red to deep-red surface, but with the characteristic light-red, slick, friable clay subsoil below a depth of about 15 inches. On some of the ridges south of Hurst the surface is a gray loam and the subsurface a light reddish-brown silt loam. Southeast of Dora the type includes patches that are somewhat browner than typical. In places, particularly at the base of slopes and near areas of Ranger silt loam, the subsoil is more yellow than typical. Such areas if of sufficient extent would be separated as Chandler silt loam. On some of the ridges near Fry the soil is more deeply weathered and the subsoil is rather more firm than the typical subsoil. This variation usually occurs near areas of Fannin soils. A few included patches have a slightly mottled subsoil.

This soil is derived from the weathering of mica schist and semi-crystalline slates. In the greater part of the type the parent rock is within 3 to 8 feet of the surface, on the steeper slopes it is usually encountered near the surface, and here and there are exposures of the partly weathered rocks.

The Talladega silt loam occupies extensive areas through the eastern, central, and northern parts of the county. In the southern part of the county it is developed in smaller areas associated with the Porters soils. The surface varies from fairly smooth or rolling to very steep and broken. The type is well drained throughout. On the slopes the run-off is very rapid and in many places severe erosion has followed where the fields have been kept in cultivated crops for several years without grass or winter cover crop.

This is the most extensive of the upland soils in the central and northern parts of the county. About one-fourth of it is used for cultivated crops and hay. Much of it is difficult to farm because of the steepness of the slopes and the tendency to wash and gully. About one-half of the type remains in woodland and with the unused cleared fields affords some pasturage for cattle and hogs. The forest growth consists mainly of shortleaf pine, post oak, Spanish oak, and hickory.

The Talladega silt loam is used principally in the production of the general farm crops of the section, consisting of corn, hay, wheat, rye, and potatoes, named in the order of their importance. Corn averages 15 to 30 bushels per acre, although on new land or where fertilizers are used and the content of organic matter is maintained, yields as high as 40 bushels per acre are harvested. Wheat and rye average 10 and 20 bushels, respectively, per acre. Hay, consisting of herd's grass or redtop, and native grasses, produces about 1 ton per acre. Soy beans and cowpeas are becoming popular hay crops. Red clover will grow well when the land is limed. Potatoes are widely grown on this soil and yield 75 to over 100 bushels per acre. In the vicinity of McCaysville and Blue Ridge truck crops

and small fruits are grown to some extent for the local markets. Apples are grown successfully in many home orchards, and a few commercial orchards have been established. The Talladega silt loam seems well adapted to apples, and owing to the hilly or sloping character of the sections where it is found the air drainage is good and the danger of damage by unseasonable frosts is minimized.

Some commercial fertilizer is used on the small grains and potatoes. Acid phosphate applied at the rate of about 200 pounds per acre for the small grains at the time of seeding and a complete fertilizer analyzing around 8-2-2 for potatoes are the kinds commonly used.

Land of this type sells for prices ranging from \$15 to \$25 an acre, depending upon the location with respect to main roads and the railroad, the topography of the land, and the improvements.

Crops on the Talladega silt loam respond well to applications of lime, and slopes that are too steep for cultivation could readily be seeded to bluegrass after lime has been added. Lime can be applied either in the form of the ground marble dust at the rate of about 1 ton per acre, or of burnt lime at the rate of 600 to 1,000 pounds per acre. The wider use of soy beans and cowpeas as hay and cover crops would help to build up the fertility of the soil and supply a good quality of hay. Terracing the steeper slopes and growing winter cover crops would aid in preventing destructive washing and gullying.

FANNIN STONY LOAM

The Fannin stony loam is a light-brown loam or silt loam, 6 to 8 inches deep, passing into a brown or reddish-brown, friable silty clay loam. Below 16 to 20 inches it is a red, friable silty clay. The parent rock in most places is encountered within 3 feet of the surface, and outcrops are common on slopes. Strewn over the surface are fragments of gneiss, schist, and fine-grained graywacke.

