Series 1958, No. 19

Issued July 1962

SOIL SURVEY

Cherokee County South Carolina

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SOIL SURVEY can be used as a guide in planning management of the cropland, pasture, and woodland of Cherokee County. It describes the soils, shows their location on a map, and tells what they will do if various practices are followed. It also gives information that will be helpful to engineers in planning the construction of roads, ponds, and other structures.

The soil map, bound at the back of this report, is a large aerial photograph of the county. On this map you can see roads, houses, streams, and other landmarks that will help you locate your farm.

Locating the soils

To find your land on the large map, use the index to map sheets. This is a small map of the county on which numbered rectangles have been drawn to show what part of the county each sheet of the large map covers. To locate your farm on this index map, look for roads, streams, towns, and other familiar landmarks.

When you have found the map sheet for your farm, you will notice that the soils have been outlined and that there is a symbol for each kind of soil. All areas marked with the same symbol are the same kind of soil, wherever they appear on the map.

Suppose you have found on your farm an area marked with the symbol CdB. The legend for the detailed map shows that this symbol identifies Cecil sandy loam, 2 to 6 percent slopes.

Learning about the soils on your farm

From information obtained when they mapped the soils, soil scientists prepared descriptions of Cecil sandy loam, 2 to 6 percent slopes, and of all other soils mapped. These are in the subsection "Descriptions of Soils." The scientists talked with farmers and others about the use and management that each soil should have and then placed the soil in a capability unit. A capability unit is a group of similar soils that need about the same management and that respond to this management in about the same way. For example, Cecil sandy loam, 2 to 6 percent slopes, is in capability unit IIe-1. To learn about management of this soil turn to the section "Use and Management of Soils" and read what is said about the soils in capability unit IIe-1. You will want to study table 3, which tells you how much you can expect to harvest on Cecil sandy loam, 2 to 6 percent slopes, under two levels of management.

Making a farm plan

For the soils on your farm, compare your yields and practices with those given in this report. Look at your fields for signs of runoff and erosion. Then decide whether or not you need to change your methods. This survey will aid you in planning new methods, but it is not a plan of management for your farm or any other farm in the county. If you find that you need help in farm planning, consult the local representative of the Soil Conservation Service. The county agricultural agent and members of your State Agricultural Experiment Station also will be glad to help you.

Finding information in this report

Some readers will be more interested in one part of the report than in others, for the report has special sections for different groups, as well as sections of interest to all. A "Guide to Mapping Units" at the back of the report lists the soils in alphabetic order, according to map symbol, and gives for each soil the page numbers of the description of the soil, of its capability unit, and of its woodland suitability group.

Farmers and those who work with farmers will want to refer to the subsection "Descriptions of Soils" to read about the soils on their farm. They can then turn to the section "Use and Management of Soils" to find how these soils can be managed and what yields can be expected.

Foresters and others interested in woodland can refer to the section "Use and Management of Woodland." This section tells what hazards affect the growth of trees on the different soils and what yields can be expected from certain species of pines and from hardwoods.

Engineers will find information that will help them in the section "Engineering Applications." In this section are the results of engineering tests of certain soils and an evaluation of each soil in the county for engineering work.

Biologists and others interested in wildlife can turn to the subsection "Management of Soils for Wildlife." In this subsection the wildlife of the county is briefly discussed and information on managing the soils to increase wildlife is given.

Soil scientists will find information about how the soils were formed and how they were classified in the section "Formation and Classification of Soils."

Students, teachers, and other users will find information about soils and their management in various parts of the report, depending on their particular interest. Those not familiar with the county may want to refer to the section "General Soil Map," which discusses broad areas of soils in the county.

* * * * *

Fieldwork for this survey was completed in 1958. Unless otherwise specified, statements in the report refer to conditions at the time of the survey. This survey is a part of the technical assistance furnished to the Cherokee Soil Conservation District.

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Contents

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SOIL SURVEY OF CHEROKEE COUNTY, SOUTH CAROLINA

SOILS SURVEYED BY R. L. BISHOP, S. B. ROCHESTER, WILLIAM E. JONES, AND W. A. DAVIS, SOIL CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT BY WILLIAM E. JONES

UNITED STATES DEPARTMENT OF AGRICULTURE IN COOPERATION WITH THE SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

CHEROKEE COUNTY is in the northwestern part of South Carolina (fig. 1). It is bounded on the north by North Carolina, on the east by the Broad River and York County, on the south by the Pacolet River and Union County, and on the west by Spartanburg County. The total area of the county is about 394 square miles, or 252,160 acres. Gaffney, the county seat and largest town, has a population of about 10,000. The county is mainly agricultural, but many farmers work part time in industrial plants. The chief crops are cotton, corn, and vegetables. Peaches are grown on a small total acreage. Beef and dairy products have increased in importance in recent years as more cropland has been converted into pasture. The main industries produce cotton textiles and wood products.

General Nature of the Area

This section is provided mainly for those not familiar with Cherokee County. It tells about the physiography and drainage, climate, woodland, industries, and other subjects of general interest. Details about agriculture in the county will be found in the section "Agriculture".

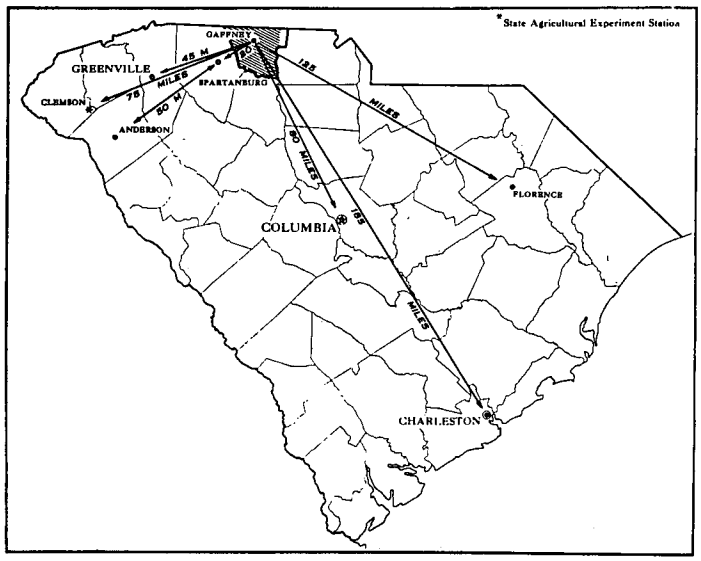

Figure 1.—Location of Cherokee County in South Carolina.

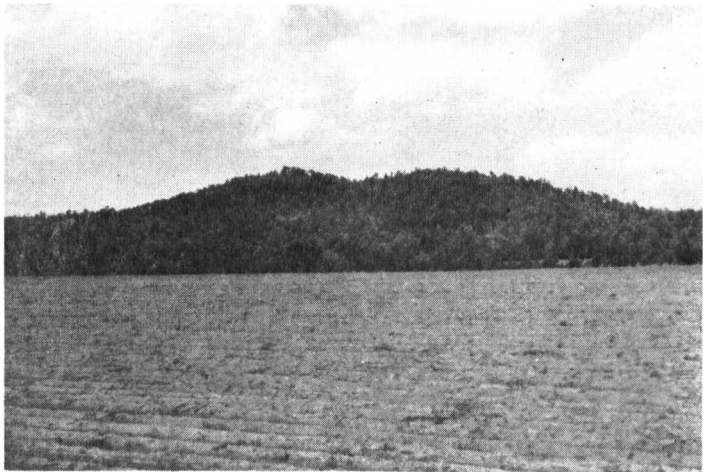

Figure 2.—Thicketty Mountain, the highest point in Cherokee County, is sparsely covered with hardwoods and pines.

Physiography and Drainage

Cherokee County, in the upper part of the Piedmont Plateau, is gently sloping to steep and and is thoroughly and fairly deeply dissected. The northwestern corner of the county is about 30 miles from the foothills of the Blue Ridge Mountains. Many ridges, mounds, or rounded hills, which are locally called mountains, rise abruptly 100 to 300 feet above the surrounding land.

The county slopes generally from the northwest to the southeast. Elevations in most of the county range from 500 to 1,000 feet above sea level, but the highest point in the county is about 1,300 feet above sea level. This is at the top of Thicketty Mountain (fig. 2). The lowest point in the county is about 500 feet above sea level and is at the junction of the Pacolet and the Broad Rivers in the southeastern corner.

The drainage of Cherokee County is dendritic. More than 95 percent of the county is drained by the Broad River and its branches, and a small area in the southern part of the county is drained by the Pacolet River. The main branches of the Broad River are Goforth, Cherokee, Buffalo, Kings, Gilkey, and Thicketty Creeks. The bottom lands along the rivers and their branches are generally narrow, nearly level, and undulating. Along the Broad River and along Thicketty, Kings, and Gilkey Creeks are a few bottom lands more than 2,000 feet wide.

Climate

The climate of Cherokee County is of the modified continental type and is warm and temperate. The warmest month in summer averages about 79° F., and the coldest month in winter averages about 43°.

Table 1, compiled from the records of the United States Weather Bureau at Spartanburg and at Gaston Shoals, gives average monthly and annual precipitation. The data on temperature are from the Spartanburg station, and those on precipitation are from the Gaston Shoals station.

The average rainfall is about 48 inches annually, and the average snowfall about 4.5 inches. Precipitation is about 25 percent less in fall than in other seasons. Moderately dry periods of 2 to 5 weeks often occur late in spring and early in summer and are common in fall. The soil generally contains a favorable amount of moisture in winter and in the early months of spring.

Droughts in spring and early in summer are moderately harmful to seeding, and to the growth of pasture plants, peaches, and grapes. Droughts are more common in fall than in the rest of the year and are harmful to all growing crops. Soils generally have an optimum amount or an excess of moisture in winter and early in spring when evaporation and transpiration are at a minimum. Surface runoff and water losses are greater late in spring and in summer when rainfall is commonly greatest.

Winters are fairly short and relatively mild. Periods when the temperature is below the freezing point seldom exceed 4 or 5 days, and there are only a few days of freezing temperature each winter. Periods of 1 to 4 weeks when the temperature is below 40° do occur almost yearly. The ground seldom freezes to a depth of 4 or 5 inches. The average period free of killing frost at Spartanburg is about 227 days, and it extends from March 29 to November 11.

The county has about 145 days of clear weather. About 120 days are partly cloudy, and 100 days are cloudy.

TABLE 1.—*Temperature at Spartanburg (elevation 801 feet), Spartanburg County, and precipitation at Gaston Shoals (elevation 680 feet), Lexington County*

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1925)	Wettest year (1936)	Average snowfall
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
December	42.7	78	9	4.47	1.86	7.06	0.9
January	42.5	80	9	4.18	7.51	11.10	1.5
February	43.8	78	3	4.36	1.46	5.23	1.6
Winter	43.0	80	3	13.01	10.83	23.39	4.0
March	51.4	87	13	4.68	3.36	6.41	.6
April	59.0	90	28	3.44	1.41	10.22	(3)
May	68.9	97	40	3.63	2.46	.06	0
Spring	59.8	97	13	11.75	7.23	16.69	.6
June	76.2	104	51	4.21	1.94	3.17	0
July	78.6	103	57	5.00	2.94	8.43	0
August	77.5	101	55	5.46	1.99	7.72	0
Summer	77.4	104	51	14.67	6.87	19.32	0
September	72.2	100	41	3.35	1.15	3.34	0
October	61.8	95	29	3.35	3.22	9.16	0
November	50.7	83	11	2.68	3.44	1.19	(3)
Fall	61.6	100	11	9.38	7.81	13.69	(3)
Year	60.5	104	3	48.81	32.74	73.09	4.6

[1] Average temperature at Spartanburg based on a 60-year record, through 1960; highest and lowest temperatures based on a 17-year record, through 1960.

[2] Average precipitation at Gaston Shoals based on a 53-year record, through 1955; wettest and driest years based on a 51-year record, in the period 1889–1955; snowfall based on a 45-year record, through 1952.

[3] Trace.

Rock Formations

Underlying the soils in Cherokee County are many kinds of granite, gneiss, and schist. Sericitic schist is beneath the soils in about one-third of the county, mostly in the northeastern quarter. A narrow belt south of Gaffney is also underlain by sericitic schist. Quartz mica gneiss and quartz mica schist are the dominant underlying rocks in the northwestern quarter of the county. In the southeastern quarter are diorite, diabase, gabbro, hornblende schist, and other basic rocks. These rocks are under about one-tenth of the county and extend from State Highway 18 eastward through Wilkinsville to the Broad River. A fairly small area in the southeastern corner is underlain by porphyritic granite. Outcroppings of highly metamorphosed granite or of gneiss, and possibly of quartzite, are on Draytonville and Saladback Mountains, which are in areas of the sericitic schist formation.

Woodland

Most of the woodland in Cherokee County consists of formerly cultivated areas that have reforested naturally. These areas are mostly in mixed hardwoods and pines, except for the areas on severely eroded soils, which are mostly in pines. A few severely eroded areas were planted to pines by the Civilian Conservation Corps late in the 1930's. Small acreages of steep or otherwise undesirable soils that were never cleared are now covered mostly by mixed hardwoods. According to the Federal agricultural census, about 50.4 percent of the county was woodland in 1954.

Settlement and Population

Following hunters, trappers, and traders, farmers came into the area of Cherokee County and settled along or near the Broad and Pacolet Rivers and their larger tributaries. These farmers began to move into the area in fairly large numbers in the early years of the 1750's. They were dominantly of Scotch-Irish descent and are the forebears of most of the present population.

In 1897, Cherokee County was legally created from parts of Spartanburg, Union, and York Counties. Gaffney is the county seat and the largest town. In 1950, Gaffney had a population of 8,123 and one other town in the county had a population of more than 1,000. In that year, the population of Blacksburg was 2,056. Preliminary figures from the 1960 census indicate that the population of the county had increased only 0.07 percent since 1950. Gaffney, however, appears to have increased about 27 percent.

Industries

Cotton textiles are the main industrial products in Cherokee County, and many kinds of cotton goods are produced. Several textile plants are at Gaffney, and two are at Blacksburg. There is also a textile plant at Cowpens and one near Chesnee, just outside the county.

Large quantities of crushed stone and agricultural limestone are produced in an area northeast of Blacksburg. Brick for building purposes is made near Interstate Highway 1–85, just west of the Broad River, and a plant at Kings Creek produces barite. Throughout the county sawmill operators and pulpwood growers employ some full-time labor and some part-time farm labor.

Transportation

Cherokee County has a network of all-weather State and county roads. The State maintains about 569 miles of roads, and about 85 percent of this mileage is paved with asphalt and concrete. Interstate Highway 1–85 crosses the northern part of the county. The dual-track of the Southern Railway passes through Gaffney and the central part of the county, and a branch runs southeastward to Blacksburg. Although there is no commercial airfield in the county, air service is available at Spartanburg, S.C., and at Charlotte, N.C.

Water Supply

Because there are no large bodies of water in Cherokee County, and many of the small streams dry up in prolonged droughts, obtaining water is a problem in many areas. Rural homes obtain water mostly from drilled, bored, or dug wells. Streams and farm ponds supply water for most of the livestock, and almost all of the water used to irrigate peaches comes from farm ponds. Families in urban areas and large commercial users are supplied with water from Cherokee Creek and from the Broad and the Pacolet Rivers.

Most of the wells on farms are 30 to 60 feet deep. In the severe droughts of 1953 and 1954, shallow wells had to be deepened. Most of the 300 farm ponds in the county were constructed in the past 15 years. The ponds average 2½ acres in size and are of the earth-embankment type. Some were built primarily to supply irrigation water, and the very small ones were built to supply water for livestock and thus improve grazing. All ponds are stocked with fish.

Schools, Churches, and Farm Organizations

Grade schools are distributed throughout the county, and high schools are at Gaffney and Blacksburg. Limestone College, a liberal arts school for women, is at Gaffney. Vocational courses in agriculture are available at Gaffney and Blacksburg. Some children who live near the county line attend school in other counties.

Small churches are well distributed in rural areas, and the towns have larger churches. Many members who live in town support and attend services in rural areas because these are their home churches.

Units of the Farm Bureau and the Grange are active in the county, and 4-H clubs and other groups of young people participate in various agricultural activities. The soil conservation activities in the county are chiefly directed by the Cherokee Soil Conservation District.

Power Facilities

Electrical power is available throughout the county. A large part of the power used by commercial consumers in Gaffney, and much of that used by private consumers, is supplied by a private electric company. Power furnished by the Rural Electrical Administration is available in all parts of the county. Electrical appliances are used in most farm homes and in almost all the homes of industrial workers.

Three plants generate electricity in the county, all of which are on the Broad River. These plants are at Dravo in the northern part of the county, at Cherokee Falls, and southeast of Cherokee Falls.

Several electric power transmission lines and a telephone cable cross the county, and gas and oil pipelines cross the central part. The rights-of-way for these lines and the structures themselves have to be considered when terraces, outlets, farm ponds, and flood-control structures are planned.

General Statistics on County

The data that follow are from the Federal census of agriculture and from the South Carolina Development Board. The column on the right is the rank in the State that the county holds for the item listed. For example, Cherokee County ranked twenty-first in population among the counties in South Carolina in 1950. In the section "Agriculture" are tables that list the acreage of principal crops, yields of crops, and the number of livestock.

		Rank in S.C.
Population (1950)	34, 992	21
Growth in population (1940–50)—percent	5. 1	24
Land area (1950)—square miles	394	45
Density of population (1950)—per square mile	88. 8	12
Urban population (1950)—percent	35. 5	9
Farms (1954)—number	2, 357	22
Average size farm (1954)—acre	86. 5	30
Tenant farmers (1954)—percent	32. 8	27
Farmers working 100 days or more each year off farm (1954)—percent	45. 1	10
Motortrucks on farms (1954)—number	768	18
Tractors on farms (1954)—number	866	24
Autos on farms (1954)—number	1, 710	23
State highways (1957)—miles	547	20
State highways paved (1957)—percent	84. 9	15
Main line railroad track (1957)—miles	38	39
Elementary and high school pupils (1955–56)—number	8, 036	29

General Soil Map

The General Soil Map at the back of this report shows by colors broad areas, or soil associations, in the county. Each association is distinguished from the others in the county by its kinds, proportions, and patterns of soils. The soils in any one association may be similar, or they may differ greatly.

From a knowledge of the kinds, proportions, and patterns of soils, it is possible to make general statements about the capabilities of the soil associations. These statements have to be much less detailed than the statements that can be made about individual soils, but they are useful to those who need general information about broad areas.

In the following pages, the five soil associations shown on the General Soil Map are described and broad uses of the soils in the associations are discussed.

Area 1

Deep, well-drained, friable soils over gneiss, granite, and schist, on broad ridges and side slopes: Cecil-Madison association

This soil association, called the Broad Ridge section, has a total area of about 117,400 acres. It consists of broad ridgetops and their slopes. The slopes extending in the direction that the ridges run are gentle and moderate; those that slope abruptly downward from the ridgetops are dissected, fairly regular, and strong to moderately steep.

The main ridge in this area extends across the county and separates the watershed of the Broad River from the watershed of the Pacolet River. The Broad River cuts through the northeastern corner of this area, and the Pacolet River is along most of the southern boundary.

Cecil soils make up 43 percent of area 1, and Cecil and Madison soils, 32 percent. About 7 percent of the area consists of Appling soils, and about 6 percent is Mixed alluvial land. Small acreages of Lloyd, Wilkes, Louisburg, Worsham, and other soils make up the rest of the area.

The soils in this area are in capability classes I, II, III, or IV, or are not generally suited to cultivated crops (see subsection "Capability Groups of Soils"). About 6 percent of the area is Local alluvial land in class I. About 25 percent consists of sandy loams in class II, and about 39 percent consists of severely eroded loams and clay loams in classes III and IV. Figure 3 shows a typical landscape in area 1.