This type occupies an area containing about 1½ square miles, situated 7 miles southeast of Blue Ridge in the vicinity of Ray School. Smaller areas occur near Gravelly Gap, south of Alsobrook School, north of Mount Zion Church, and near Bald Knob School. Other widely separated areas are mapped in the east-central part of the county. The type has a steep, broken topography, and drainage tends to be excessive.

About 5 per cent of the Fannin stony loam is farmed and is handled in much the same way as the adjacent Fannin and Talladega soils. Its topography is not favorable for the growing of cultivated crops, but much of it could be successfully utilized for orchards. It has some value for the grazing of cattle and hogs. Some merchantable timber in saw sizes or suitable for crossties remains and yields considerable revenue. Most of this land probably is best suited to forestry under present conditions.

FANNIN FINE SANDY LOAM

The Fannin fine sandy loam in the virgin condition has a layer of 1 to 2 inches of brown or grayish-yellow loamy fine sand, below which to a depth of 7 or 8 inches appears a light-brown fine sandy loam. In cultivated fields the soil is a light-yellow fine sandy loam.

The upper subsoil consists of light-brown or yellowish-brown friable fine sandy clay, which at 16 or 18 inches grades into a light-red or reddish-brown very friable clay. In places the subsoil material is slightly streaked or mottled with red and yellow. Fragments of gneiss and quartz are scattered on the surface in places.

This type occurs south and southwest of Epworth, where it occupies ridges and upper slopes. About 30 per cent of it is farmed; the rest is in forest. Corn and wheat are the principal crops. So far as topography is concerned much of the type is well suited to farming, but its relatively low productiveness and in places its stoniness have tended to retard its use. Corn yields 15 to 25 bushels, and wheat 10 to 12 bushels per acre. The cultural methods used are those commonly employed in the region; little fertilizer is applied and little effort made to increase productiveness by growing legumes or turning under cover crops. Land of this type is held at \$10 to \$25 an acre.

Owing to the sandy texture of the surface soil of this type it is well suited to the production of truck crops, vegetables, and berries. Its comparatively porous, open structure has resulted in rather more leaching than has occurred on the other soils of the county. It needs liberal additions of organic matter in the form of barnyard manure or cover crops plowed under, and for most crops applications of a good grade of commercial fertilizer.

The table below shows the results of mechanical analyses of samples of the soil and subsoil of the Fannin fine sandy loam:

Mechanical analyses of Fannin fine sandy loam

Number	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>						
257919	Soil, 0 to 2 inches.....	1.0	3.6	3.4	37.4	27.1	19.5	3.0
257920	Soil, 2 to 8 inches.....	1.0	5.0	4.9	32.5	17.8	25.6	13.2
257921	Subsoil, 8 to 18 inches.....	.5	4.6	4.2	27.6	15.6	24.0	23.5
257922	Subsoil, 18 to 36 inches.....	1.4	5.4	4.8	27.6	13.0	20.1	27.6

FANNIN SILT LOAM

The Fannin silt loam is grayish-brown to light-brown silt loam 4 to 6 inches in depth, grading into a yellowish-brown to yellowish-red silt loam. At about 12 to 15 inches the subsoil, a red or light-red, firm but friable silty clay or clay, appears, and below 18 to 24 inches this has a very friable structure and contains considerable mica. Here and there on the slopes the parent rock, gneiss and schist, is encountered at depths of less than 3 feet, and rock fragments are scattered over the surface.

Variations occur in this soil. Patches having a loamy surface soil appear on some of the narrow ridges and in the small saddles between stream heads. Spots of a brown or reddish-brown clay loam, underlain by a stiff but brittle clay were observed east of Alsobrook School, on both sides of Noontooth Creek, south and west of Dial, east of Mount Zion Church, and about 1 mile southeast of Blue Ridge. Most of this heavier soil is under cultivation. Had it occurred in larger areas it would have been classed as Cecil clay loam.

The Fannin silt loam is extensively developed in the north-central part of the county in the vicinity of Fry, Kingtown, Pierceville, and Epworth, west of Galloway, east and southeast of Blue Ridge, and scattered through the eastern and southern parts of the county near Toccoa Church, Liberty Hill Church and Loving, and west of Dial. It occupies broad ridges and smooth upper slopes whose lower parts are occupied in many places by the Talladega soils. The topography is gently rolling or sloping to hilly; in general it is not so broken and rough as is characteristic of the Talladega soils.

The type has enough slope to insure good surface drainage, and the friable subsoil gives good internal drainage. Owing to its high absorptive power this soil does not erode badly.

The Fannin silt loam is an important farming soil. About 60 per cent of it is farmed; the rest which is in second-growth forest, affords some forage for cattle and hogs. Corn, wheat, rye, potatoes, and hay are the principal crops. Corn yields 20 to 35 bushels, wheat 10 to 25 bushels, rye about the same, and potatoes 60 to 100 bushels per acre. The hay consists mainly of redtop, some timothy, and the native grasses. Soy beans and late potatoes are sometimes planted as a second crop after small grain. Several commercial apple orchards, established recently on this type, are very promising. That this soil is well suited to fruit is shown by the rare failure in home orchards. Good moisture conditions and favorable topography that prevail over much of this type are important factors in its value for fruit. In the vicinity of Epworth and from that point northward toward McCaysville and Fry, some of this type is used in growing vegetables for the Copperhill market. Acid phosphate is the most extensively used fertilizer. It is applied ordinarily at the rate of about 200 pounds per acre for grain.

Price of this land ranges from \$20 to \$50 an acre, depending on the situation with respect to roads and towns and the character of the improvements.

This type of soil, particularly where it occurs on ridges at elevations around 2,000 feet, should be very well suited to the production of apples, and other fruits. It is also a good soil for general farming, but the methods of farming should be changed to include rotation of crops, the use of cover crops, and the application of lime. With careful management the yields of field crops can be increased. Its naturally good internal drainage and easily worked soil make the type well suited to potatoes and vegetables. The use of fertilizers fairly high in phosphoric acid and nitrogen will probably be found profitable.

PORTERS STONY LOAM

The Porters stony loam has a surface layer of dark-brown to mahogany-colored loam, rich in organic matter, passing into a reddish-brown silt loam or silty clay loam, with a subsoil of red, friable silty clay or clay. The parent rock in most places is encountered within 2 to 3 feet of the surface, and outcrops of the bedrock are common. Numerous fragments are strewn over the surface. The texture of this type is somewhat variable, ranging from a fine sandy loam to a clay loam. Where the heavier texture occurs the subsoil is yellow and somewhat slick and the type resembles the Ashe soils.

The Porters stony loam has a rough, hilly topography. It occupies the rougher parts of the Blue Ridge in the west-central part of the county and the mountain spurs and ridges southeast of Blue Ridge, near Due and Aska, and south of Newport. Other large areas are mapped on Licklog, Rocky, John Dick, Double Knobs, and Springer Mountains in the southeastern part of the county. The type includes some small areas that are very stony and approach the conditions classed as Rough stony land.

The only parts of the type farmed are some of the small smoother cove areas, where corn and potatoes are grown. The total extent of such areas would amount to less than 1 per cent of the whole. A few home orchards have been set out on some of the more easily accessible slopes. The type remains almost entirely in forest consisting of hemlock, shortleaf pine, chestnut, poplar, hickory, and various oaks. The cut-over openings are used to some extent for pasture. Forestry and grazing seem to be about the only uses for this kind of land.

PORTERS LOAM

The Porters loam is characterized by a surface layer of dark-brown loam rich in organic matter, 2 or 3 inches thick, resting on a brown or reddish-brown loam, which at 10 to 12 inches grades into a reddish-brown or brownish-red, friable silty clay or clay. Normally at 24 to 40 inches the disintegrated parent rock is reached. Fragments of granite and other crystalline rock which supply the materials from which this soil is weathered are present in places on the surface, and mica particles are mixed with the soil and subsoil.