Except on the steeper slopes, much of the area has been cleared and cultivated. A large part is eroded. About 40 percent of the area is woodland, 30 percent is cultivated, 25 percent is in pasture, and 5 percent is in nonfarm use. The main crops are cotton, corn, peaches, small grains, and hay. Beef cattle are raised on many farms, and much of the acreage not suited to cultivation is used for pasture. Some of it is reverting to woodland.

The soils in area 1 are generally better suited to cultivation than those in other parts of the county and are easier to manage. However, the sloping and eroded soils need good management to prevent the loss of soil and water. Surface runoff is moderate in amount and is fairly slow except on the steep or severely eroded soils. The content of organic matter is fairly low, but moisture-supplying capacity and fertility are moderate.

Some of the minor soils are not well suited to cultivation, but Local alluvial land is productive and is used for vegetated outlets in cultivated areas. The Worsham soils are not suited to cultivated crops but are suited to pasture, to trees, and to pond sites. The Louisburg soils that have been cultivated are returning to trees. Because it is likely to be flooded, most Mixed alluvial land is used for pasture or trees.

The farms in this area are smaller than the county average in size. A larger percentage of farmers own their farms, and many farmers work in industrial plants. This is the most thickly populated area in the county, especially that part northwest of Gaffney. A network of roads serves the area, and the main roads and many connecting roads are paved. Interstate Highway 85 and the Southern Railway cross the area from west to northeast.

The most intensely cultivated part of area 1 is called the Battleground section. The boundary of this section is shown on the General Soil Map by a broken line. This section extends to Gaffney along the main ridge and includes smaller ridges between Goforth, Cherokee, and Suck Creeks in the northwestern part of the county. It is mostly cultivated or in pasture but is wooded in a few small parts. Farms are smaller than in the rest of area 1, and the percentage of farmers who work in industrial plants is less. More farmers, however, own their farms. Most of the farming is of the general type, but peaches and some grapes are also grown.

Area 2

Deep, well-drained, friable soils over sericitic schist: Tatum association

This soil association has an area of about 73,020 acres. The soils are on short, gently sloping to moderately sloping ridgetops and dissected, irregular, strongly sloping to steep side slopes. Many drainageways are in this area, and the bottom lands are narrow. The Broad River, Kings Creek, and Thicketty Creek are the main streams. In the northeastern corner of this area are about 5,000 acres of Kings Mountain National Park. McGowans, Draytonville, Saladback, and Whitaker are rounded hills that rise abruptly a few hundred feet and are locally called mountains.

Tatum soils make up about 70 percent of area 2, Nason soils, 10 percent, and Manteo soils, 10 percent (fig. 4). The rest of the association is in Tirzah soils, Mixed alluvial land, and small areas of Orange, Cecil, Madison, Lloyd, and Wilkes soils.

The soils on ridgetops and moderate side slopes are eroded very fine sandy loams and silty clay loams in capability classes II and III. These areas are cultivated and consist mostly of Tatum and Nason soils. Gravelly Manteo soils are on the moderately steep to steep side slopes and broken ridges. Nearly one-third of area 2 is severely eroded silty clay loam.

The Tatum soils have a yellowish-brown surface soil and a yellowish-red to red subsoil. The surface soil of the Nason soil is grayish brown, and the subsoil is mot-

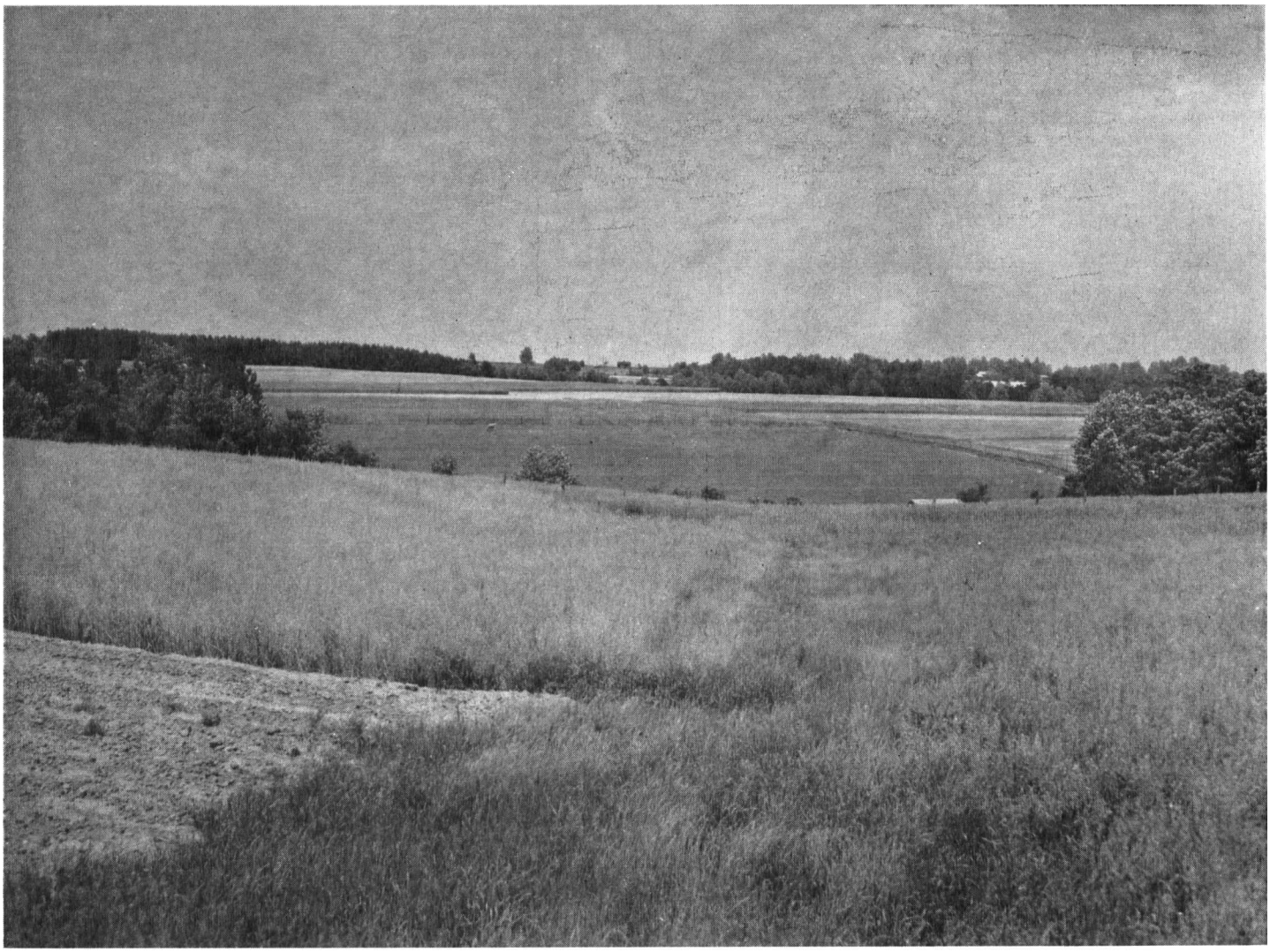

Figure 3.—General soil area 1. Crops planted in strips that have grassed outlets are on soils in classes II and III. Pasture on soils in class IV.

tled strong brown and yellowish red. The Manteo soils have a shallow surface soil and a gravelly subsoil of thin, discontinuous, firm clay. Generally, the soils of area 2 take water slowly and are moderately permeable. The amount of surface runoff is large. These soils are low in organic matter, moisture-supplying capacity, and fertility.

All of area 2 was once cultivated except the steep and the gravelly parts. About 55 percent is now in woods, 20 percent is in pasture, 15 percent is cultivated, and 10 percent is idle or in nonfarm use. Areas that have never been cleared are in mixed hardwoods and some pines. Reforested areas are in pines. Virginia pine is common near Cherokee Falls and Blacksburg. Corn, cotton, grain sorghums, small grains, and vegetables are the main cultivated crops. The most commonly used pasture mixtures are tall fescue and ladino clover, and bermudagrass or bahiagrass mixed with white clover and annual lespedeza. Sericea lespedeza is seeded for hay and pasture except on the Orange and Manteo soils. Beef cattle are raised, and some pulpwood is produced. Nearly all of the poultry in the county is raised in the northern part. The soils in area 2 are only fairly productive. They require large additions of fertilizer and careful management to maintain fertility and to prevent erosion.

Farms in area 2 are generally smaller than the county average in size. The farms are small because of the effects of industry and because of the steep slopes, erosion, and generally low production. The larger farms are in an area south of Gaffney, and the smaller ones are in the thickly populated parts around Gaffney, Cherokee Falls, and Blacksburg. About 90 percent of the farming is done by farmers who also work in industrial plants.

Cherokee Falls, Blacksburg, and the eastern suburbs of Gaffney are centers of urban population and of industrial employment. This area is served by the Southern Railway, by Interstate Highway 85, and other main roads and connecting roads. One gasoline pipeline, two natural gas pipelines, and several power transmission lines also cross area 2. Two brick companies in the north-

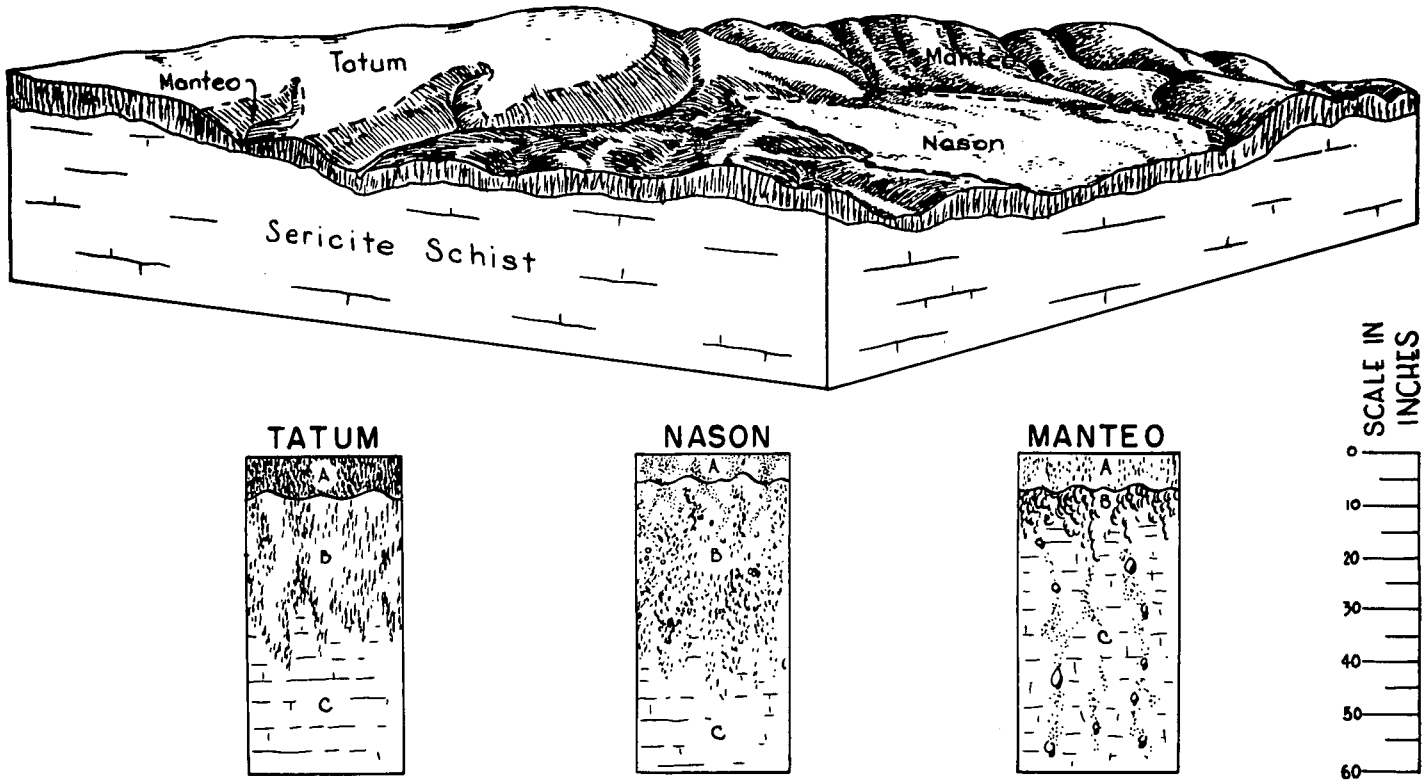

Figure 4.—**Relation of landscape and underlying material in the Tatum soil association.**

eastern corner of area 2 use parts of Manteo, Nason, and Tatum soils to make their product. A limestone company produces large quantities of agricultural lime.

Area 3

Shallow to deep, moderately well drained to well drained soils over mixed basic and acidic rocks: Wilkes-Lloyd association

This association covers about 27,150 acres. It consists of long, narrow ridgetops that are gently sloping to moderately sloping and have irregularly dissected, strongly sloping to steep side slopes. Across the middle of the area are two main ridges that are separated by Gilkey Creek and its bottom lands. Thicketty Creek and adjoining bottom lands extend across the southern part of the area, and the Broad River and its terraces and bottom lands form the eastern boundary. Generally, the ridge north of Gilkey Creek is moderately dissected and the ridgetops are wider than those south of Gilkey Creek.

Wilkes soils make up about 57 percent of this area, and Lloyd soils about 18 percent (fig. 5). About 10 percent consists of Mecklenburg soils and 3 percent Iredell soils. The rest of the association consists of Mixed alluvial land and of Helena, Davidson, and other soils.

The soils in this area are in capability class II, III, IV, VI, and VII. Nearly all of the soils in classes II and III are on ridgetops. Those in class IV are on short, upper side slopes; and those in class VII are on the steeper, dissected side slopes. The shallow Wilkes soils that have never been cultivated are in class VI.

In the southern half of area 3, the soils are generally Wilkes sandy loams. In the northern half, they are Lloyd and Mecklenburg clay loams. The Wilkes soils are shallower than the Lloyd and Mecklenburg soils and have little or no development of the subsoil (B horizon). The Wilkes soils next to the Iredell soils and those in the more nearly level areas have a thin, discontinuous subsoil in some places. Iredell soils are relatively shallow.

Generally, the Wilkes soils are on the steeper, more broken slopes. They are in large areas in the southern half of the county on the ridge between Gilkey and Thicketty Creeks. Lloyd and Davidson soils are mainly on the main ridgetops along the Irene Bridge Road. The Mecklenburg soils are on low slopes, mostly in the northern part of area 3.

The soils in this area are moderately slow in permeability, and surface runoff is in large amounts. Except for the Lloyd and Davidson soils on ridgetops, these soils are low in organic matter, moisture-supplying capacity, and fertility.

All of area 3 except the steepest parts has been cultivated to clean-tilled crops. The wooded areas that were not cultivated have been cut, burned, or grazed. Sheet and gully erosion have been active in the area and are now only partly controlled.

About 67 percent of the area is wooded, 20 percent is in pasture, 8 percent is cultivated, and 5 percent is in nonfarm use. Large parts of the wooded areas have poor stands of trees. Common pasture plants are tall fescue mixed with ladino clover, or bermudagrass mixed with white clover and annual lespedeza. Sericea lespedeza, which is suited to the reddish-brown soils in this area, is seeded for hay and pasture. Crops commonly grown are

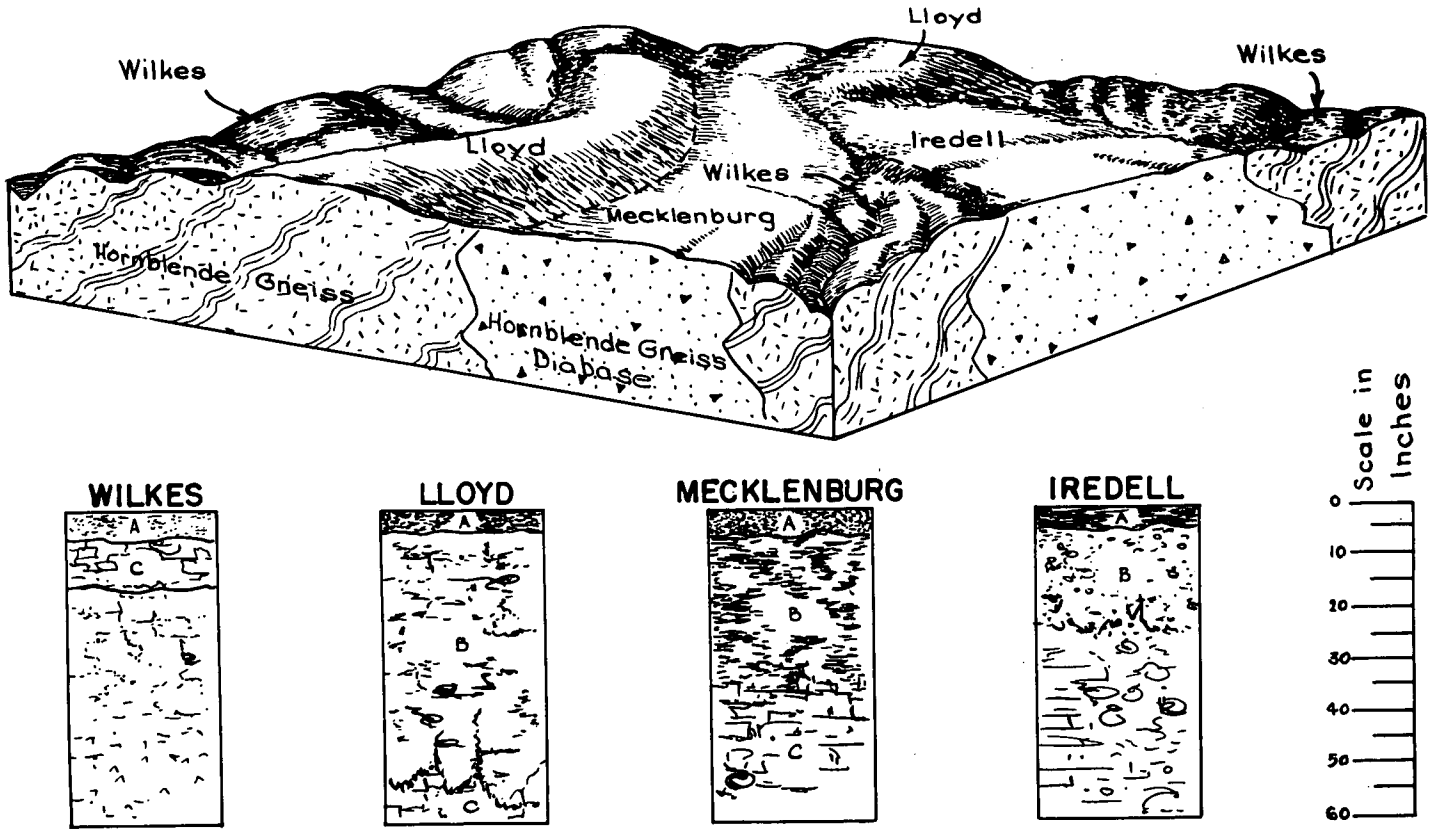

Figure 5.—**Relation of soils to landscape and underlying material in the Wilkes-Lloyd association.**

cotton, corn, grain sorghum, small grains, and annual lespedeza.

The farms in this area are generally larger than the average-sized farm in the county. Beef cattle and pulpwood are the main products. Only about 25 percent of the farmers are living on and farming their own land. Area 3 has adequate roads; the main roads and some connecting roads are paved.

Though most of area 3 was once cultivated, most cultivation is now on the smoother ridgetops because of the steep slopes, erosion, and other unfavorable soil conditions. The natural reforestation of loblolly pine has been slow, and the growth of all pines is slow. The better areas are planted to pasture.