In some of the coves, particularly those having northern exposures, the surface soil is almost black. Such areas occur on some mountain slopes and coves in the western part and southeastern part of the county. If these areas were of large extent, they would be separated as Burton loam. The Porters loam also includes considerable colluvial material along the base of slopes; that is, material that has been washed and rolled down from the higher elevations.

The Porters loam is extensively developed on the eastern slopes and lower foothills of the Blue Ridge in the western part of the county near Patterson Gap, Mount Pisgah, and Crawford Mountain. It also occupies a large part of Wilsco Mountain in the south-central part and the smoother mountains in the southeastern part of the county in the Cherokee National Forest. The type has a sloping to steeply hilly topography and occurs on ridge crests and narrow stream divides. Drainage is thorough to excessive.

Although the Porters loam is an extensive type, only a small proportion of it is farmed; the rest is in forest or partly cleared land used to some extent for pasture and hog range. The forest growth consists of chestnut, chestnut oak, poplar, linn, shortleaf pine, and hickory. In the coves and along the streams hemlock and mountain laurel are common.

Corn and potatoes are the principal crops. The corn compares very favorably with bottom-land corn in size of ear and size and height of stalk and yields 25 to 40 bushels per acre. Most of the type, however, is so steep that planting and cultivation are very tedious operations, the work being done by hand. Potatoes of very

fine quality are grown, with yields ranging from 75 to 150 bushels per acre. Wheat and rye are crops of minor importance. Both soil and climatic conditions are particularly favorable for the production of potatoes. Tree fruits, particularly apples, do well, judging from the success made with home orchards, of which there are many. Few commercial orchards are situated upon it, however, chiefly, it is probable, because most of the areas lie at considerable distance from present markets and transportation facilities. The type makes excellent pasture land, bluegrass doing well. Applications of lime would undoubtedly aid in the establishing of permanent pastures.

Land of the Porters loam type brings from \$7.50 to \$20 an acre depending upon the location, area of cleared land, and kind and quantity of forest.

In farming this land care should be taken to prevent erosion by growing winter cover crops after cultivated crops. As a general rule this soil contains sufficient potash for plant requirements, so that applications of this element will be, at least for the present, unnecessary. Fertilizers high in phosphoric acid and nitrogen should prove beneficial.

ASHE SILT LOAM

The Ashe silt loam, as mapped in Fannin County, is a dark-gray loam about 3 inches deep, underlain by a yellowish-brown friable silt loam, which grades at 15 to 18 inches into a yellowish silty clay of friable structure. Generally the disintegrated parent rock is encountered within 30 to 40 inches of the surface, and platy fragments of slate and gneiss are present on the surface in small areas. Included in the type are some patches that are almost black at the surface and others that are sufficiently stony to be mapped as stony loam, had they been large enough.

This type is mapped on the high mountain tops and upper slopes and on some of the foothills in the western part of the county. It covers the crest of the Blue Ridge around Hemp Top and the Cohutta Mountain crest, including Cowpen Mountain, the highest point of the county.

The Ashe silt loam is of little agricultural importance, as none of it is farmed. The mountain crests are covered with a thin forest growth consisting mainly of stunted, gnarled, and misshapen chestnuts and oaks. The coves contain hemlock, poplar, some pine, chestnut, and mountain laurel. Some excellent virgin and second-growth timber remains on part of this type, but this will probably be taken out within a few years. This type of land is generally unfenced. It is used as a range for cattle during the summer season. Under present conditions this land appears to be better suited to forestry than to any form of agriculture.