Area 4

Deep, well-drained soils over porphyritic granite or pegmatite: Lockhart association

This soil association has a total area of about 23,580 acres. It is bounded on the north by Gilkey Creek, on the east by the Broad River, and on the south by the Pacolet River. The area consists of long, narrow, gently sloping and moderately sloping ridgetops and strongly sloping and moderately steep side slopes. Two main ridges dominate in the area. Thicketty Creek, the main drainageway in the southern part of the county, flows through it.

Lockhart soils, which occur in one body, occupy about 90 percent of area 4 (fig. 6). Mixed alluvial land is distributed through the area and makes up about 3 percent. The rest of the area consists of Cecil, Appling, and Wilkes soils, and of soils on terraces that border other soil associations.

The soils of area 4 are in capability classes II, III, IV, VI, and VII. On ridgetops the soils are mostly eroded coarse sandy loams in class II, but there are also severely eroded clay loams. Most of the acreage of severely eroded clay loams is in class III, but some is in class IV. Severely eroded clay loams also occur on side slopes, where they are divided about equally in classes IV, VI, and VII.

The Lockhart soils have more definite layers than the Wilkes soils. Their profile is thinner than that of associated soils, and their B horizon is less distinct. Fragments of feldspar are common in the Lockhart soils and, on some slope breaks, rocks or boulders are just below or are on the surface. Infiltration of water is slow, permeability is moderate, and surface runoff is in large amounts. These soils are low in organic matter, moisture-supplying capacity, and fertility.

About 65 percent of area 4 is wooded, 10 percent is cultivated, 15 percent is in pasture, and 10 percent is idle. Cultivation is now generally limited to fairly small fields of class II and III soils on ridgetops. Cotton, corn, grain sorghums, small grains, and annual lespedeza are the cultivated crops. Sericea lespedeza and some cowpeas are planted for hay. Suitable pasture plants are tall fescue mixed with ladino clover, and bermudagrass or bahiagrass mixed with white clover and annual

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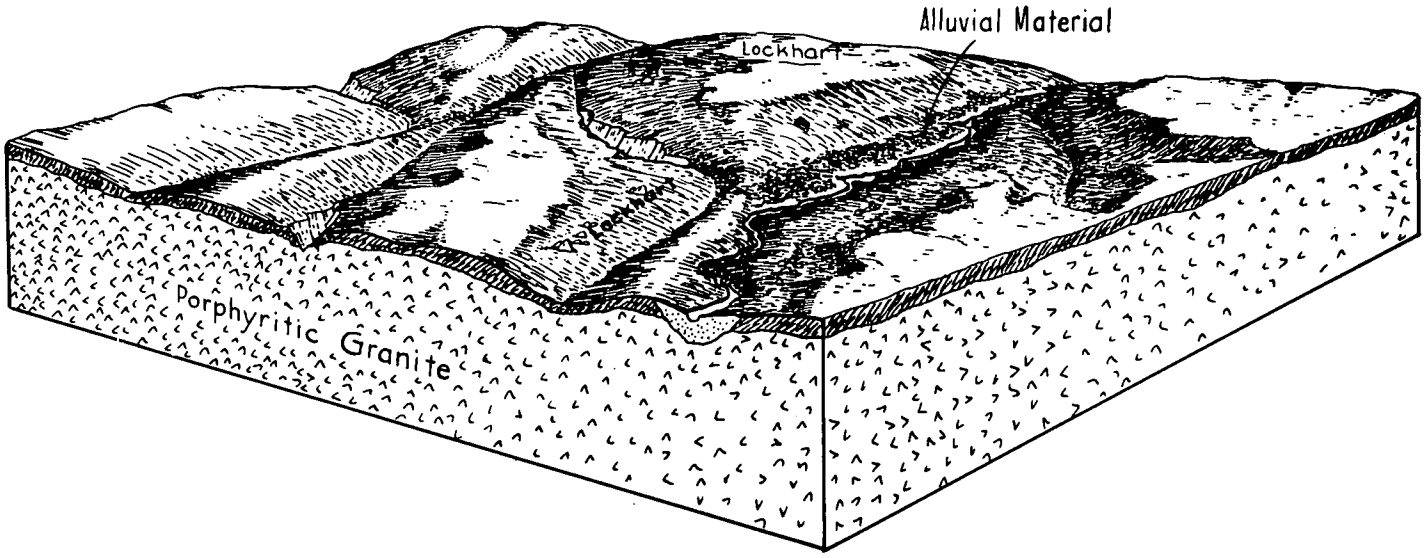

Figure 6.—Landscape and underlying material in Lockhart soil association.

lespedeza. Pasture in kudzu provides limited grazing. Peach orchards, once established in this area, have been abandoned. Most livestock in the area are beef cattle.

The farms in area 4 are above the county average in size, and only about 20 percent of the farm owners live on their land. Nearly all farm buildings are on roads along ridgetops and occupy many acres of gently sloping class II and III land. This is the least populated area in the county and has comparatively few roads. Main roads and some connecting roads are paved.

Because this area was settled early and the settlers practiced clean cultivation on strong slopes, erosion has been active and many deep gullies have formed (fig. 7). Many fields have reforested naturally in loblolly pine, which is harvested for pulpwood and is a leading commercial product.

Area 5

Deep, friable, moderately well drained to poorly drained soils on bottom lands: Mixed alluvial lands

This soil association consists of about 12,310 acres of nearly level bottom lands and terraces, mostly along the Broad and Pacolet Rivers and Thicketty, Gilkey, and Kings Creeks. The terraces, which amount to about 1,310 acres, are generally along the larger streams.

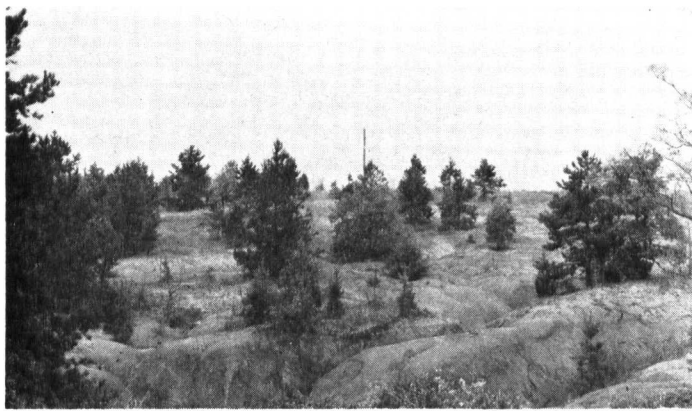

Figure 7.—Gullied land on Lockhart soil.

Mixed alluvial land makes up 40 percent of this association, and Mixed wet alluvial land about 20 percent. Congaree soils amount to 11 percent of the area; Wickham soils, 7 percent; Chewacla soils, 6 percent; Buncombe soils, 4 percent; Altavista soils, 4 percent; and Riverwash, State, and other soils, 8 percent (fig. 8).

The soils in this area are mostly in capability classes II, III, IV, and V. About 62 percent of the acreage on bottom lands is in class II, 26 percent is in class V, 8 percent is in class III, and 4 percent is in class IV. Cultivation of the bottom lands is chiefly on Congaree and State soils, and on the higher, more uniform areas of Mixed alluvial land. The soils on terraces are well drained to moderately well drained and are in cultivated crops and pasture, except for the moderately steep soils that are mostly in pines.

The Congaree, State, Chewacla, and Buncombe soils are on bottom lands and have fairly uniform characteristics. Mixed alluvial land and Mixed wet alluvial land have variable characteristics. The Congaree soils lack a B horizon and are more subject to overflow than the State soils. In some places, the State soils are higher than the Congaree. Chewacla soils have a darker surface soil than the Congaree or State soils and are mottled in the subsoil. The Buncombe soils are light colored, coarse textured, droughty, and fairly unproductive. On bottom lands crop losses are severe once every 3 or 4 years because of floods.

The soils on terraces are deep, friable, and dominantly well drained. They are suited to a wide variety of crops. Except for the droughty Buncombe soils, the soils on bottom lands generally have a good supply of moisture and are productive.

About 70 percent of this area is wooded, about 20 percent is in pasture, and about 10 percent is cultivated. The wooded areas are chiefly in mixed hardwoods of

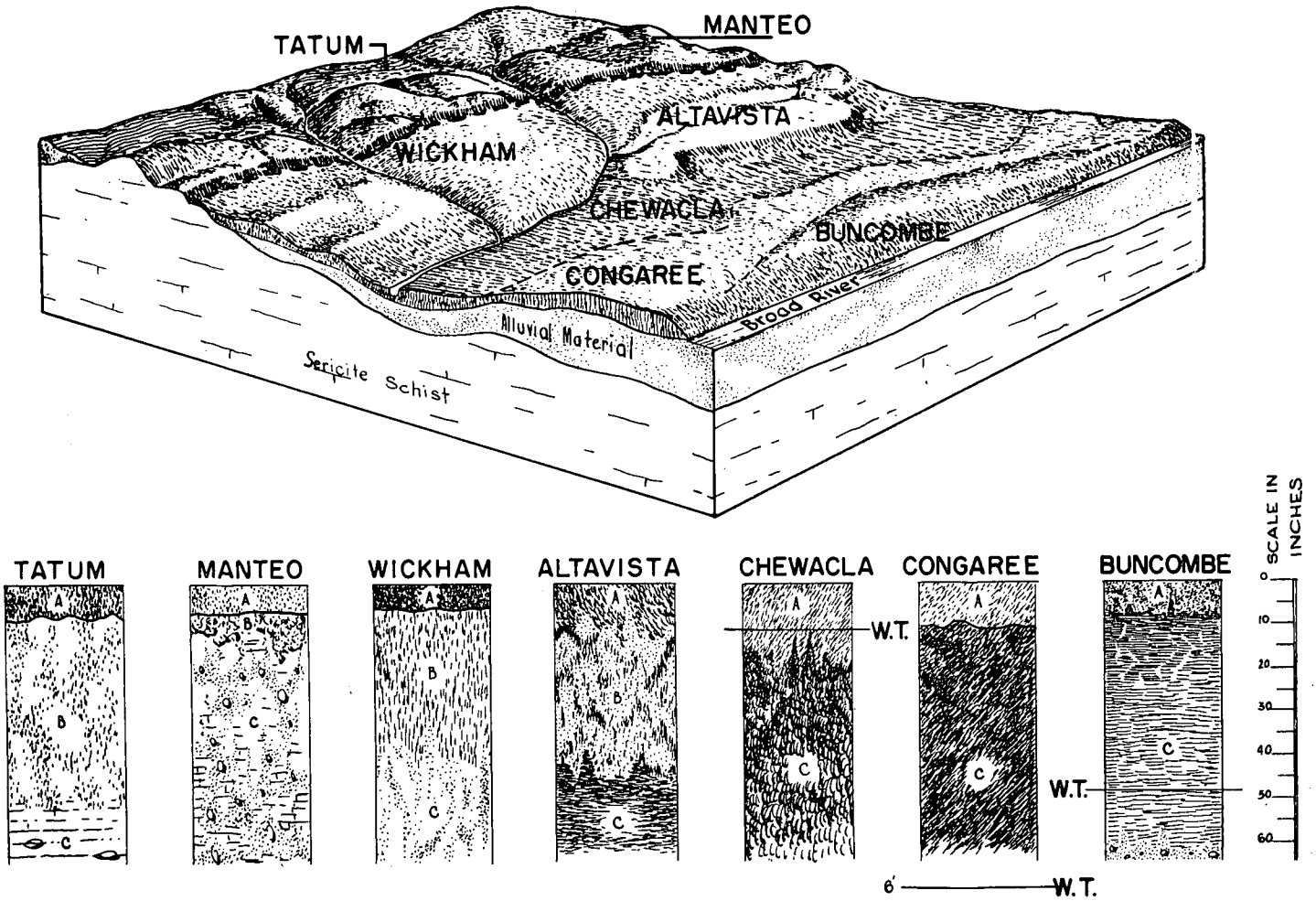

Figure 8.—**Schematic drawing of a small part of soil association 5 showing the relation of the main soil series in the dominant land types, Mixed alluvial land and Mixed wet alluvial land.**

low quality. Except for the more varied and wetter parts, the soils on bottom lands are well suited to shallow-rooted pasture plants grown locally. They are, however, poorly suited to sericea lespedeza and other deep-rooted crops. Most areas in class II soils have high yields of grain sorghums, oats, rye, corn grown for grain or silage, and mixtures of annual pasture plants. Most of this area is well suited to loblolly pine, but surface drainage may be needed on the wetter areas.

Generally, the farmlands in this association are parts of large farms that are partly in other associations. The area has an adequate mileage of through roads and has many unimproved roads that end in stream bottoms. A few homesites are on the terraces.

Though most of this area was cleared and cultivated early, large acreages were abandoned in the period between 1915 and 1935 because of damaging floods. Many areas, particularly those along Thicketty and Gilkey Creeks, received damaging deposits of sand and silt. Most cultivation is on the Broad River, Kings Creek, and the Pacolet River in places that are less likely to be flooded. Because the number of beef cattle is increasing, much of the brush and low-yielding hardwoods is being replaced by pasture.

Soils of Cherokee County

This section contains a discussion of soil survey methods and the detailed descriptions of all soils mapped in the county.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the field, classifies the soils according to the facts he observes, and maps their boundaries on aerial photographs.

OFFICE STUDY.—Before the aerial photographs are taken into the field, a study is made to determine the drainage pattern and slope changes. The depressions where water accumulates and flows are marked with a blue pencil, and abrupt changes of slope are drawn in lightly with a black pencil. Also noted, so that later they can be checked in the field, are indications of severe sheet erosion, gully erosion, sandy areas, and other characteristics that can be seen on the aerial photographs.

FIELD STUDY.—Then the soil scientist bores or digs many holes to see what the soils are like. The holes are not spaced in a regular pattern but are located according

to the lay of the land. Usually they are not more than a quarter of a mile apart, and sometimes they are much closer. In most soils each boring or hole reveals several distinct layers, called horizons, which collectively are known as the soil profile. Each layer is studied to see how it differs from others in the profile and to learn the things about this soil that influence its capacity to support plants.

Color, which is an indication of the content of organic matter, is noted in each layer. The darker the surface layer, as a rule, the more organic matter it contains. Streaks and spots of gray, yellow, and brown in the lower layers generally indicate poor drainage and poor aeration.

Texture, or the content of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers. It is later checked by laboratory analysis. Texture determines how well a soil retains moisture, plant nutrients, and fertilizer, and whether it is easy or difficult to cultivate.

Structure depends on the way the individual soil particles are arranged in aggregates and the amount of pore space between the particles and the aggregates. The ease or difficulty with which the soil is penetrated by plant roots and by moisture is determined to a large degree by structure.

Consistence, or the tendency of the soil to crumble or to stick together, indicates whether the soil is easy or difficult to keep open and porous under cultivation.

Other characteristics observed in the course of the field study and considered in classifying the soils include the following: The depth of the soil over bedrock or compact layers; the presence of gravel or stones in amounts that will interfere with cultivation; the steepness and pattern of slopes; the degree of erosion; the nature of the underlying parent material from which the soil has developed; and acidity or alkalinity of the soil as measured by chemical tests.

CLASSIFICATION.—On the basis of the characteristics observed by the field survey team or determined by laboratory tests, soils are classified into phases, types, and series. The soil type, which may consist of several phases, is the basic classification unit. Types that resemble each other in most of their characteristics are grouped in a soil series.

Soil type.—Soils that are similar in kind, thickness, and arrangement of soil layers are classified as one soil type.

Soil phase.—Because of differences other than those of kind, thickness, and arrangement of layers, some soil types are divided into two or more phases. Variations in slope, frequency of rock outcrops, degree of erosion, depth of soil over the substratum, and natural drainage are examples of characteristics that suggest dividing a soil type into phases.

The soil phase (or the soil type if it has not been subdivided) is the unit shown on the soil map. It is the unit that has the narrowest range of characteristics. Use and management practices, therefore, can be specified more easily for the soil phase than for soil series or yet broader groups that contain more variation.

Soil series.—Two or more soil types that differ in surface texture, but are otherwise similar in kind, thickness, and arrangement of soil layers, are normally designated as a soil series. In a given area, however a soil series may be represented by only one soil type. Each series is named for a place near which it was first mapped.

Miscellaneous land types.—Areas that have little true soil are not classified by types and series but are identified by descriptive names. Examples in Cherokee County are Gullied land, firm material; Gullied land, friable material; Local alluvial land; Mixed alluvial land; Mixed wet alluvial land; Riverwash; and Stony land.

Descriptions of Soils

This section describes the soil series, or groups of similar soils, and the mapping units in Cherokee County. The 23 soil series and 8 miscellaneous land types of the county are arranged in alphabetic order. Each series is described generally and is compared to other series. Then the mapping units in the soil series that have the same texture in the surface layer are described together. For example, all of the mapping units in the Cecil series that have a sandy loam surface layer are described first, and then all that have a clay loam surface layer.

Ordinarily, only one mapping unit in a series is described in detail. The other mapping units are described briefly, mainly by contrasting them with the first one. Characteristics not described and not in the name of the mapping unit are considered similar to those of the mapping unit described in detail.

The description of each mapping unit points out slope, erosion, texture, and other properties that distinguish it from other soils in the series. Frequently the characteristics emphasized for a mapping unit are those that directly affect its use and management.

Following the name of each mapping unit is a symbol, in parentheses, that identifies it on the large map at the back of this report. At the end of each description of a mapping unit is a reference to the capability unit in which it has been placed. Management for each capability unit is discussed in the subsection "Capability Groups of Soils." The location and distribution of the mapping units are shown on the detailed map at the back of this report. The approximate acreage and proportionate extent of the mapping units are given in table 2.

Some of the terms used in describing the soils have been explained in the previous subsection; others in the Glossary. The descriptions of the soil profiles contain most of the terms that may not be familiar or that have special meaning in soil science.

In most of the layers of the profiles, following a color name, there is a Munsell notation, such as (10YR 4/4). This notation is for the use of soil scientists and others who need to define color more precisely than is possible by using words. Munsell notations are described in the "Soil Survey Manual" (*3*)[1]. Most readers can ignore these notations. The color given for a soil is its color when moist.

Altavista series

The Altavista series consists of deep, well drained to moderately well drained, light-colored soils on stream terraces. These soils are medium acid to strongly acid.

[1] Italic numbers in parentheses refer to Literature Cited, p. 103.

TABLE 2.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent
Altavista fine sandy loam, 0 to 2 percent slopes	143	0.1
Altavista fine sandy loam, 2 to 6 percent slopes, eroded	354	.1
Appling sandy loam, 2 to 6 percent slopes	4,747	1.9
Appling sandy loam, 2 to 6 percent slopes, eroded	411	.2
Appling sandy loam, 6 to 10 percent slopes	1,026	.4
Appling sandy loam, 6 to 10 percent slopes, eroded	178	.1
Appling sandy loam, 10 to 15 percent slopes, eroded	452	.2
Appling sandy loam, 15 to 25 percent slopes, eroded	536	.2
Buncombe loamy sand	477	.2
Cecil clay loam, 2 to 6 percent slopes, severely eroded	4,253	1.7
Cecil clay loam, 6 to 10 percent slopes, severely eroded	5,908	2.3
Cecil clay loam, 10 to 15 percent slopes, severely eroded	5,180	2.1
Cecil clay loam, 15 to 25 percent slopes, severely eroded	3,213	1.3
Cecil sandy loam, 2 to 6 percent slopes	3,564	1.4
Cecil sandy loam, 2 to 6 percent slopes, eroded	15,321	6.1
Cecil sandy loam, 6 to 10 percent slopes	775	.3
Cecil sandy loam, 6 to 10 percent slopes, eroded	4,794	1.9
Cecil sandy loam, 10 to 15 percent slopes	982	.4
Cecil sandy loam, 10 to 15 percent slopes, eroded	1,792	.7
Cecil sandy loam, 15 to 25 percent slopes	2,526	1.0
Cecil sandy loam, 15 to 25 percent slopes, eroded	1,292	.5
Cecil sandy loam, 25 to 35 percent slopes	997	.4
Chewacla silt loam	752	.3
Congaree fine sandy loam	424	.2
Congaree silt loam	1,132	.4
Davidson loam, 2 to 10 percent slopes, eroded	256	.1
Davidson loam, 10 to 25 percent slopes, eroded	114	(1)
Gullied land, firm materials	7,269	2.9
Gullied land, friable materials, 2 to 10 percent slopes	1,274	.5
Gullied land, friable materials, 10 to 35 percent slopes	16,311	6.5
Helena sandy loam, 2 to 10 percent slopes, eroded	302	.1
Iredell clay loam, 6 to 10 percent slopes, severely eroded	466	.2
Iredell fine sandy loam, 2 to 6 percent slopes	790	.3
Iredell fine sandy loam, 6 to 10 percent slopes, eroded	625	.2
Lloyd clay loam, 2 to 6 percent slopes, severely eroded	849	.3
Lloyd clay loam, 6 to 10 percent slopes, severely eroded	1,573	.6
Lloyd clay loam, 10 to 15 percent slopes, severely eroded	774	.3
Lloyd clay loam, 15 to 25 percent slopes, severely eroded	912	.4
Lloyd loam, 2 to 6 percent slopes, eroded	1,521	.6
Lloyd loam, 6 to 10 percent slopes, eroded	558	.2
Lloyd loam, 10 to 15 percent slopes, eroded	339	.1
Lloyd loam, 15 to 25 percent slopes	897	.4
Lloyd loam, 25 to 35 percent slopes	571	.2
Local alluvial land	508	.2
Lockhart clay loam, 2 to 6 percent slopes, severely eroded	764	.3
Lockhart clay loam, 6 to 10 percent slopes, severely eroded	2,263	.9
Lockhart clay loam, 10 to 15 percent slopes, severely eroded	1,788	0.7
Lockhart clay loam, 15 to 25 percent slopes, severely eroded	2,055	.8
Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded	1,303	.5
Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded	1,044	.4
Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded	308	.1
Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded	600	.2
Lockhart coarse sandy loam, 25 to 35 percent slopes	197	.1
Louisburg sandy loam, 10 to 35 percent slopes, eroded	384	.2
Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded	1,697	.7
Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded	2,893	1.1
Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded	3,251	1.3
Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded	2,454	1.0
Madison and Cecil sandy loams, 2 to 6 percent slopes	843	.3
Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded	10,395	4.1
Madison and Cecil sandy loams, 6 to 10 percent slopes	557	.2
Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded	4,441	1.8
Madison and Cecil sandy loams, 10 to 15 percent slopes	1,025	.4
Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded	2,904	1.1
Madison and Cecil sandy loams, 15 to 25 percent slopes	2,472	1.0
Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded	1,652	.7
Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded	1,136	.4
Manteo channery silt loam, 2 to 10 percent slopes	377	.1
Manteo channery silt loam, 6 to 15 percent slopes, eroded	624	.2
Manteo channery silt loam, 10 to 15 percent slopes	407	.2
Manteo channery silt loam, 15 to 35 percent slopes	4,420	1.8
Manteo channery silt loam, 15 to 35 percent slopes, eroded	1,148	.5
Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded	231	.1
Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded	605	.2
Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded	555	.2
Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded	783	.3
Mecklenburg loam, 2 to 6 percent slopes, eroded	413	.2
Mecklenburg loam, 6 to 15 percent slopes, eroded	429	.2
Mecklenburg loam, 15 to 25 percent slopes	471	.2
Mixed alluvial land	11,161	4.4
Mixed wet alluvial land	4,211	1.7
Nason very fine sandy loam, 2 to 6 percent slopes	1,599	.6
Nason very fine sandy loam, 6 to 10 percent slopes, eroded	1,182	.5
Nason very fine sandy loam, 10 to 15 percent slopes, eroded	734	.3

See footnote at end of table.

TABLE 2.—*Approximate acreage and proportionate extent of the soils*—Continued

Soil	Acres	Percent	Soil	Acres	Percent
Nason very fine sandy loam, 15 to 25 percent slopes	1, 208	0. 5	Tatum very fine sandy loam, 15 to 25 percent slopes	6, 390	2. 5
Nason silty clay loam, 2 to 10 percent slopes, severely eroded	457	. 2	Tatum very fine sandy loam, 15 to 25 percent slopes, eroded	5, 043	2. 0
Nason silty clay loam, 10 to 25 percent slopes, severely eroded	1, 835	. 7	Tatum very fine sandy loam, 25 to 35 percent slopes	3, 383	1. 3
Orange silt loam, 2 to 6 percent slopes, eroded	125	(1)	Tirzah silt loam, 2 to 6 percent slopes, eroded	183	. 1
Riverwash	259	. 1	Tirzah silt loam, 6 to 10 percent slopes, eroded	385	. 2
State fine sandy loam	148	. 1	Tirzah silt loam, 10 to 15 percent slopes, eroded	225	. 1
Stony land	1, 161	. 5	Tirzah silt loam, 15 to 25 percent slopes, eroded	270	. 1
Tatum silty clay loam, 2 to 6 percent slopes, severely eroded	1, 913	. 8	Wickham sandy loam, 2 to 6 percent slopes	282	. 1
Tatum silty clay loam, 6 to 10 percent slopes, severely eroded	6, 506	2. 6	Wickham sandy loam, 2 to 10 percent slopes, eroded	362	. 1
Tatum silty clay loam, 10 to 15 percent slopes, severely eroded	6, 077	2. 4	Wickham sandy loam, 10 to 25 percent slopes, severely eroded	167	. 1
Tatum silty clay loam, 15 to 35 percent slopes, severely eroded	5, 523	2. 2	Wilkes sandy loam, 2 to 6 percent slopes	395	. 2
Tatum very fine sandy loam, 2 to 6 percent slopes	573	. 2	Wilkes sandy loam, 6 to 15 percent slopes	1, 801	. 7
Tatum very fine sandy loam, 2 to 6 percent slopes, eroded	6, 381	2. 5	Wilkes sandy loam, 6 to 15 percent slopes, eroded	2, 861	1. 1
Tatum very fine sandy loam, 6 to 10 percent slopes	763	. 3	Wilkes sandy loam, 15 to 25 percent slopes, eroded	8, 492	3. 4
Tatum very fine sandy loam, 6 to 10 percent slopes, eroded	5, 550	2. 2	Wilkes sandy loam, 15 to 35 percent slopes	4, 719	1. 9
Tatum very fine sandy loam, 10 to 15 percent slopes	1, 029	. 4	Worsham sandy loam, 0 to 6 percent slopes	1, 605	. 6
Tatum very fine sandy loam, 10 to 15 percent slopes, eroded	2, 729	1. 1	Worsham sandy loam, 2 to 10 percent slopes, eroded	203	. 1
			Water	243	. 1
			Total	252, 160	100. 0

[1] Less than 0.1 percent.

They formed in general alluvium on nearly level to gentle slopes in small areas adjacent to or near bottom lands.

The surface layer is 5 to 12 inches thick. It ranges from sandy loam to silt loam in texture and from grayish brown to olive brown in color. The subsoil is 20 to 36 inches thick and consists of yellowish-brown clay loam, somewhat mottled with dark brown and red.

These soils are moderately permeable and moderately low in fertility. They contain a moderate amount of organic matter and have a moderate moisture-supplying capacity.

The Altavista soils lie along the main drainageways. They occur with Wickham soils and adjacent to soils on bottom lands or uplands. They are lower lying than the Wickham soils and are not so reddish as those soils.

Altavista soils formed under mixed hardwoods. Most of the acreage is in pasture or is wooded. Small areas are cultivated or are idle.

Altavista fine sandy loam, 2 to 6 percent slopes, eroded (AfB2).—This deep, well-drained, friable soil formed on the lower slopes of stream terraces in the uplands of the Piedmont.

Typical profile (in a gently sloping cultivated field on Buffalo Creek, 4 miles west of Blacksburg):

A_p 0 to 9 inches, olive-brown (2.5Y 4/4) fine sandy loam; moderate, medium, granular structure; very friable when moist; many small roots; few quartz pebbles; strongly acid; clear, wavy boundary.

B_1 9 to 11 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, fine, subangular blocky structure; friable when moist; many small roots; few quartz pebbles; medium acid; gradual, wavy boundray.

B_2 11 to 42 inches, yellowish-brown (10YR 5/8) clay loam; moderate, medium, subangular blocky structure; slightly sticky when wet, firm to friable when moist, and slightly hard when dry; few roots to depth of 26 inches; few medium, dark-brown (7.5YR 4/4) and fine red (2.5YR 4/6) aggregates at 24 to 28 inches; brown aggregates are larger than red and slightly hard at 28 inches; faint clay films at 24 to 28 inches; moderate amount of fine mica; medium acid; gradual, wavy boundary.

C 42 inches +, light brownish-gray (2.5Y 6/2) and yellowish-brown (10YR 5/8) clay loam; friable when moist, slightly sticky when wet, crumbly when dry; clay films on gray aggregates; considerable amount of fine mica; material in this layer is very fine sand.

The surface layer ranges from 5 to 10 inches in thickness. The subsoil is 20 to 36 inches thick. In the lower part of the B horizon, the colors vary but are mainly browns and reds. The C horizon varies in texture and in color but, in most places, is friable, slightly sticky clay loam. The clay loam contains a considerable amount of fine sand. A few strata of small pebbles occur. Fine mica is common in the lower part of the B horizon and in the C.

Included with this soil are small areas of sandy loam and gravel. Also included are a few severely eroded spots and a few small areas with slopes of more than 6 percent.

Use and management.—Most of Altavista fine sandy loam, 2 to 6 percent slopes, eroded, has been cleared and cultivated. Cotton, corn, hay, and other crops were grown, but most of the acreage is now in pasture. Small areas are in woods, are cultivated, or are idle.

This soil is fairly well suited to most crops locally

grown. It is not suited to peaches and is poorly suited to cotton or alfalfa.

This soil responds to fertilization and other good management. If managed well, it produces good yields of corn, grain sorghums, oats, rye, and soybeans. To prevent excessive erosion, divert water from higher lying slopes and control runoff. Manage crop residue so that tilth is improved and crusting is prevented in areas where the sandy surface soil is thin.

Pasture plants suited to this soil are sericea lespedeza, tall fescue, ladino clover, and bahiagrass or bermudagrass seeded with crimson clover or white clover. Control grazing to maintain cover and to prevent compaction in eroded areas. (Capability unit IIe-2.)

Altavista fine sandy loam, 0 to 2 percent slopes (AfA).—This soil is deep, moderately well drained, and friable. Its surface layer is 5 to 12 inches thick and, in most places, is thicker than that in Altavista fine sandy loam, 2 to 6 percent slopes, eroded.

This soil is fairly well suited to most crops grown in the county. It is not suited to peaches and is poorly suited to cotton or alfalfa. If adequately limed and fertilized, it produces good yields of corn, grain sorghum, oats, rye, and soybeans. It is easy to manage, and it responds to good management. Crop residue should be handled in a way that will maintain tilth and fertility.

Pasture plants suited to this soil are sericea lespedeza, annual lespedeza, tall fescue seeded with ladino clover, and bahiagrass or bermudagrass seeded with crimson clover or white clover. For high yields of hay or pasture, this soil needs lime and fertilizer. (Capability unit I-2.)

Appling series

The Appling series consists of deep, well-drained, light-colored soils that formed on weathered granite, gneiss, or schist. These soils are medium acid to strongly acid. In some small areas the parent materials contain quartz and are gravelly. Dominant slopes are less than 10 percent, but slopes range from 2 to 25 percent.

The surface layer ranges from sandy loam in slightly eroded areas to clay loam in severely eroded areas. The subsoil is yellowish red to yellowish brown and is mottled in the lower part. It is 30 to 45 inches thick. The amount of mica in these soils varies.

The Appling soils have a friable subsoil and are moderate to moderately slow in permeability. Their available moisture-holding capacity is moderate. They contain a medium amount of organic matter and have moderate natural fertility.

Appling soils occur with the Cecil, Madison, Lockhart, Louisburg, and Helena soils. They are yellower but less uniformly colored than the Cecil and Madison soils. Appling soils are less friable than the Madison and contain fewer pebbles. Their subsoil is finer textured, firmer, and yellower than that in the Lockhart soils, and they lack the fragments of feldspar that are common in those soils. They have a coarser textured, much more friable subsoil than have the Helena soils, which formed on parent materials derived from mixed acidic and basic rocks.

These soils are in the western part of the county. Most of the acreage has been cleared and cultivated and is now in crops, pasture, or trees. Small areas are idle.

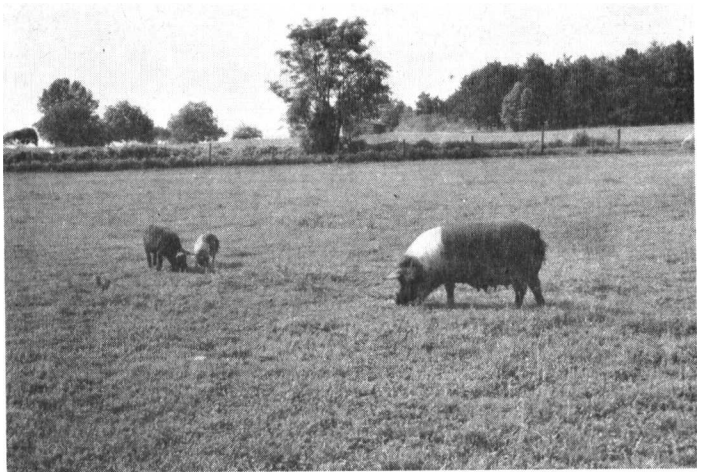

Figure 9.—**Ladino clover on Appling sandy loam, 2 to 6 percent slopes.**

Appling sandy loam, 2 to 6 percent slopes (ApB).—This is a deep, well-drained soil that formed on weathered gneiss on gently sloping uplands.

Typical profile (in a cultivated field 4 miles northwest of Gaffney):

- A_p 0 to 6 inches, dark yellowish-brown (10YR 4/4) sandy loam; weak, fine, granular structure; very friable when moist; many fine roots; medium acid; abrupt, smooth boundary.
- B_{21} 6 to 15 inches, yellowish-red (5YR 4/8) sandy clay loam; moderate, medium, subangular blocky structure; friable when moist; strongly acid to medium acid; gradual, wavy boundary.
- B_{22} 15 to 48 inches, yellowish-red (5YR 4/8) and yellowish-brown (10YR 5/6) clay; moderate, medium, subangular blocky structure; friable when moist, firm when dry; strongly acid to medium acid; gradual, wavy boundary.
- C 48 inches +, friable material weathered from gneiss.

The A horizon ranges from 6 to 12 inches in thickness. Infiltration is moderately rapid, and runoff is slow. A few shallow to moderately deep gullies have formed.

Included with this soil are small areas of fine sandy loam on slopes of 0 to 2 percent. Also included are very small gravelly areas and eroded areas.

Use and management.—Because it is deep, well drained, and easy to till, this soil is suited to all crops grown in the area (fig. 9). It is not so well suited to annual lespedeza and other crops that have short, fine roots.

Terraces and outlets are needed to dispose of excess water that causes erosion. Stripcropping and good management of crop residue help to protect terraces and to increase the organic-matter content and the available moisture-holding capacity.

This soil responds to lime and fertilizer and produces high yields of crops if adequate amounts of these amendments are added. (Capability unit IIe-2.)

Appling sandy loam, 2 to 6 percent slopes, eroded (ApB2).—The surface layer of this eroded soil is generally thinner than that in Appling sandy loam, 2 to 6 percent slopes, and more varied in other characteristics. The subsoil is sandy clay loam, which, in many places, has been mixed with the original surface soil by plowing.

Infiltration is moderate to slow, and runoff is medium. Many rills, many shallow gullies, and a few moderately deep gullies have formed.

Included with this soil are many severely eroded areas where the sandy clay loam subsoil is exposed. Also included are a few small gravelly areas.

Because of its thin, more variable surface layer, this soil is not so well suited to frequent cultivation as Appling sandy loam, 2 to 6 percent slopes. It is suited to hay or pasture. If it is cultivated, this soil needs protection from further erosion. To obtain high yields, add adequate amounts of fertilizer. (Capability unit IIe-2.)

Appling sandy loam, 6 to 10 percent slopes (ApC).—This soil has a thinner, more varied surface layer than Appling sandy loam, 2 to 6 percent slopes, and a subsoil that is more friable and less distinctly mottled. Water infiltrates rapidly, and runoff is medium. In areas that were once cultivated, shallow gullies are common and a few deep ones have formed.

Included with this soil are small gravelly areas, and very small areas with slopes of more than 10 percent. Near Goucher small areas contain a considerable amount of coarse fragments of granite and quartz as well as a few boulders.

This soil is well suited to hay and pasture. It is not so well suited to cultivated crops as is Appling sandy loam, 2 to 6 percent slopes. If it is cultivated, this soil ought to be protected against erosion and loss of water through runoff. Long crop rotations and additions of crop residue increase the content of organic matter and the available water-holding capacity. (Capability unit IIIe-2.)

Appling sandy loam, 6 to 10 percent slopes, eroded (ApC2).—This eroded soil has stronger slopes and more rapid runoff than Appling sandy loam, 2 to 6 percent slopes. Infiltration of water is medium to slow, and runoff is rapid. Shallow gullies are common, and a few deep ones have formed.

Included with this soil are many severely eroded areas where the subsoil has been mixed with remnants of the original surface soil. In these areas the surface layer is sandy clay loam to clay loam. Also included are a few small gravelly areas.

This soil is best suited to perennial hay, to pasture, or to trees. Because of its strong slopes, thin surface layer, and rapid runoff, it is not suited to frequent cultivation. If it is cultivated, use practices that will conserve soil and water. Long crop rotations and good management of crop residue will help to maintain tilth and fertility. To keep a good cover on this soil, apply sufficient fertilizer and regulate grazing. (Capability unit IIIe-2.)

Appling sandy loam, 10 to 15 percent slopes, eroded (ApD2).—This strongly sloping, eroded soil has more rapid runoff and a thinner surface layer than has Appling sandy loam, 2 to 6 percent slopes, and a thinner, more friable subsoil. Infiltration of water is medium to slow, and runoff is medium to rapid. Gullying is common. Many of the gullies are shallow, and a few are moderately deep to deep.

Included with this soil are some severely eroded areas. The surface layer of these inclusions is sandy clay loam to clay loam. Also included are small gravelly areas and very small areas with slopes of more than 15 percent.

Because it is in small, strongly sloping areas, this soil is not suited to frequent cultivation. It is best suited to pasture and trees. Suitable pasture plants are sericea lespedeza, kudzu, and other perennials. This soil responds to lime and fertilizer. It needs large additions of fertilizer if it is to produce good pasture. (Capability unit IVe-1.)

Appling sandy loam, 15 to 25 percent slopes, eroded (ApE2).—This steep, eroded soil has in many places a subsoil that is thin, very friable, and light colored. Infiltration of water is moderate to slow, and runoff is rapid. Gullying is common in cleared areas, where many shallow and a few moderately deep to deep gullies have formed.

Included with this soil are medium-sized to small, severely eroded areas. In these areas the surface layer is sandy clay loam or clay loam and is chiefly subsoil material. Also included are small gravelly areas and a few small areas on slopes of more than 25 percent.

Because it is steep and its plow layer is mostly subsoil material, this soil is not suited to crops. It is best suited to trees. Some areas on the lower parts of slopes, however, can produce fairly good permanent pasture if fertilizer is added and grazing is regulated. (Capability unit VIe-2.)

Buncombe series

The Buncombe series consists of deep, excessively drained, light-colored soils. These soils consist of recent sandy alluvium on high bottom lands along the larger streams. Slopes range from 0 to 3 percent and, in many places, are undulating.