HABERSHAM SILT LOAM

The Habersham silt loam is a light grayish-brown silt loam or loam, 4 to 6 inches deep, underlain by a brownish-yellow or yellow friable silt loam, grading at about 15 inches into a yellowish-brown or reddish-yellow friable silty clay loam, mottled with reddish and grayish colors at depths of 20 to 30 inches. Fragments of quartzite

and sandstone are present on the surface in some places, although generally not in sufficient quantities to interfere with farm operations. The influence of the quartzite and sandstone material upon the soil is reflected in the structure of the subsoil, which is friable as compared with the greasy compact structure seen in the Talladega subsoil.

The Habersham silt loam includes some areas that have a light-gray or grayish-brown surface soil and a yellow subsoil, mottled somewhat with gray. This condition is found near Maple Grove Church, east of Hurst, and near Hemp. Another variation appears near Epworth, where small areas have a rather compact subsoil of mottled yellow, gray, and red clay loam, resembling in this respect the Appling soils of the Piedmont Plateau region. Included also with this type, on benches overlooking streams, are patches that have been influenced to a minor extent by old alluvial deposits.

The Habersham silt loam occurs in widely scattered areas. These are relatively small. The more important are situated west of Higdon's Store, south of Sugar Creek School, north, east, and west of Hemp, at several places close to Wilscot Creek in the vicinity of Hurst, south and southwest of Dial, near Stock Hill, west of Coopers Creek Church, and in the extreme northeastern corner of the county. These areas occupy gentle slopes and gently rolling shoulders and ridges and are generally well drained, except locally at the base of some slopes, where small patches may be kept wet by seepage.

The type has a small total area in Fannin County and is relatively unimportant agriculturally. About half of it is cleared and cultivated; the rest, including forested and stony areas, is devoted to pasture. Very little merchantable timber remains in the forest on the type. Corn, the principal crop, yields 15 to 25 bushels per acre. Wheat and grass also are grown. Apples and vegetables grown in home orchards and gardens seem to indicate a soil well suited to the production of these products. As a general rule this soil is deficient in organic matter, and the growing of legumes and the application of phosphatic fertilizers are suggested for increasing its productivity. In Habersham County some commercial orchards have been set out on this type and appear to be doing well.

RANGER SILT LOAM

The Ranger silt loam consists of bluish-gray or grayish-brown silt loam, 4 to 6 inches deep, passing into a yellowish-gray or bluish-gray silty clay loam having a firm but greasy feel. Below 12 to 15 inches the partly weathered, gray, micaceous schist rock, from which comes the soil material, is encountered. Fragments of this rock also are present on the surface.

This type is of very small total area. It occurs near Harmony Church, north of Mineralbluff, southeast of Blue Ridge, west of Sugar Creek School, and near Watson Gap. It is closely associated with the Talladega soils. It occupies gentle to steep slopes and swells and has a tendency to erode severely after a few years of cultivation. A small proportion of the type is included in fields which consist mainly of other soils, but the most of the type is in forest and affords a small amount of grazing. Forestry and grazing seem to be the best present uses for this land.

The following table gives the results of mechanical analyses of samples of the soil and upper and lower subsoil of the Ranger silt loam:

Mechanical analyses of Ranger silt loam

Number	Description	Fine gravel	Coarse sand	Medium sand	Fine sand	Very fine sand	Silt	Clay
		<i>Per cent</i>						
257926	Soil, 0 to 6 inches.....	1.6	2.4	1.6	10.0	17.5	48.6	18.2
257927	Upper subsoil, 6 to 15 inches.....	.0	.2	.1	1.4	13.0	75.2	10.2
257928	Lower subsoil, 15 to 36 inches.....	.0	.2	.0	1.8	18.8	72.0	7.2

WICKHAM SILT LOAM

The Wickham silt loam consists of a brown to reddish-brown silt loam, 8 to 10 inches deep, grading into a brown to reddish-brown fairly friable silty clay loam. The lower subsoil at 24 to 30 inches in some places becomes more friable than the typical Wickham silt loam mapped in the Piedmont Plateau region. In several areas, such as west of Morganton, the color is rather more yellow than typical. Some gravel and bowlders are commonly found on the surface. In road cuts beds of gravel, widely variable in thickness, are exposed at depths of several feet below the present surface.