The surface layer of these soils is pale yellowish-brown to dark yellowish-brown loamy sand. It is underlain by light yellowish-brown to dark yellowish-brown and grayish-brown loamy fine sand. In many places, layers of mixed sand and gravel are at a depth of more than 4 feet. These soils are low in organic matter and fertility and are medium acid to strongly acid.

Buncombe soils occur with Mixed alluvial land and with State, Chewacla, and Congaree soils. They are more excessively drained than Mixed alluvial land and are more uniform in texture. They are on higher elevations, are lighter colored, and are sandier than the State, Congaree, and Chewacla soils. Buncombe soils are more excessively drained than the well drained State and Congaree soils and the moderately well drained to somewhat poorly drained Chewacla soils.

The larger areas of Buncombe soils in this county are along the Broad River. Most of the acreage has been cleared and cultivated but is now in hardwoods, pines, or pasture. Because they are droughty, these soils are suited to only a narrow range of crops.

Only one Buncombe soil is mapped in Cherokee County.

Buncombe loamy sand (0 to 3 percent slopes) (Bc).—This is a deep, excessively drained soil that formed on high bottom land along large drainageways.

Typical profile (in an unimproved pasture along the Broad River):

A_{1p} 0 to 1 inch, dark yellowish-brown (10YR 4/4) loamy sand; weak, medium, crumb structure; loose when moist, soft when dry; many fine roots; fine mica; medium acid; clear, wavy boundary.

A_{2p} 1 to 8 inches, yellowish-brown (10YR 5/4) loamy fine sand; weak, fine, crumb structure; loose when moist; many fine roots; few coarse fragments of quartz; fine mica; medium acid; gradual, wavy boundary.

C_1 8 to 24 inches, light yellowish-brown (10YR 6/4) loamy fine sand with a few lighter colored spots or splotches and a few brown spots; structureless; loose when moist; few medium roots; fine mica; strongly acid; clear, wavy boundary.

C_2 24 to 30 inches, dark grayish-brown (10YR 4/2) light fine sandy loam or loamy fine sand with a few lighter or darker spots; weak, fine, crumb structure; fine mica; strongly acid.

C_3 30 to 60 inches, dark yellowish-brown (10YR 4/4) loamy fine sand or very light fine sandy loam; structureless; fine mica; loose; strongly acid.

The surface soil ranges from pale yellowish brown to dark yellowish brown. The A_{1p} horizon is 0 to 2 inches thick, and the A_{2p} horizon is 5 to 8 inches thick. The C horizons range from pale brown to dark grayish brown. In many areas, the C_2 horizon is missing, but generally it occurs in low-lying flats. Some areas contain pebbles or small fragments of quartz.

This soil has slow surface runoff, rapid permeability, and low moisture-supplying capacity. It is low in organic matter and natural fertility and is medium acid to strongly acid. The root zone is thick and tilth is good.

Use and management.—Most of Buncombe loamy sand has been cultivated but is now in woods or pasture. Because it is droughty, this soil has only a limited use for crops. The less droughty areas, however, will produce corn, annual hay, and bermudagrass, but these areas need to be fertilized heavily. (Capability unit IIIs-2.)

Cecil series

The Cecil series consists of deep, well-drained, friable soils that are gently sloping to steep. These soils formed in uplands on weathered gneiss and schist. They are medium acid.

The surface layer of the Cecil soils in Cherokee County ranges from sandy loam to clay. In eroded areas, this layer is clay loam and clay because most of the original surface has been removed by erosion. The original surface layer is 7 to 13 inches thick and, in the less eroded areas, is grayish brown to yellowish brown. The subsoil is 30 to more than 70 inches thick and is yellowish red to red. The depth to bedrock ranges from 6 to more than 40 feet.

Cecil soils are moderate in permeability and in available moisture-supplying capacity. They are moderately low in organic matter and in natural fertility. Infiltration ranges from medium in sandy loam to slow in clay loam.

In Cherokee County, the Cecil soils are mainly in the northwestern part and are the dominant soils in that area. In most places they occur with the Appling and Madison soils. In some places they occur with Wilkes soils, and in some places they are adjacent to the Tatum, Helena, Lockhart, or Louisburg soils.

The Cecil soils have a browner surface layer and a redder subsoil than have the Appling soils. Their surface soil contains less gravel than that of the Madison soils, and their entire profile contains less mica. Cecil soils are slightly less friable than the Madison soils. They are deeper, redder, and have more distinct horizons than the Wilkes soils, which formed on mixed basic and acidic rocks. The Cecil soils resemble the Tatum soils but are coarser textured and more productive. They are redder than the Helena soils and are coarser textured in the subsoil. They lack the fragments of feldspar that are common in the Lockhart soils and have a thicker and more stable subsoil than those soils. The layers in the Cecil soils are more distinct than those in the Louisburg soils.

Cecil soils formed under mixed hardwoods. Areas that were once cultivated and have reforested naturally are in pines, and some areas that have not been cultivated are in mixed hardwoods and a few pines. Uneroded Cecil soils on the milder slopes are suited to all crops grown in the county.

Cecil sandy loam, 2 to 6 percent slopes, eroded (CdB2).—This deep, well-drained soil formed on weathered gneiss or granite on uplands of the Piedmont.

Typical profile (in a moist, cultivated field 3 miles northwest of Gaffney):

A_p 0 to 6 inches, dark-brown (10YR 4/3) sandy loam; weak, fine, granular structure; very friable when moist; many roots; few small fragments of quartz; medium acid; abrupt, smooth boundary.

B_1 6 to 13 inches, yellowish-red (5YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable when moist; few fine roots; medium acid; clear, smooth boundary.

B_{21} 13 to 23 inches, red (2.5YR 5/6) clay; moderate, medium, subangular blocky structure; firm when moist, hard when dry; continuous clay films; low content of mica; medium acid; gradual, smooth boundary.

B_{22} 23 to 45 inches, red (2.5YR 5/8) clay to clay loam; firm to friable when moist, hard when dry; continuous clay films; few mica flakes; few yellowish-red mottles; medium acid; gradual, smooth boundary.

B_3 45 to 70 inches, red (2.5YR 5/6) clay loam; weak, medium, subangular blocky structure; friable when moist; moderate content of mica; few yellowish-red mottles; medium acid.

C 70 inches +, yellowish-red (5YR 5/6) partly weathered quartz mica schist or gneiss that contains a considerable amount of mica; medium acid.

The A horizon ranges from 4 to 7 inches in thickness and from grayish brown to reddish brown in color. The subsoil is reddish brown to red. A few mottles or splotches are in the lower part of the B horizon, and a few mica flakes are in the B and C horizons.

Included with this soil are some areas of fine sandy loam and a few small severely eroded areas that have a clay loam surface soil. Also included are some gravelly areas that contain fragments of quartz or of other underlying rocks.

All of this soil has been cultivated to cotton, corn, small grain, or other clean-tilled crops. Most of it is now cultivated or in pasture, but a few small areas are wooded or are idle.

Use and management.—Because it is gently sloping, is in good tilth, has a friable subsoil, and has a good content of moisture, this soil is well suited to all crops grown locally. It responds to fertilization and other good management. Moderate practices to conserve soil and water will maintain tilth and productivity. (Capability unit IIe-1.)

Cecil sandy loam, 2 to 6 percent slopes (CdB).—The surface layer in this soil is 6 to 12 inches thick and is thicker than that in Cecil sandy loam, 2 to 6 percent slopes, eroded. In most places the surface layer is

grayish brown, but in small areas where subsoil material has been brought up by tillage, it is yellowish brown. Included with this soil are a few very small gravelly areas and areas that have slopes of less than 2 percent.

Small areas of this soil are cultivated, but most of it remains in stands of hardwoods or of hardwoods and a few pines. The cleared acreage is in clean-tilled crops and pasture.

This soil is better suited to crops than Cecil sandy loam, 2 to 6 percent slopes, eroded. It is well suited to all crops grown locally. It responds to fertilization and other management and can be used continuously if simple practices of soil management are used. (Capability unit IIe-1.)

Cecil sandy loam, 6 to 10 percent slopes (CdC).—Erosion has not been active on this strongly sloping soil. The surface layer is grayish-brown sandy loam, 6 to 10 inches thick. A few gravelly spots are included.

Most of this soil is in stands of hardwoods and a few pine. A small part is in crops or pasture. This soil is suited to a wide range of uses, but it is likely to erode if it is cultivated frequently. It responds to fertilization and other good management. If it is cultivated continuously, moderate management is needed. (Capability unit IIIe-1.)

Cecil sandy loam, 6 to 10 percent slopes, eroded (CdC2).—This strongly sloping soil has more rapid runoff than Cecil sandy loam, 2 to 6 percent slopes, eroded. The plow layer is yellowish-brown sandy loam, 4 to 6 inches thick. Included with this soil are a few severely eroded spots and a few areas where moderately deep gullies have formed. Also included are a few gravelly areas.

Most of this soil has been cultivated to small grain and to cotton, corn, and other clean-tilled crops, but much of it is now in pasture and peach orchards. Small areas are in pines, and very small parts are idle.

This soil is suited to peaches, pasture, or hay. It is susceptible to erosion if it is cultivated. It responds to fertilization and other good management but needs moderate practices of soil and water conservation. (Capability unit IIIe-1.)

Cecil sandy loam, 10 to 15 percent slopes (CdD).—This strongly sloping soil has more and faster runoff than Cecil sandy loam, 2 to 6 percent slopes, eroded. The grayish-brown sandy loam surface soil ranges from 7 to 12 inches in thickness. In many areas the subsoil is thinner, lighter colored, and contains less clay than that in Cecil sandy loam, 2 to 6 percent slopes, eroded. A few small areas of gravelly soils are included.

Little of this soil has been cultivated. Most of it remains in stands of hardwoods and a few pines. The cleared acreage is mostly in pasture, but a few cleared areas are idle.

This soil is suited to bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza. Because slopes are strong, modern farm machinery is difficult to use. If cultivated, this soil should be protected from erosion by intense management, and by the use of crop rotations in which cultivated crops are not grown frequently. (Capability unit IVe-1.)

Cecil sandy loam, 10 to 15 percent slopes, eroded (CdD2).—This strongly sloping soil has much more and faster runoff than Cecil sandy loam, 2 to 6 percent slopes, eroded, and a slightly thinner surface soil. Severely eroded spots are more numerous. In some areas the subsoil is thinner, lighter colored, and more friable than that of Cecil sandy loam, 2 to 6 percent slopes, eroded. Included with this soil are a few gravelly areas and some severely eroded spots where a few moderately deep gullies have formed.

Most of this soil is in hay or pasture. Some small areas are in peach orchards or forest trees, or are idle.

This soil is best suited to pasture, perennial hay, or trees. Annual lespedeza, sericea lespedeza, and bahiagrass or bermudagrass seeded with whiteclover and annual lespedeza will control erosion and provide good yields of hay or pasture. This soil responds to fertilizer, but frequent cultivation may cause erosion. If it is cultivated, apply fertilizer, use long crop rotations, and control water. (Capability unit IVe-1.)

Cecil sandy loam, 15 to 25 percent slopes (CdE).—This moderately steep soil is deep, well drained, and friable. It is on breaks that slope to medium sized and small streams. The sandy surface soil is 7 to 12 inches thick, but runoff is rapid and the risk of erosion is great. The subsoil, in many places, is thinner and contains less clay than that of Cecil sandy loam, 2 to 6 percent slopes, eroded. Included with this soil are a few gravelly areas. A few moderately deep gullies have formed.

Most of this soil is in stands of mixed hardwoods. Areas that have been heavily cut, burned, or grazed are in hardwoods mixed with pines. Open areas are in pasture or are idle.

Because erosion is likely and the use of modern farm machinery is difficult, this soil is not suited to cultivated crops. It responds to fertilizer, however, and is fairly well suited to bahiagrass, bermudagrass, sericea lespedeza, kudzu, and other pasture plants. (Capability unit VIe-2.)

Cecil sandy loam, 15 to 25 percent slopes, eroded (CdE2).—This moderately steep soil is deep, well drained, and friable. The grayish-brown sandy loam surface soil is 4 to 8 inches thick. The subsoil is generally thinner and sandier than that in Cecil sandy loam, 2 to 6 percent slopes, eroded.

Included with this soil are many areas of clay loam where clayey subsoil material has been plowed into the surface soil. Also included are a few gravelly areas and a few areas where moderately deep gullies have formed.

Most of this soil has been cultivated for only a short time. It is now in pasture, in stands of mixed hardwoods and pines, or in small idle areas. Because of the moderately steep slopes and the hazard of further erosion, this soil is not suited to crops. It responds to fertilizer and if well managed will produce fair yields of annual lespedeza, of kudzu, and of bermudagrass or bahiagrass mixed with whiteclover. (Capability unit VIe-2.)

Cecil sandy loam, 25 to 35 percent slopes (CdF).—This steep soil is in very small areas that slope up from bottom lands or directly from the edge of streams. The subsoil is red to reddish brown and, in many places, is thin, very friable to loose, and contains only a small amount of clay. Included with this soil are a few small gravelly areas, a few stony spots, and a few areas where moderately deep gullies have formed.

Most of this soil is still in stands of mixed hardwoods that, where disturbed by grazing animals or by fire, have a few pines intermingled. Because of the steep slopes and the risk of erosion, this soil is not well suited to crops or pasture. Open areas within pastures will produce limited grazing if these areas are seeded to kudzu and are well managed. (Capability unit VIIe-1.)

Cecil clay loam, 2 to 6 percent slopes, severely eroded (CcB3).—This soil is in medium-sized areas on gently sloping ridgetops and in small areas surrounded by soils with slopes greater than 6 percent. Its surface soil is reddish brown and much finer textured than that in Cecil sandy loam, 2 to 6 percent slopes, eroded, and it has slower infiltration than the sandy loam and more rapid runoff. Most of the original sandy loam surface soil is gone; many shallow and a few moderately deep gullies have formed. The moisture-supplying capacity is moderately low.

All of this soil has been cultivated to cotton, corn, small grain, and other clean-tilled crops. Most of it is now in pasture or crops, but a few small areas are planted to pines, are idle, or are in nonfarm use.

This soil is best suited to pasture or close-growing crops, but it will also produce good yields of row crops if it is fertilized and otherwise well managed. If cultivated, this soil needs moderately intensive practices to control erosion and to improve the soil. (Capability unit IIIe-1.)

Cecil clay loam, 6 to 10 percent slopes, severely eroded (CcC3).—This soil occurs in small areas at the head of drainageways and in larger areas on slopes adjacent to medium-sized drainageways. The surface soil is reddish brown. This soil has steeper and shorter slopes than has Cecil sandy loam, 2 to 6 percent slopes, eroded, and finer texture, slower infiltration, and faster runoff. Nearly all of the original surface soil is gone, and many shallow gullies and a few deep ones have formed. Included with this soil are a few gravelly areas.

All of this soil has been cultivated but is now in pasture, crops, or trees, or is idle. Because it is sloping and susceptible to severe erosion, it is not well suited to row crops. It is best suited to pasture, perennial hay, or trees. Suitable pasture plants are sericea lespedeza, or bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza.

If it is needed for cultivated crops, this soil should be planted to close-growing crops 3 in every 4 years. Larger fields should be stripcropped, and small fields, planted to trees or pasture. Management is needed to control erosion, to improve tilth, and to increase the moisture-supplying capacity. (Capability unit IVe-1.)

Cecil clay loam, 10 to 15 percent slopes, severely eroded (CcD3).—This strongly sloping, severely eroded soil is mainly on slopes adjacent to medium-sized and large drainageways. It has faster runoff than Cecil sandy loam, 2 to 6 percent slopes, eroded. The surface soil is reddish-brown to red clay loam. In some areas the B horizon contains less clay and is less distinct than that in Cecil sandy loam, 2 to 6 percent slopes, eroded. The surface soil and subsoil combined range from 20 to 40 inches in thickness. Shallow and moderately deep gullies are common. Included with this soil are a few severely gullied areas and a few small gravelly areas.

This soil has been cultivated to corn, small grain, cotton, and other clean-tilled crops. It is now in pine trees, pasture, or is idle.

Because of the steep slopes, slow infiltration, and rapid runoff, this soil is unsuited to cultivation. It is best suited to pine trees. Under good management, some areas of this soil can be seeded to pasture and grazed, if the grazing is regulated. Suitable pasture plants are kudzu, sericea lespedeza, or bermudagrass mixed with whiteclover and annual lespedeza. (Capability unit VIe-2.)

Cecil clay loam, 15 to 25 percent slopes, severely eroded (CcE3).—This soil is in small areas on breaks along drainageways. It has lost all of its original sandy loam surface soil and, in some small areas, most of its subsoil. The surface layer is reddish-brown clay loam, 2 to 4 inches thick. The subsoil is reddish-brown or red clay loam, 15 to 30 inches thick. Shallow and moderately deep gullies are common. Included with this soil are a few small gravelly areas and a few areas with slopes of more than 25 percent.

Most of this soil has been cultivated. It is now mainly in pine trees, but small areas are idle and a few small spots are in pasture. This steep, severely eroded soil is not suited to crops or pasture. It is best suited to trees.

Areas of this soil that are within pastures on other soils will gain a protective cover and provide limited grazing if they are seeded to pasture plants and are heavily fertilized and otherwise well managed. Suitable pasture plants are kudzu, or bermudagrass mixed with annual lespedeza and whiteclover. (Capability unit VIIe-1.)

Chewacla series

In the Chewacla series are deep, somewhat poorly drained to moderately well drained, medium acid soils. These soils formed under hardwoods in recent alluvium on bottom lands along medium-sized and large streams. Slopes range from 0 to 2 percent.

The surface layer of these soils is better drained and more uniformly colored than is the underlying substratum. It is dark grayish-brown to dark-brown silt loam. The silt loam is 10 to 15 inches thick in most places, but it ranges from 8 to 20 inches in thickness. In these soils, a B horizon has not developed. The substratum is silty clay loam and has a wide range of colors and mottles. Brownish colors dominate to a depth of 25 to 35 inches, and grays and yellowish browns are below that depth.

These soils are moderately permeable and contain a medium amount of organic matter. Their moisture-supplying capacity and fertility are moderately high. Though subject to fairly frequent overflows, they are productive soils.

Chewacla soils are mostly along the Broad River, the Pacolet River, Thicketty Creek, and Kings Creek. Though they occur with other soils on bottom lands, they are closely associated with Congaree soils and Mixed alluvial land. Chewacla soils are more uniform in drainage, color, and texture than Mixed alluvial land. They lack the well-drained, uniformly colored layers in the substratum that are common in Congaree soils.

Only one Chewacla soil is mapped in Cherokee County.

Chewacla silt loam (0 to 2 percent slopes) (Ch).—This

is a deep, somewhat poorly drained to moderately well drained, productive soil on bottom lands.

Typical profile (in a nearly level pasture, on the east side of the Broad River, 1 mile south of bridge on old U.S. Highway 29, 6 miles east of Gaffney):

A_1 0 to 2 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, granular structure; friable when moist and slick when wet; many small roots; medium acid; gradual boundary.

A_2 2 to 16 inches, dark-brown (10YR 4/3) silt loam; weak, medium, granular structure; very friable when moist; many fine roots; few small pores; few small fragments of quartz; small amount of very fine mica; common, fine, faint, brownish mottles in lower 4 inches; medium acid; gradual, wavy boundary.

A_3 16 to 28 inches, dark grayish-brown (10YR 4/2) silty clay loam with many streaks and mottles of pale brown (10YR 6/3); weak, fine, subangular blocky structure or coarse, granular structure; friable; few medium roots and pores; many small, dark-brown aggregates; medium acid; clear, wavy boundary.

C_1 28 to 40 inches, dark grayish-brown (10YR 4/2) silty clay loam with common, fine, distinct, dark-brown (7.5YR 3/2) and grayish-brown (2.5Y 5/2) mottles; weak, medium, subangular blocky structure or coarse, granular structure; slick when wet; considerable amount of fine mica; few roots; strongly acid; gradual, wavy boundary.