This type of soil occurs on stream terraces at elevations of 5 to about 30 feet above the stream bottoms. Some remnants of old high terraces lying 50 to 100 feet above the bottoms, which have been greatly dissected by erosion, are redder in color than typical, and have almost lost their terrace identity, are included with this type. Where the terrace material was deposited and later eroded at the margin, exposures of old residual material derived from schist may be encountered on slopes to the bottoms, but such areas are too small to show on the map.

This type occurs in several areas along the Toccoa River and Star Creek, near their junction, in disconnected areas along Hemptown Creek east and northeast of Morganton, at the junction of the Little Skeenah Creek with the Toccoa River, along Noontooth Creek near its mouth, and along Fightingtown Creek near Higdon's Store. It has a gently undulating to sloping topography and is adequately drained throughout.

About 90 per cent of the type is in cultivation, and although it is not extensive it is of considerable local importance because of the scarcity of level lands suitable for farming. It is devoted largely to corn, with wheat and hay of secondary importance. Corn produces 20 to 35 bushels and wheat 12 to 15 bushels per acre. Potatoes do well.

The Wickham silt loam is well suited to the production of potatoes, vegetables, and fruit, in addition to the field crops generally grown at present. Its topography is favorable to the use of machinery. Applications of phosphate fertilizers and the growing of legumes, such as soy beans and clovers, would aid in building up the productivity of this soil. Land of this type ranges in price from \$60 to over \$100 an acre, according to the location and the kind of associated soils.

CONGAREE SILT LOAM

The Congaree silt loam typically is a dark-brown silt loam, 6 to 8 inches in depth, passing downward into a lighter, slightly reddish brown silt loam. Commonly the soil contains a noticeable admixture of fine mica particles.

This type occurs in overflowed stream bottoms and consists of material transported by water from the adjacent uplands. Like most alluvial soils it is somewhat variable in texture and structure. Near the streams it includes narrow strips of fine sandy loam, and next to the valley slopes it may be a silty clay loam. In places the color is somewhat more yellow than typical, and in sloughs or old stream channels where drainage is somewhat restricted the subsoil is heavier and mottled, approaching that of the Toxaway silt loam.

The Congaree silt loam is most extensively developed in the Toccoa River bottoms in discontinuous strips. Other areas are found along most of the larger streams of the county. The topography is undulating to almost level and all of it lies favorably for the use of machinery.

The whole of this type is farmed, corn being the principal crop, followed by hay and wheat. Some vegetables also are grown. Corn yields 25 to 60 bushels per acre and hay 1 to 2 tons per acre. Redtop is the most common hay, although some clover and timothy are seeded. Practically no fertilizers are applied, as the loam is being frequently enriched by additional deposits of material. Land of this type is very highly prized. It is rarely sold and always commands a premium. It is valued at \$100 to \$150 an acre, depending on its location.

TOXAWAY SILT LOAM

The Toxaway silt loam consists of a dark-gray or grayish-brown or almost black silt loam, 6 to 10 inches deep, underlain by a gray silty clay mottled with rusty brown and yellow. It is an alluvial soil, imperfectly drained, and occurs in bottoms, closely associated with the Congaree silt loam. In places the type includes patches of silty clay loam, and close to the stream some strips of fine sandy material, too narrow to show on the map, have developed.

This type is mapped principally along Hothouse, Young Stone, Hemptown, Sugar and Weaver Creeks. It is subject to occasional overflows. A few higher lying areas, such as those east of the main bridge on the Blue Ridge-Morganton road, which are not subject to flooding, are included in this type.

The Toxaway silt loam is all in use, being devoted principally to grass and corn. The yields of corn are lower than on the Congaree silt loam and the hay commonly has a considerable admixture of wet-land grasses. This soil is not as desirable as the Congaree silt loam.