C_2 40 inches +, gray (2.5Y 5/0) silty clay with many, medium, distinct, yellowish-brown (10YR 5/6) mottles and streaks; weak, medium, subangular blocky structure; tough and plastic; water table at top of this layer; some fine mica; strongly acid; grades to unconsolidated gray sands and clays at 54 to 60 inches.

The A_1 horizon is 1 to 3 inches thick, and the A_2 horizon is 10 to 18 inches thick. Other horizons in the profile vary slightly in thickness. Also variable is the depth to unconsolidated underlying material and the content of mica and quartz. The water table is below a depth of 36 inches in most places but at times rises to a depth of about 12 inches. Included with this soil are small areas of Congaree soils and Mixed alluvial land, and spots of poorly drained soils.

Chewacla silt loam is moderately high in fertility and in moisture-supplying capacity. It is likely to be flooded frequently.

Use and management.—This soil is best suited to summer crops and to pasture. If overflow is controlled, it is suited to a wide range of truck crops. Suitable summer crops are corn grown for grain or silage; grain sorghums, oats, and rye; and bahiagrass or annual lespedeza grown for hay. Suitable pasture plants are tall fescue mixed with ladino clover, bahiagrass or dallisgrass mixed with white clover, and annual lespedeza. Bermudagrass or ryegrass is fairly well suited to the better drained areas. Most cultivated fields need open ditches to carry surface runoff from low areas. (Capability unit IIIw-2.)

Congaree series

In the Congaree series are deep, well-drained, very friable soils in recent general alluvium on bottom lands along medium-sized and large streams in the Piedmont. These soils are slightly acid. Slopes range from 0 to 2 percent, but surface drainage is good.

The surface layer of these soils is dark-brown to dark reddish-brown silt loam to fine sandy loam. It is underlain by dark-brown to dark yellowish-brown silty clay loam to silt loam.

Congaree soils are moderately permeable and have a moderately high moisture-supplying capacity. They contain a medium amount of organic matter and are naturally fertile.

These soils are mostly along the Broad River, the Pacolet River, and Kings Creek. Though they occur with other soils on bottom lands, Congaree soils are more closely associated with Mixed alluvial land and Chewacla soils. They are browner than Mixed alluvial land, have a more uniform and finer texture, and are less likely to be flooded. Congaree soils are better drained and have a browner surface soil than the somewhat poorly drained Chewacla soils, which have a poorly drained subsoil.

These soils formed under mixed hardwoods but are now cultivated or are in pasture. They are flooded infrequently, are easily worked, and are productive.

Congaree silt loam (0 to 2 percent slopes) (Cr).—This is a deep, well-drained, very friable soil on high bottom lands.

Typical profile (in a nearly level pasture west of the Broad River, 3 miles east of Wilkinsville):

A_{1p} 0 to 2 inches, dark-brown (7.5YR 3/2) silt loam; moderate, medium, granular structure; soft when dry; mass of fine roots; slightly acid; clear, wavy boundary.

A_{2p} 2 to 10 inches, dark reddish-brown (5YR 3/3 to 3/4) silt loam; medium, coarse, granular structure; very friable when moist; many roots; considerable amount of fine mica; few medium pores; very slightly acid; clear, wavy boundary.

C_1 10 to 32 inches, dark-brown (7.5YR 4/4) silty clay loam; weak, medium, granular structure; crumbly when dry, friable when moist, and slick when wet; few medium roots, root holes, and pores; much very fine mica; slightly acid; gradual, wavy boundary.

C_2 32 inches +, dark-brown (7.5YR 4/4) and dark yellowish-brown (10YR 4/4) light silty clay loam; a few, medium, distinct, light yellowish-brown (10YR 6/4) concretions; weak, medium, granular structure; very friable when moist and slick and slightly sticky when wet; much mica; layer of quartz gravel 2 to 3 inches thick at a depth of 36 to 38 inches; medium acid; C_2 horizon 36 inches or more thick.

This soil contains fine mica in some places. Infiltration is moderately slow and runoff is moderate. In some areas the profile is less uniform than that described, and some small spots are not so well drained. Included with this soil are small areas of fine sandy loam.

Use and management.—Congaree silt loam is in crops or pasture. It is suited to most locally grown crops. Some areas are not suited to cotton, peaches, or grapes. This soil is suited to mixtures of pasture plants seeded locally. The less deep and the low-lying areas are only fairly well suited to sericea lespedeza and alfalfa. If it is fertilized adequately and otherwise well managed, this soil will produce high yields. (Capability unit IIw-2.)

Congaree fine sandy loam (0 to 2 percent slopes) (Co).—This soil is coarser textured than Congaree silt loam and is less uniform in other characteristics. It occurs in areas where the overflow from streams is more direct than it is on the silt loam. Mica is coarser textured and more common. The infiltration of water is medium, and surface runoff is slow.

Included with this soil are a few small areas of Congaree silt loam and a few small, sandy washouts. Also included are areas of gravelly soil and poorly drained spots. These areas are more numerous than those in-

cluded with Congaree silt loam. Some areas have slopes of 4 percent.

This soil has slightly lower yields than Congaree silt loam, but it is suited to about the same use and management as that soil. (Capability unit IIw-2.)

Davidson series

The Davidson series consists of deep, well-drained, friable soils on uplands. These soils formed in residuum weathered from gabbro, diabase, diorite, hornblende schist, and other dark, basic rocks.

The surface layer is dark reddish-brown loam, 3 to 10 inches thick. The subsoil is dark-red clay to clay loam, 30 to 48 inches or more thick. In some places the surface layer and the subsoil are so similar in color and texture that it is difficult to tell them apart. In most places, bedrock is at a depth of more than 15 feet. Locally, these soils are called push dirt.

The Davidson soils are medium acid to strongly acid. They are moderate in permeability and in moisture-supplying capacity. They contain a medium amount of organic matter and are moderately high in fertility.

These soils are in the vicinity of Wilkinsville. They occur mostly with Lloyd and Mecklenburg soils. Davidson soils are deeper, darker red, and finer textured than Lloyd soils, which formed on mixed basic and acidic rocks. They are much deeper than the lower lying Mecklenburg soils, and they lack the yellowish-brown and brown colors of those soils.

Davidson soils formed under stands of hardwoods mixed with redcedar. The wooded areas are now mostly in pine and mixed hardwoods, cedar, shrubs, and vines.

Davidson loam, 2 to 10 percent slopes, eroded (DaC2).—This is a deep, well-drained, dark reddish-brown to red soil. It is in uplands on the top of fairly narrow ridges.

Typical profile (in a gently sloping, cultivated field, 2 miles south of Wilkinsville):

- A_p 0 to 7 inches, dark reddish-brown (2.5YR 2/4) loam; weak, medium, granular structure; very friable and soft when moist and slightly sticky when wet; many roots; a few small quartz pebbles; occasional soft, dark concretions; medium acid; gradual, wavy boundary.
- AB 7 to 10 inches, dark reddish-brown (2.5YR 3/4) clay loam; weak, medium, subangular blocky structure; crumbly when dry and slick and slightly sticky when wet; a few soft, dark concretions; strongly acid; gradual, wavy boundary.
- B 10 to 25 inches, dark-red (2.5YR 3/6) clay; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, and slightly sticky when wet; few roots; few dark concretions; few pores and old root holes in upper part; strongly acid; gradual, wavy boundary.
- B_3 25 to 46 inches, clay loam, dominantly red (2.5YR 4/6 and 4/8) but slightly variable and includes yellowish-brown hues; weak, medium, subangular blocky structure; friable when moist, slightly hard and crumbly when dry, and slick when wet; few soft, dark concretions; strongly acid; diffuse boundary.
- C_1 46 inches +, dark-red (2.5YR 3/6) clay loam splotched with lighter colors; weak, coarse, subangular blocky structure; soft when dry, very friable when moist, and slick when wet; few dark concretions; strongly acid; 12 or more inches thick.

The surface layer ranges from 3 to 7 inches in thickness. Infiltration of water is slow, and on the steeper slopes, runoff is rapid. Included with this soil are small areas of severely eroded soils that have a clay loam surface soil, and small gravelly areas with remnants of old terraces.

This soil has been cleared and planted to clean-tilled crops. Most of it is cultivated, but some is in pasture and trees. Most crops grown locally are suited to this soil, but because of the slightly sticky surface soil, frequent cultivation is not desirable. Cotton grown on this soil may produce too much foliage. If it is fertilized heavily, this soil will produce good yields of sericea lespedeza and mixtures of pasture plants. Where cultivated crops are grown, intensive management is needed to control erosion and to maintain fertility. (Capability unit IIIe-1.)

Davidson loam, 10 to 25 percent slopes, eroded (DaE2).—This soil is on the lower slopes of fairly narrow ridges. In most places the original surface soil is mixed with the clay subsoil to a depth of 3 to 6 inches. Infiltration of water is slow. Because this soil is steep, surface runoff is greater than on Davidson loam, 2 to 10 percent slopes, eroded. Shallow gullies are common, and a few moderately deep gullies have formed. Included are some small areas of gravelly soils and soils on remnants of old terraces.

This soil was once cultivated to clean-tilled crops but now is mostly in pasture or woods. Small areas are cultivated. Frequent cultivation of this steep soil may cause severe erosion. If fertilized and managed well, the less sloping fields can be planted to grain sorghums, oats, and rye, or to sericea lespedeza for hay. The steeper slopes are better suited to pasture or loblolly pine than to crops. Suitable pasture plants are sericea lespedeza, kudzu, or mixtures of bahiagrass or bermudagrass with whiteclover and annual lespedeza. (Capability unit IVe-1.)

Gullied land

In Cherokee County, this land has been mapped in three units. They are Gullied land, firm materials; Gullied land, friable materials, 2 to 10 percent slopes; and Gullied land, friable materials, 10 to 35 percent slopes.

Gullied land, firm materials (10 to 35 percent slopes) (Ga).—This land type consists of very severely eroded areas in which more than half of the acreage has been dissected by shallow to moderately deep gullies in intricate patterns. Before it was gullied, most of this land was made up of Wilkes, Manteo, and Mecklenburg soils, but some consisted of small areas of Iredell, Orange, and Helena soils. In many places the gullies have cut into the underlying weathered basic rock, mixed basic and acidic rock, or sericitic schist. Rocky areas are common. Slopes generally range from 10 to 35 percent, but in some areas they are less than 10 percent.

Between the gullies the soil material is mostly reddish brown to yellowish brown, plastic, and clayey. This material made up the subsoil and substratum of the soils in this land type before they were gullied. Some of the original sandy loam surface soil remains in a few spots between the gullies.

This land contains very little organic matter and is low in fertility. Infiltration of water is slow, runoff is rapid and in large amounts, and tilth is poor. Though the depth to bedrock is more than 20 inches in most places, the soil material is not suitable for good root growth.

Large areas of this land are near Ashbury and Wilkinsville in the southeastern quarter of the county. Though plants are difficult to establish, much of this land has been partly stabilized by sparse stands of cedar, pine, and mixed hardwoods, and by brush and vines. (Capability unit VIIe-3.)

Gullied land, friable materials, 2 to 10 percent slopes (GfC).—This land consists of very severely eroded areas in which more than half of the acreage has been dissected by shallow to deep gullies. Before it was gullied, most of this land was made up of Cecil, Tatum, Appling, and Madison soils and some of it consisted of very small areas of Lockhart, Lloyd, Nason, or other friable soils. The gullies in and adjacent to the Lockhart soils are especially large. In many places the gullies in this land type have cut into the underlying weathered granite, gneiss, or granitic schist. Gravelly areas are common, and there are a few rocky areas.

Between most of the gullies is reddish-brown to brownish-yellow clayey material that made up the subsoil and the substratum of the soils in the area before they were gullied. In a few areas some of the original surface soil remains between the gullies.

Infiltration of water is slow, permeability is moderate, and surface runoff is in large amounts. This land is low in fertility and in organic matter and is in poor tilth. Bedrock is at a depth of 3 feet or more, and root growth is fair.

This land is distributed through the county in small areas. Though it is difficult to establish plants, most of this land has been partly stabilized by fair or sparse stands of pines and mixed hardwoods, and by brush and vines. Nevertheless, much silt is washed to areas downstream.

The better areas of this land might be made suitable for limited grazing if the land were prepared and well managed, including the addition of large amounts of fertilizer. Suitable pasture plants are kudzu, sericea lespedeza, and bermudagrass mixed with whiteclover and annual lespedeza. (Capability unit VIIe-4.)

Gullied land, friable materials, 10 to 35 percent slopes (GfF).—This land consists of very severely eroded areas, in which more than half of the acreage has been dissected by shallow to deep gullies. Before it was gullied, this land was made up of Cecil, Tatum, Appling, Nason, and Lockhart soils. In many places the gullies have cut into the underlying weathered granite, gneiss, or schist. Some large gullies have formed, mostly in or adjacent to Lockhart soils. Gravelly areas are common, and there are a few rocky areas.

Between most of the gullies is red or reddish-brown and yellowish-brown clayey material that made up the subsoil and the substratum of the soils in this area before they were gullied. A few places retain the original sandy loam surface soil.

This land has slow infiltration of water, moderate permeability, and rapid runoff in large amounts. It is low in fertility and in organic matter and is in poor tilth. In many places the depth to bedrock is 3 feet or more and the soil material is suitable for good root growth.

This land is distributed through the county, mostly in small areas. Vegetation is slow to establish, but some of this land has been partly stabilized by fair to sparse stands of pine and of mixed hardwoods, and by brush and vines. Nevertheless, much silt washes downstream from this land, which needs to be prepared if it is to have new plantings or a satisfactory cover of vegetation. (Capability unit VIIe-1.)

Helena series

The Helena series consists of deep to moderately deep, moderately well drained to somewhat poorly drained soils on uplands.

These soils have a firm subsoil and are medium acid. They formed on low-lying ridges over light-colored, acidic and basic rocks.

Helena soils have a dark grayish-brown sandy loam surface soil, 3 to 7 inches thick. The firm subsoil consists of mottled yellowish-brown to brownish-yellow clayey material and is 24 to 40 inches thick. Weathered bedrock is at a depth of 40 to 72 inches or more.

These soils are mainly in the south-central part of the county near Thicketty Creek and Asbury. They occur with Appling, Cecil, Lloyd, and Wilkes soils. They are not so deep or so well drained as Appling soils, which have a friable instead of a firm subsoil. Helena soils lack the red color and the friable subsoil that characterize the Lloyd and the Cecil soils. They are deeper than Wilkes soils and have a browner subsoil and more distinct layers in the profile.

Helena soils were formed in residuum weathered from aplitic granite that contains intrusions of quartz diorite, diabase, and other basic rocks. These soils developed under mixed hardwoods, but the woodland is now in pines or mixed hardwoods.

Only one Helena soil is mapped in Cherokee County.

Helena sandy loam, 2 to 10 percent slopes, eroded (HaC2).—This is a deep, moderately well drained to somewhat poorly drained soil on uplands.

Typical profile (in a cottonfield, west of State Highway 11, south of Thicketty Creek, 10 miles south of Gaffney):

A_p 0 to 6 inches, dark grayish-brown (10YR 4/2) sandy loam; weak, fine, granular structure; very friable to loose when moist; many roots; few fragments of quartz and granite; rather sharp sand particles; slightly acid; clear, wavy boundary; 4 to 7 inches thick.

B_1 6 to 10 inches, yellowish-brown (10YR 5/6) clay loam; weak, medium, subangular blocky structure; friable when moist; few fragments of rock; many roots, root holes, and pores; medium acid; gradual, wavy boundary; 3 to 6 inches thick.

B_{21} 10 to 20 inches, yellowish-brown (10YR 5/4) sandy clay with common, small, distinct, yellowish-red (5YR 5/6) mottles and a few, small, distinct, red (2.5YR 5/6) mottles; moderate, medium, subangular blocky structure; slightly hard when dry, firm when moist, and slightly sticky and plastic when wet; few medium root channels in top 6 inches of layer; few weak, pale concretions; medium acid; gradual, wavy boundary; 8 to 12 inches thick.

B_{22} 20 to 36 inches, brownish-yellow (10YR 6/6) clay with common, fine, distinct, strong,-brown (7.5YR 5/6) and a few, medium, distinct, red (2.5YR 4/6) mottles; moderate, medium, subangular blocky structure; hard and brittle when dry, firm when moist, and plastic when wet; few fragments of quartz and feldspar; medium acid; gradual, wavy boundary; 10 to 20 inches thick.

C_1 36 inches +, yellowish-brown (10YR 5/4) and light brownish-gray (2.5Y 6/2) sandy clay and clay with some sandy streaks; yellowish brown and light brown in nearly equal amounts; some brown spots; tough but slightly crumbly; few fragments of rock; many particles of sharp, coarse quartz; strongly acid; layer several feet thick.

The A horizon ranges from 4 to 7 inches in thickness. The low ridges and lower side slopes are generally the most poorly drained. The mottling in the B horizon varies rather widely in distinctness. Some profiles do not have red mottles but are streaked with yellowish brown and brownish yellow. A few fragments of quartz are common in most profiles. Fine mica and fragments of feldspar are in some places.

This soil is low in content of organic matter, in moisture-supplying capacity, and in fertility. Water infiltrates the soil at a medium rate, permeability is slow, and runoff is moderately high. The soil warms up slowly in spring.

Use and management.—This soil has been cleared and cultivated to clean-tilled crops. Most of it is now in crops, pasture, or trees. Small areas are idle.

Because it is moderately well drained to well drained and has a slowly permeable subsoil, this soil is only fairly well suited to crops grown locally. It responds fairly well to good management, including fertilization. Suitable crops are grain sorghums, oats, rye, and cowpeas. The better drained areas are fairly well suited to sericea lespedeza grown for hay, and to cotton and corn. Suitable for pasture are sericea lespedeza, annual lespedeza, and bermudagrass or bahiagrass mixed with crimson clover or white clover. Pine trees are poorly suited on severely eroded areas.

If the soil is needed for cultivation, plan rotations of crops in strips to add organic matter, to protect against excessive runoff, and to improve fertility. Control grazing so that a good cover is maintained and excessive compaction is prevented in the more severely eroded areas. (Capability unit IIIe-3.)

Iredell series

The Iredell series consists of moderately deep, medium acid soils on uplands. These soils are gently sloping to strongly sloping and are moderately well drained to somewhat poorly drained. They formed on weathered diorite, gabbro, diabase, horneblende schist, chloritic schist, and other dark basic rock.

The surface layer of these soils ranges from fine sandy loam to clay loam. It is very dark grayish-brown to grayish-brown fine sandy loam, 4 to 12 inches thick, in areas where the original surface soil remains, and clay loam in areas where the fine sandy loam has been removed. The subsoil is yellowish-brown to olive-brown clay and is very heavy, plastic, and sticky. The surface layer and subsoil combined are 15 to 36 inches thick.

Iredell soils are slowly permeable and have a moderate moisture-supplying capacity. The infiltration of water is medium in the fine sandy loam and is slow in the clay loam. These soils are medium in organic matter and in fertility.

Iredell soils occur in the southeastern part of the county and are associated with the Wilkes and the Mecklenburg soils. They are more gently sloping than the Wilkes soils and have a thicker, more uniform subsoil. Where they are adjacent to the Wilkes soils, Iredell soils have a subsoil that is generally thinner than it is elsewhere. The subsoil in the Iredell soils is more plastic and harder than that in the Mecklenburg soils and is yellowish brown instead of yellowish red. Where they adjoin the Mecklenburg soils, Iredell soils are browner than they are in other places and contain concretions of iron and manganese.

The native vegetation was mostly mixed hardwoods, but there was some cedar.