This type is in need of drainage. Either surface ditches or tile drains could be used in its improvement. The scarcity of level land would seem to warrant the cost of installation of tile drains. In places ditches partly filled with stone and then covered over have greatly improved the drainage conditions and made entire fields available for cultivated crops. This soil is acid, and the application of lime would improve the conditions for many crops.

ROUGH STONY LAND

Rough stony land includes areas that have such a steep and broken topography or are so stony as to be unfit for agricultural use. The western slope of the Cowpen Mountain and Cohutta Range comprises the largest area of Rough stony land. Other areas are mapped along Jacks River near the Murray County line, and near Doublehead Gap, John Dick and Springer Mountains, and High Falls. Smaller areas occur along some of the small streams. A growth of oak, hickory, chestnut, poplar, and shortleaf pine is supported on this land, and its chief value lies in the timber that remains upon it. A little grazing is afforded during the summer.

SUMMARY

Fannin County is located in the extreme northern part of Georgia. It has an area of 395 square miles, or 252,800 acres. It lies in the Appalachian Mountain province and much of it is very rough and mountainous. The valleys are typically V-shaped and narrow. The county as a whole is well drained. The streams are swift flowing, and water power is developed from some of them, but much of the potential power remains undeveloped.

Blue Ridge, McCaysville, Mineralbluff, and Morganton are the principal towns and trading points. The roads are fair during the summer season, but are bad and in some cases almost impassable in winter. Several intercounty highways are being constructed.

The climate of Fannin County is characterized by long, cool summers and mild open winters. The average annual temperature is about 58° F. and the average rainfall about 62 inches.

General farming, including the grazing of cattle, comprises the type of agriculture followed by most farmers. Corn is the principal crop. Rye, wheat, and hay are crops of minor importance. Very good potatoes, cabbage, and other vegetables are grown. Sorgo and apples are grown on practically all farms to a small extent. The growing of apples commercially is becoming of increasing importance. Agriculture is supplemented by lumbering, cutting of cross-ties, and mine and mill work at Copperhill.

The soils of Fannin County may be divided into three groups as regards land classification, economic value, and agricultural uses or adaptations.

The first group comprises those soils whose topography and stony character preclude their use except in local spots for agricultural purposes at present and which are suited to forestry and scant grazing. This group includes the Rough stony land, Talladega slate loam, Fannin stony loam, Porters stony loam, Ashe silt loam, and Ranger silt loam.

The second group comprises such types as the Talladega silt loam, Fannin silt loam and fine sandy loam, Porters loam, and Habersham silt loam. These soils are rolling to hilly and semimountainous in topography but can be and are used for general farming, grazing, the growing of vegetables, especially potatoes and cabbage, and the production of apples.

The third class includes those soils with comparatively smooth surface features, such as Wickham silt loam, Congaree silt loam, and

Toxaway silt loam. Nearly all of these soils are under cultivation and produce good yields of corn, hay, wheat, and other crops.

Fannin County offers opportunities in the growing of apples and the development of the cattle and sheep industries. Much of the land is low in price, the region is a healthful place in which to live, and the climate is delightful, especially during the summer and fall months.



[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.]

Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at (800) 457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at <http://offices.sc.egov.usda.gov/locator/app>.

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers. If you believe you experienced discrimination when obtaining services from USDA, participating in a USDA program, or participating in a program that receives financial assistance from USDA, you may file a complaint with USDA. Information about how to file a discrimination complaint is available from the Office of the Assistant Secretary for Civil Rights. USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex (including gender identity and expression), marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.)

To file a complaint of discrimination, complete, sign, and mail a program discrimination complaint form, available at any USDA office location or online at www.ascr.usda.gov, or write to:

USDA
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, S.W.
Washington, DC 20250-9410

Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender.

Persons with disabilities who require alternative means for communication of program information (e.g., Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).