Iredell fine sandy loam, 2 to 6 percent slopes (IrB).—This is moderately deep, moderately well drained to somewhat poorly drained soil that has a subsoil of heavy, plastic, sticky clay. It has formed in uplands on dark basic rock.

Typical profile (in a moist, gently sloping, idle field 4 miles west of Wilkinsville):

A_p 0 to 5 inches, very dark grayish-brown (2.5Y 3/2) fine sandy loam; weak, fine, granular structure; friable when moist; many fine roots; slightly acid; abrupt, smooth boundary.

B_{21} 5 to 12 inches, yellowish-brown (10YR 5/4) clay; moderate, medium and fine, angular blocky structure; distinct clay films; hard when dry and very plastic and sticky when wet; many dark concretions; medium acid; gradual, wavy boundary.

B_{22} 12 to 22 inches, light olive-brown (2.5Y 5/4) clay with olive (5Y 4/3) and yellowish-brown (10YR 5/4), coarse mottling in lower part; strong, coarse, angular blocky structure; distinct clay films; very hard when dry and very plastic and sticky when wet; few small concretions; medium acid; gradual, wavy boundary.

D_r 22 inches +, mainly olive (5Y 4/4) but some nearly black and green, disintegrated, weathered basic rock.

The surface layer ranges from 4 to 8 inches in thickness. It is grayish brown to very dark grayish brown, according to the content of organic matter. Fine mica occurs through the profile in many places, and variously colored mottling is common in the lower part of the B horizon. In some areas rock fragments 1 to 5 inches in diameter are in the surface soil, and in many small areas there are a few large dark-colored rocks. These rocks and rock fragments do not interfere with tillage.

Use and management.—Nearly all of this soil has been cultivated to cotton, corn, small grain, and other clean-tilled crops, but most of it is now in trees or pasture. A few areas are cultivated or are idle.

This soil is fairly well suited to most crops grown locally. Because of the heavy subsoil, it is not suited to peaches or to alfalfa and other deep-rooted crops. A few small areas are not suited to cotton or winter pasture.

This soil responds to management, including fertilization. For good yields it requires additions of lime and potash. If this soil is cultivated, the cropping system should include legumes to maintain organic matter and fertility. Some areas need ditches for surface drainage. If this soil is seeded to pasture, the grazing ought to be controlled so that the thin surface soil is not compacted. (Capability unit IIe-4.)

Iredell fine sandy loam, 6 to 10 percent slopes, eroded (IrC2).—This strongly sloping soil has more rapid and a greater amount of runoff than has Iredell fine sandy loam, 2 to 6 percent slopes, and a slightly thinner surface layer. The surface layer is light yellowish-brown fine sandy loam, 4 to 6 inches thick. In most places it is a mixture of the original fine sandy loam surface soil

and the clayey subsoil. It is finer textured than the surface soil in Iredell fine sandy loam, 2 to 6 percent slopes. The subsoil is of more varied thickness than that in Iredell fine sandy loam, 2 to 6 percent slopes. Included with this soil are a few small areas of gravelly soil and a few severely eroded spots where the yellowish-brown clay subsoil is exposed.

Nearly all of this soil has been cultivated to clean-tilled crops, but it is now in woods, in pasture, or is idle. It is suited to cotton, corn, cowpeas, grain sorghums, small grains, and annual lespedeza, and to pasture of dallisgrass or mixtures of bermudagrass or bahiagrass with whiteclover and annual lespedeza. This soil responds to good management, but runoff is difficult to control. Grazing should be regulated to prevent excessive compaction in the more eroded areas. (Capability unit IVe-2.)

Iredell clay loam, 6 to 10 percent slopes, severely eroded (IcC3).—This strongly sloping soil has much more rapid runoff than has Iredell fine sandy loam, 2 to 6 percent slopes, and a much finer textured surface soil. The yellowish-brown surface soil is heavy, sticky clay loam into which water enters very slowly. Shallow gullies are common, and many moderately deep gullies have formed. A few small areas of gravelly soil are included.

This soil has been cultivated but is now idle or is in trees or pasture. Because of the excessive runoff, the many gullies, and the fine-textured and sticky surface soil, it is not suited to cultivation. If they are adequately fertilized and managed, a few of the better areas can be planted to grain sorghums, oats, rye, or annual lespedeza. Bahiagrass or ryegrass mixed with whiteclover and annual lespedeza will furnish good grazing and protection from erosion if grazing is rigidly controlled. (Capability unit VIe-4.)

Lloyd series

The Lloyd series consists of deep, well-drained, medium acid soils on gently sloping to steep uplands. These soils are underlain by weathered granite, granite gneiss, diabase, gabbro, hornblende schist, and other acidic and basic rocks.

The surface layer ranges from loam to clay loam, depending on the degree of erosion. In uneroded areas, the surface layer is reddish-brown loam, 6 to 10 inches thick. The subsoil is redder than the surface soil and is 30 to 48 inches thick. In most places friable, yellowish-red to brown clay loam occurs at a depth of 36 to 45 inches. Yellow and red mottles or splotches are common in the lower part of the subsoil. Many moderately deep gullies have formed in these soils.

The Lloyd soils are moderate in permeability and in moisture-supplying capacity. Infiltration of water ranges from moderately slow in the loam to slow in the clay loam. Natural fertility is moderate, and the content of organic matter is medium. Locally, these soils are called push dirt because, when moist, the soil material slows tillage implements by sticking to them.

The Lloyd soils in Cherokee County are mostly in the southeastern part, near Wilkinsville. They occur with the Davidson, Mecklenburg, and Cecil soils. Lloyd soils are shallower and more varied in color than Davidson soils, which are dark reddish brown and dark red. They have a darker brown surface soil and a darker red subsoil than have the Cecil soils. They are deeper, better drained, and more friable than the Mecklenburg soils. Where they are adjacent to the Mecklenburg soils, the Lloyd soils have concretions in their profile.

These soils formed under mixed hardwoods. Some areas are still in mixed hardwoods but have a few cedars and pines. Wooded areas that were once cultivated are now in pines and scattered cedars.

Lloyd loam, 2 to 6 percent slopes, eroded (LdB2).—This is a deep, well-drained soil on the uplands of the Piedmont.

Typical profile (in a gently sloping idle field 2 miles northwest of Wilkinsville):

- A_p 0 to 5 inches, reddish-brown (5YR 4/3) loam; weak, fine, granular structure; friable when moist; few fine roots; slightly acid; clear, smooth boundary.
- B_1 5 to 8 inches, yellowish-red (5YR 4/6) clay loam; weak, fine, subangular blocky structure; friable when moist; few roots; medium acid; clear, smooth boundary.
- B_2 8 to 40 inches, dark-red (2.5YR 3/6) clay; moderate, medium, subangular blocky structure; firm when moist; medium acid; gradual, wavy boundary.
- B_3 40 to 55 inches, yellowish-red (5YR 4/6) and brownish-yellow (10YR 6/6) clay loam; weak, fine, subangular blocky structure; friable when moist; medium acid; gradual, wavy boundary.
- C 55 inches +, disintegrated acidic and basic rocks; medium acid.

The surface soil ranges from 4 to 7 inches in thickness. It is reddish brown to dark grayish brown, depending on the content of organic matter and on the amount of subsoil material plowed into the surface layer. Some fine mica is present in most places. Rill gullies are common. Included with this soil are a few severely eroded spots where the surface soil is clay loam. These spots have a few moderately deep gullies. A few gravelly areas are also included, but the gravel does not seriously affect tillage.

Use and management.—Almost all of this soil has been planted to cotton, corn, small grain, or other clean-tilled crops, and most of it is now in cultivated crops or pasture. Very small areas are in woods, in nonfarm use, or are idle. This deep, gently sloping soil is well suited to most crops grown locally. Because it is sticky, it ought not be cultivated when too wet. Cotton produces dark, heavy foliage and is susceptible to damage from insects and moisture.

This soil responds well to fertilization and other good management. Because water infiltrates slowly and runoff is in large amounts, this soil needs management that protects it from erosion. (Capability unit IIe-1.)

Lloyd loam, 6 to 10 percent slopes, eroded (LdC2).—This soil has stronger slopes and more runoff than Lloyd loam, 2 to 6 percent slopes, eroded. Included with this soil are some severely eroded spots and a few small gravelly areas.

Most of this soil has been cultivated to cotton, corn, small grains, or other clean-tilled crops, but it is now in small grains, hay, and pasture. Some areas are wooded or are idle. This soil responds to good management, but it is less suited to cultivation than Lloyd loam, 2 to 6 percent slopes, eroded. It produces good yields of crops and pasture if it is adequately fertilized and is managed to maintain tilth and to prevent loss of soil and water. (Capability unit IIIe-1.)

Lloyd loam, 10 to 15 percent slopes, eroded (LdD2).—This soil is steeper than Lloyd loam, 2 to 6 percent slopes, eroded, and has more rapid runoff. It is on short slopes along drainageways and at drainage heads. The subsoil is 2 to 3 feet thick and, in some places, is a lighter color and contains less clay than the subsoil in Lloyd loam, 2 to 6 percent slopes, eroded. Included with this soil are small severely eroded areas. These inclusions have a clay loam surface soil that consists mostly of subsoil materials. Also included are small gravelly areas. In a few areas moderately deep gullies have formed.

Most of this soil has been cultivated for a short time but is now in pines. Some acreage is in pasture, is cultivated, or is idle. Frequent cultivation may cause severe erosion, but if this soil is fertilized and otherwise well managed, it produces good yields of grain sorghums, cowpeas, or sericea lespedeza. Suitable pasture plants are ryegrass, sericea lespedeza, kudzu, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. (Capability unit IVe-1.)

Lloyd loam, 15 to 25 percent slopes (LdE).—This moderately steep soil is on short slopes along major drainageways. If it is not protected, it is much more likely to erode than Lloyd loam, 2 to 6 percent slopes, eroded. The subsoil is thinner and lighter colored than that of Lloyd loam, 2 to 6 percent slopes, eroded, and contains less clay. Included with this soil are a few very small severely eroded areas. In a few areas moderately deep gullies have formed.

Most of this soil remains in mixed hardwoods, in which there are a few pines and cedars. Small areas that once were cleared are in pasture or pines. Because of the moderately steep slopes, this soil is not suited to cultivation. If it is fertilized and otherwise well managed, pasture in open areas on lower slopes provides good grazing if seeded to sericea lespedeza, kudzu, or bermudagrass mixed with whiteclover and annual lespedeza. Higher slopes or broken fields are well suited to loblolly pine or to kudzu that is seeded for soil protection and limited grazing. (Capability unit VIe-2.)

Lloyd loam, 25 to 35 percent slopes (LdF).—This steep soil is in small areas on short slopes. It has a thinner subsoil that has less distinct layers than those in the subsoil of Lloyd loam, 2 to 6 percent slopes, eroded. The loam surface layer is 5 to 10 inches thick. The subsoil, ranging from 1 to 3 feet in thickness, is clay loam to clay. In many places the subsoil consists of a layer of very friable clay loam, 1 to 2 feet thick. A few rounded, dark rocks are in the profile and on the surface in some places. Included with this soil are a few very small gravelly areas and a few areas where moderately deep gullies have formed.

This soil remains in mixed hardwoods. Because of its short, steep slopes, it is unsuited to cultivation. (Capability unit VIIe-1.)

Lloyd clay loam, 2 to 6 percent slopes, severely eroded (LcB3).—This severely eroded soil is on ridgetops and on gentle slopes extending down from ridgetops. It has lost most of its original surface soil. The present surface soil is 3 to 6 inches thick and consists of a reddish-brown mixture of the loam in the original surface soil and finer textured material from the subsoil.

This soil has been cleared and planted to cotton, corn, small grains, and other clean-tilled crops. Most of it is now cultivated or is in pasture. Small areas are in pines or are idle.

Because water infiltrates more slowly, runoff is in larger amounts, and tilth is poorer than on Lloyd loam, 2 to 6 percent slopes, eroded, this soil is more poorly suited to cultivation. If fertilized and otherwise managed well, this soil is fairly well suited to tilled crops. It is also suited to peaches, sericea lespedeza, and other deep-rooted crops, and to the pasture plants generally grown in the county.

If cultivated crops are planted, this soil requires intensive management so that tilth is improved, moisture-supplying capacity is increased, and erosion is prevented. If this soil is seeded to pasture, grazing should be regulated so that a good cover is maintained and excessive compaction is prevented. (Capability unit IIIe-1.)

Lloyd clay loam, 6 to 10 percent slopes, severely eroded (LcC3).—This strongly sloping, severely eroded soil is finer textured than Lloyd loam, 2 to 6 percent slopes, eroded, and has more runoff. Its reddish-brown surface layer is 3 to 5 inches thick and consists mostly of subsoil material. Shallow gullies are common, and a few deep gullies have formed. A few small gravelly areas are included.

This soil has been cultivated, and some of it is now in crops. The rest is in pasture or pines, and a few small areas are idle. Because of the strong slopes, the clay loam surface layer, and the large amounts of runoff, this soil is unsuited to frequent cultivation. It will, however, produce peaches, grain sorghums, oats, and rye. Suitable pasture plants are ryegrass, sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza.

If cultivated crops are grown, soil and water must be conserved so that tilth and fertility are improved. Long rotations that include perennials much of the time are desirable. If pasture plants are seeded, grazing should be controlled so that a good cover is maintained and erosion is controlled. (Capability unit IVe-1.)

Lloyd clay loam, 10 to 15 percent slopes, severely eroded (LcD3).—This strongly sloping, severely eroded soil is on short slopes adjacent to and at the heads of drainageways. Its surface layer is reddish-brown clay loam and is mostly subsoil material. The subsoil, ranging from 20 to 30 inches in thickness, is clay loam to clay. In most places the subsoil on the steeper slopes contains less clay than the subsoil on the more nearly level slopes. Shallow gullies are common, and a few moderately deep ones have formed.

This soil has been cultivated but is now mostly in pasture and woods. Small areas are idle or are cultivated. Because of strong slopes and rapid runoff, this soil is not suited to frequent cultivation. It responds to good management and may produce fair yields of grain sorghums, oats, rye, or cowpeas. It is well suited to sericea lespedeza, kudzu, or other deep-rooted perennials. Suitable grazing crops are sericea lespedeza, kudzu, or bermudagrass mixed with whiteclover and annual lespedeza.

If this soil is needed for cultivated crops, not more than one-fourth of each field should be plowed each year.

The rest of the field should be in close-growing perennials. (Capability unit IVe-1.)

Lloyd clay loam, 15 to 25 percent slopes, severely eroded (LcE3).—This moderately steep soil is in small areas on short slopes. The surface layer is reddish-brown clay loam, 2 to 4 inches thick. It consists mostly of material brought up from the subsoil in tillage. The subsoil is 15 to 20 inches thick, and in many places it is lighter colored and contains less clay than the subsoil of more nearly level Lloyd soils. Shallow gullies are common, and a few moderately deep gullies have formed. Included are a few gravelly areas and a few areas that have slopes of more than 25 percent.

Most of this soil has been cultivated but is now in woods. Small areas are idle or are in pasture. Because it is steep, fine textured, and has slow infiltration of water and excessive runoff, this soil is not suited to crops. It is not well suited to pasture, but under good management a pasture of kudzu will provide protective cover and very limited grazing. This soil is best suited to pines. (Capability unit VIe-2.)

Local alluvial land

This miscellaneous land type consists of soil material that washed from nearby areas.

Local alluvial land (0 to 3 percent slopes) (Ln).—This land is deep, well drained to moderately well drained alluvium. The alluvium washed from sandy loams and fine sandy loams on adjacent slopes into depressions and along poorly defined drainageways in the uplands. It has a loamy sand to fine sandy loam texture and is 15 to 40 inches or more thick.

This land is well drained except in places where the natural drainageways are blocked by landforms or by roads, hedges, or other obstacles. Its surface runoff is slow, its permeability is moderately rapid, and its moisture-supplying capacity is moderately high. It contains a medium amount of organic matter, is moderately high in natural fertility, and is slightly acid to medium acid. The root zone is thick and is easily tilled.

This land is very productive, but the total acreage is small and the individual areas generally are smaller than 2 acres. It is well suited to most shallow-rooted crops grown in the county. It is widely used for vegetated waterways and for home gardens. The moderately well drained areas are not suited to cotton or to sericea lespedeza, alfalfa, or other deep-rooted crops. Because air drainage is poor and frost is a hazard, this land is not suited to grapes and peaches. (Capability unit I-1.)

Lockhart series

The Lockhart series consists of deep, well-drained, friable soils that are medium acid. These soils are on gently sloping to steep uplands and are underlain by porphyritic granite or pegmatite.

The surface layer ranges from coarse sandy loam to clay loam in texture and from 6 to 12 inches in thickness. It is clay loam in places where most of the original sandy loam surface layer has washed away and is grayish-brown sandy loam in the less eroded areas. Varied amounts of angular fragments of feldspar are in the surface layer and the subsoil. The subsoil ranges from clay to clay loam in texture and from yellowish red to red in color. It is 1 to 3 feet thick. In many places there is a very friable layer of clay loam, 12 to 20 inches thick, in the lower part of the subsoil. The depth to bedrock is 3 to 20 feet or more.

These soils are moderate to moderately rapid in permeability and low in moisture-supplying capacity. The infiltration of water is rapid in the coarse sandy loam and is slow in the clay loam. These soils contain little organic matter and are moderately low in fertility.

The Lockhart soils are in the southeastern corner of the county. They are adjoined by the Cecil and Appling soils on the west and, on the north, by the Wilkes and other soils affected by basic rocks. The Lockhart soils are coarser textured than the Cecil soils and have a thinner, less well defined subsoil. They are deeper and have more clearly defined horizons than the Wilkes soils, which formed from mixed acidic and basic rocks.

The Lockhart soils formed under mixed hardwoods. Some areas that have been cleared and cultivated are now in pines. Other areas are in mixed hardwoods and a few pines.

Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded (LrB2).—This is a deep, well-drained soil that contains some coarse material through the profile. It is on broad ridges and adjacent gentle slopes on uplands and is underlain by porphyritic granite or pegmatite.

Typical profile (in a gently sloping, cultivated field 2 miles west of Kendricks Store):

- A_p 0 to 7 inches, dark-brown (7.5YR 4/4) coarse sandy loam; weak, fine, crumb structure; friable when moist; many fine roots; medium acid; abrupt, smooth boundary.
- B_2 7 to 28 inches, red (2.5YR 4/8) clay; moderate, medium, subangular blocky structure; friable when moist; few roots; some mica and feldspar crystals; medium acid; gradual, smooth boundary.
- B_3 28 to 40 inches, red (2.5YR 4/8) clay loam; weak, fine, subangular blocky structure; friable when moist; few roots; some mica and feldspar crystals; medium acid; gradual, smooth boundary.
- C 40 inches +, disintegrated granite rock; medium acid.

The surface soil ranges from 4 to 8 inches in thickness and from grayish brown to dark brown in color. The subsoil is 24 to 36 inches thick. It is generally red but, in some places, is yellowish red. The upper part of the subsoil is clay and, on the gentler slopes, is 12 to 20 inches thick. The lower part of the subsoil is clay loam. Feldspar, rock fragments, and some mica occur through the profile but are most common in the lower part of the subsoil. A few small areas of quartz gravel are included.

Use and management.—Nearly all of this soil has been planted to cotton, corn, small grain, and hay. It is now used for cultivated crops, pasture, or hay. Some small areas are idle or in pines.

This well-drained, gently sloping soil is easily cultivated and is fairly well suited to the crops grown in the county. Because of its coarse-textured surface soil, low moisture-supplying capacity, and moderately low fertility, this soil is only fairly well suited to corn, wheat, dallisgrass, tall fescue, whiteclover, ryegrass, and annual lespedeza. It responds to moderately large additions of fertilizer. Cropping systems that include sericea lespedeza or other deep-rooted legumes increase the water-holding capacity and the supply of organic matter. If it

is heavily fertilized, this soil is well suited to sericea lespedeza or cowpeas grown for hay. Suitable pasture mixtures are bermudagrass or bahiagrass planted with crimson clover or sericea lespedeza. (Capability unit IIe-2.)

Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded (LrC2).—This sloping, eroded soil has a thinner surface layer than Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded, and is more susceptible to erosion. The surface soil is 4 to 7 inches thick and is grayish brown to brown. The red subsoil ranges from 24 to 30 inches in thickness. It varies more in color and is less clayey than the subsoil of the gently sloping soil and is generally more friable.

Included with this soil are a few gravelly areas and severely eroded spots. A few moderately deep gullies have formed. In some places, generally at slope breaks, weathered rock is near the surface and boulders may be on the surface.

Most of this soil is cultivated or in pasture. Small areas are idle or are in pines or other trees. This soil responds to fertilization and other management, but because of the steeper slopes and greater risk of erosion, it is less well suited to frequent cultivation than is Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded. It is suited to grain sorghums, oats, rye, and cowpeas, and to sericea lespedeza grown for silage or hay. Bermudagrass or bahiagrass overseeded with crimson clover or sericea lespedeza are suitable pasture plants.

If it is cultivated, this soil requires intensive management to maintain fertility and to control erosion. (Capability unit IIIe-2.)

Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded (LrD2).—This strongly sloping, eroded soil has a thinner surface layer than has Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded, and is more susceptible to further erosion. Its surface layer is 4 to 7 inches thick and contains some subsoil material where it has been plowed. The subsoil is 18 to 24 inches thick. The clay layer in the upper part of the B horizon is thinner and more variable than that in Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded. Included with this soil are a few small gravelly areas and a few severely eroded areas. Some areas have a few boulders.

Most of this soil has been cultivated but is now in pasture or pines, or is idle. Only a small acreage is cultivated. Because of the strong slopes and the hazard of erosion, this soil is not suited to frequent cultivation. If it is managed well, it produces good yields of grain sorghums or cowpeas. Suitable pasture plants are bermudagrass, bahiagrass, sericea lespedeza, and kudzu. To obtain good yields of hay and pasture, add large amounts of fertilizer, control grazing, and conserve soil and water. If cultivated, this soil needs a long cropping system that provides, at all times, a close-growing perennial on 3 out of every 4 terrace intervals. (Capability unit IVe-1.)

Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded (LrE2).—This soil is on short, steep slopes along streams. The surface layer is 7 to 12 inches thick. The subsoil varies in thickness, color, and consistence but, in most places, is yellowish brown or brown, friable clay loam, 12 to 20 inches thick. Gravelly areas and severely eroded spots are included, and there are a few boulders in many places.

This soil was originally in stands of mixed hardwoods. Most of it is now in hardwoods and a few pines. Small areas are in pines, in pasture, or are idle. This soil is not suited to cultivation. If it is fertilized and otherwise well managed, it will produce pasture that will support limited grazing. Suitable pasture plants are bermudagrass or kudzu. (Capability unit VIe-2.)

Lockhart coarse sandy loam, 25 to 35 percent slopes (LrF).—This soil is on very short, steep slopes along large drainageways. Runoff is rapid and in large amounts, and unless the soil is protected, the erosion hazard is severe. The grayish-brown surface soil is 6 to 12 inches thick. The subsoil is yellowish brown and friable to loose. The B horizon is thin in most places. A few deep gullies have formed.

Most of this soil is in mixed hardwoods. There are a few pines in areas that have been in pasture or have been burned frequently.

Because of thin subsoil and the steep slopes, this soil is not suited to cultivation or pasture. It is best suited to trees. (Capability unit VIIe-1.)

Lockhart clay loam, 2 to 6 percent slopes, severely eroded (LoB3).—This soil is on narrow ridgetops and adjacent gentle slopes. It has much more surface runoff than Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded. The surface soil is reddish-brown, slightly sticky clay loam, 3 to 6 inches thick. It contains a large amount of the coarse particles that were the original coarse sandy loam. Rills are common, and there are a few moderately deep gullies.

This soil has been cultivated to cotton, corn, cowpeas, and small grain. Most of it is now cultivated or in pasture. A few small areas are in pines or are idle.

Because of the fine texture, slow infiltration of water, and excessive runoff, this soil is not suited to frequent cultivation. Suitable crops are grain sorghums, oats, rye, and cowpeas. Suitable plants for hay or pasture are sericea lespedeza, kudzu, or bermudagrass or bahiagrass mixed with crimson clover, white clover, or annual lespedeza. This soil requires good fertilization and intensive management to control loss of soil and water and to improve fertility, tilth, and moisture-supplying capacity. If this soil is cultivated, long cropping systems that provide strips of perennials are needed to lessen surface runoff on the slopes. (Capability unit IIIe-2.)

Lockhart clay loam, 6 to 10 percent slopes, severely eroded (LoC3).—This soil has much more runoff than has Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded. The reddish-brown surface soil is 3 to 6 inches thick and slightly sticky, but it contains a considerable amount of coarse material. The subsoil is 24 to 30 inches thick. It varies more in thickness, color, and consistence than the subsoil in the more gently sloping soils. Many shallow gullies and a few moderately deep gullies have formed. A few small areas of coarse sandy loam are included.

Nearly all of this soil has been planted to cotton, corn, small grains, or other clean-tilled crops. Some of it is now in crops. The rest is in pasture, in pines, or is idle.

Because water infiltrates slowly and runs off in large amounts, this soil is not suited to frequent cultivation. If fertilized and managed well, it will produce good yields of sericea lespedeza, bermudagrass, whiteclover, annual lespedeza, or kudzu. Grazing should be controlled to maintain cover and to protect the soil from further erosion. (Capability unit IVe-1.)

Lockhart clay loam, 10 to 15 percent slopes, severely eroded (LoD3).—This strongly sloping, severely eroded soil is on short slopes adjacent to and at heads of drainageways. Runoff is rapid and in large amounts. The surface soil is reddish-brown clay loam, 3 to 5 inches thick. The subsoil is 18 to 24 inches thick. In many places, it is lighter colored and contains less clay than the subsoil of Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded. Gullies are common and many are deep. Boulders are on some slopes at the place where these slopes break between this soil and soils on ridges or between this soil and the soils that are more nearly level.

This soil has been planted to corn, cotton, cowpeas, small grains, or other clean-tilled crops. Most of it is now in pine, and the rest is in pasture or is idle.

This soil is not suited to cultivated crops. If fertilized and otherwise managed well, less severely eroded areas will produce a good cover that will provide limited grazing. Suitable pasture plants are sericea lespedeza, kudzu, or bermudagrass mixed with whiteclover and annual lespedeza. The more severely eroded areas are best suited to pine or kudzu. These areas need management to control losses of soil and water. (Capability unit VIe-2.)

Lockhart clay loam, 15 to 25 percent slopes, severely eroded (LoE3).—This soil is on short slopes adjacent to streams. Its reddish-brown surface layer mostly consists of subsoil material. The subsoil varies but, in most places, is brown or yellowish-brown friable clay loam, 12 to 20 inches thick. Bedrock is at or near the surface in some places, and there are a few boulders.

Most of this soil has been planted for brief periods to clean-tilled crops. It is now mostly in pines. Because of the steep slopes, this severely eroded soil is not suited to cultivation. It is best suited to pines or kudzu, but sites must be prepared. Low yields of pasture and wood products can be expected. (Capability unit VIIe–1.)

Louisburg series

The Louisburg series consists of shallow, medium to strongly acid, somewhat excessively drained soils. These soils formed on uplands in residuum of weathered coarse-grained granite or granite gneiss. In most cultivated areas, the surface soil is dark grayish-brown sandy loam. It is underlain by a thin, discontinuous subsoil (B horizon) of yellowish-red sandy clay loam. Partly weathered parent rock is generally at depths of less than 2 feet, but in some places, hard rock is at depths of several feet. Rock outcrops and boulders are common. Slopes range from 10 to 35 percent. These soils are low in organic matter and in natural fertility.

The Louisburg soils occur with Appling and Cecil soils and are shallower than those well-drained soils. They lack a thick subsoil with well-defined characteristics like that in the Appling and Cecil soils.

Most of the acreage in Louisburg soils is near Goucher. The less sloping areas, which have been cultivated, are now in mixed stands of loblolly pine and hardwoods of poor quality.

Louisburg sandy loam, 10 to 35 percent slopes, eroded (LuE2).—This shallow, excessively drained, eroded soil has a thin, weakly developed subsoil.

Typical profile (in a moderately sloping, idle field in the southwest corner of the county near Goucher):

- A_p 0 to 6 inches, dark grayish-brown (2.5Y 4/2) sandy loam; weak, fine, crumb structure; loose when dry and very friable when moist; many roots; many coarse particles and a few pebbles; medium acid; clear, wavy boundary.
- A_2 6 to 8 inches, light olive-brown (2.5Y 5/4) sandy loam; weak, fine, granular structure; loose when dry; many coarse particles; medium acid; clear, wavy boundary.
- B 8 to 21 inches, yellowish-red (5YR 4/6) light sandy clay loam splotched or streaked with red (2.5YR 4/6); firm when moist but easily crushed; many fragments of parent rock; strongly acid; clear, wavy boundary.
- C 21 inches +, disintegrated, coarse-grained granite or gneiss.

The A_p layer of this soil ranges from 4 to 7 inches in thickness, and the A_2 layer is 2 or 3 inches thick. The discontinuous B horizon is 0 to 14 inches thick and ranges from light brownish yellow to yellowish red. This layer is thicker in less sloping areas and is absent in many steep areas. Granite or gneiss gravel and some mica are in nearly all of the profiles.

Bedrock crops out in some places and in other places is at depths of several feet. Included with this soil are some areas of loamy sand, a few small gravelly areas, and several very small severely eroded areas.

This soil has medium to rapid surface runoff, moderately rapid permeability, and low moisture-supplying capacity. It is low in organic matter and in natural fertility and is medium to strongly acid. It is susceptible to further erosion and gullying.

Use and management.—This soil is not suited to cultivation. It is best suited to trees, but if heavily fertilized, the less sloping areas will produce fair yields of bermudagrass. Kudzu grows well enough to protect the soil from erosion. (Capability unit VIIe-2.)

Madison series

The Madison series consists of deep, well-drained, friable soils that are medium acid. These soils formed in gentle to steep, upland areas on weathered quartz mica schist.

The surface layer of these soils ranges from fine sandy loam to clay loam and is 3 to 12 inches thick. It is fine sandy loam in uneroded areas and clay loam in areas where most of the original surface soil has washed away. The surface layer ranges from grayish brown to reddish brown. It is generally grayish brown or yellowish brown in places where only a small amount of subsoil material has been plowed into the surface soil. The subsoil generally is friable red clay loam, 24 to 48 inches or more thick.

These soils are moderate in permeability and in moisture-supplying capacity. They are moderately low in fertility and in content of organic matter.

Most of the Madison soils are in the northwestern part of Cherokee County, in an area west of Gaffney and north of old U.S. Highway 29. These soils occur with

the Cecil and Appling soils and, to a minor extent, with the Tatum and Nason soils. They resemble Cecil soils, but generally vary more in depth to weathered schist, in consistence, and in content of gravel and mica. They have a browner surface soil than have the Appling soils, and a redder, more uniformly colored subsoil. Madison soils are not so fine textured as the Tatum and Nason soils, which are underlain by sericitic schist.

The Madison soils formed under stands of mixed hardwoods. Areas that have never been cleared are now in mixed hardwoods and a few pines. Cleared areas that have returned to woods are now mostly in pines.

In Cherokee County, the Madison soils have been mapped with Cecil soils in 13 groups of undifferentiated soils.

Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded (MdB2).—These soils consist of two red soils that formed in weathered quartz mica schist, quartz mica gneiss, or granite on broad ridgetops and adjacent gentle slopes. These soils are deep and well drained and are similar to each other in color and in texture through their profiles. The Madison soil generally is shallower and contains more mica than the Cecil soil and has a more friable subsoil. Because of their similarity and intricate pattern, these two soils were not mapped separately.

Typical profile of a Madison sandy loam (in a cultivated field in the eastern part of the county, 2 miles north of old U.S. Highway 29, between Thicketty Creek and Little Thicketty Creek):

A_p 0 to 7 inches, brown (7.5YR 5/4) sandy loam; weak, fine, granular structure; very friable when moist; many fine roots; few small pebbles; slightly acid; clear, smooth boundary; 5 to 10 inches thick.

B_2 7 to 20 inches, red (2.5YR 4/8) clay loam; moderate, medium, subangular blocky structure; friable when moist; some fine mica; few roots in upper part of layer and root holes in lower part; medium acid; gradual, wavy boundary; 10 to 20 inches thick.

B_3 20 to 36 inches, red (2.5YR 4/6) clay loam; moderate, medium, subangular blocky structure; very friable when moist; a large amount of mica; slightly slick; medium acid; gradual, wavy boundary; 10 to 20 inches thick.

C 36 inches +, weathered quartz mica schist; fairly large amount of feldspar and mica; medium acid.

This profile is representative of only a small acreage of the Madison and Cecil soils in Cherokee County. Other profiles have a fairly narrow range in depth to weathered mica schist, in content of gravel and mica, in color, and in consistence. Many areas have varied amounts of gravel in the surface soil. In many places the lower part of the subsoil consists of layers of very friable clay loam that are 10 to 20 inches thick and contain much mica.

The profile of Cecil sandy loam, 2 to 6 percent slopes, eroded, that is described for the Cecil series is representative of most of the Cecil component of this mapping unit. Other profiles have a narrow range in color and consistence but have a wide range in depth to weathered underlying material and in content of mica and gravel. The surface layer ranges from reddish brown to grayish brown in color and from 4 to 10 inches in thickness. The clay loam subsoil is 30 to 45 inches thick and is red to yellowish red. In some areas the subsoil contains more than the normal amount of mica. Included with this soil are a few gravelly areas and a few small, severely eroded areas.

Use and management.—Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded, is one of the most extensive mapping units in Cherokee County. Nearly all of the acreage has been cultivated to clean-tilled crops. Crops and pasture are now on most of the acreage, and the rest is in woods, in nonfarm use, or is idle.

Because they are well drained, friable, and supply much moisture to plants, these soils are well suited to the crops grown in the county. They are suited to peaches and grapes because air drainage is adequate. Under ordinary management, including large additions of fertilizer, high yields are obtained. Crop residue should be managed well to maintain tilth, moisture-supplying capacity, and fertility. (Capability unit IIe-1.)

Madison and Cecil sandy loams, 2 to 6 percent slopes (MdB).—These soils have less runoff and a slightly thicker surface layer than Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. The surface layer is grayish-brown sandy loam, 5 to 10 inches thick. A few small areas of gravelly soils are included, and a few shallow or moderately deep gullies have formed.

These soils are easier to cultivate than Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. They are suited to about the same crops and need about the same management as those soils, but they are less well suited to annual lespedeza. (Capability unit IIe-1.)

Madison and Cecil sandy loams, 6 to 10 percent slopes (MdC).—These soils have a slightly thicker sandy surface layer than have Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded, but because they are steeper, they are more likely to erode. They are on side slopes, chiefly below ridgetops and along drainageways. Their surface layer is generally grayish brown and is 5 to 10 inches thick. It is underlain by a red to yellowish-red subsoil, 30 to 40 inches thick. A few gravelly areas are included, and a few shallow gullies have formed.

Most of this mapping unit has been cultivated for a short time, but some areas have remained in mixed hardwoods. Open areas are now cultivated or are in pasture.

Because they are moderately permeable, are in good tilth, and are fertile, these soils are suited to cultivated crops and pasture plants commonly grown in the county. They are not so well suited to intense cultivation as Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Because air drainage is good, they are well suited to peaches and grapes.

If they are cultivated, these soils need moderate practices of management to prevent the loss of soil and water. To maintain tilth and fertility, add large amounts of fertilizer and manage crop residue well. Control grazing to maintain a complete cover. (Capability unit IIIe-1.)

Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded (MdC2).—These eroded soils have stronger slopes and faster runoff than have Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Shallow gullies are fairly common. Included with these soils are a few gravelly areas and very small severely eroded areas.

These soils have been cultivated to clean-tilled crops, but most of the acreage is now in pasture and cultivated crops. The rest is idle or is in woods.

These soils are suited to crops cultivated locally or to pasture plants. They are not so well suited to intensive cultivation as are Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Because surface runoff is rapid and air drainage is good, they are well suited to peaches and grapes.

If they are cultivated, these soils need moderate practices to control loss of soil and water. Good management of crop residue will help maintain tilth and fertility. Grazing should be controlled so that a complete cover is maintained. (Capability unit IIIe-1.)

Madison and Cecil sandy loams, 10 to 15 percent slopes (MdD).—These soils are on medium to short slopes along or at the heads of drainageways. Runoff is moderately rapid, and the hazard of erosion is severe. The surface layer is grayish brown and is 5 to 10 inches thick. In places the subsoil is thinner, more friable, and less red than that of Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Included with these soils are a few small gravelly areas and a few very small severely eroded spots. A few shallow gullies have formed.

Nearly all of the acreage has remained wooded and is now in mixed hardwoods and a few pine. Small areas are in pasture or are cultivated.

Because they are strongly sloping and susceptible to erosion, these soils are poorly suited to frequent cultivation. They should be kept in trees or seeded to pasture. They are suited to pasture mixtures used locally, but they require large additions of fertilizer and other good management to produce good yields. If they are cultivated, these soils require intensive management to prevent excessive erosion. (Capability unit IVe-1.)

Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded (MdD2).—These eroded soils are on medium to short slopes and have rapid runoff. Their surface layer is mostly reddish brown and is 4 to 7 inches thick. Their subsoil ranges from 30 to 40 inches in thickness. In many places it is more friable and lighter colored than that in Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Some gravelly areas and a few severely eroded areas are included. Shallow gullies are common.

Most of the acreage in these soils has been cultivated to clean-tilled crops but is now in pasture. Areas not in pasture are wooded, are cultivated, or are idle.

These strongly sloping soils are poorly suited to frequent cultivation. They are better suited to pasture or trees than to crops. Fairly suitable crops are grain sorghums, oats, rye, and cowpeas. Suitable pasture plants are sericea lespedeza or bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza.

If these soils are cultivated, intensive practices are needed to prevent the loss of soil and water and to maintain productivity. Grazing should be controlled so that a good cover is maintained. (Capability unit IVe-1.)

Madison and Cecil sandy loams, 15 to 25 percent slopes (MdE).—These soils are generally on short slopes along the drainageways. Their surface layer is mainly grayish brown and is 5 to 10 inches thick. The subsoil is dominantly yellowish red and ranges from 24 to 36 inches in thickness. In places the subsoil is thinner, less red, and more friable in the lower part than is the subsoil in gently sloping Madison and Cecil sandy loams. Some gravelly areas are included, and a few shallow or moderately deep gullies have formed.

Nearly all of these soils are in mixed hardwoods. Most of the acreage that has been cleared is in pasture, is in pine trees, or is idle.

Because of the moderately steep slopes and the hazard of severe erosion, these soils are not suited to cultivation. Wooded areas should be kept in trees. If adequately fertilized and otherwise well managed, the cleared areas are suited to pasture. A suitable pasture mixture is bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. Sericea lespedeza is suited to the less steep areas. Kudzu will protect these soils and provide pasture for limited grazing. (Capability unit VIe-2.)

Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded (MdE2).—These soils are on fairly short slopes along drainageways. Their surface layer, ranging from 3 to 7 inches in thickness, is reddish brown to grayish brown. The subsoil is yellowish red to red and is 24 to 36 inches thick. It is more varied than the subsoil in Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded, and in many places, is more friable and lighter colored in the lower part. Shallow gullies are common, and a few moderately deep gullies have formed. Some small gravelly areas are included.

Most of the acreage has been cultivated to clean-tilled crops but is now in woods or pasture. Some parts are idle.

Because runoff is rapid and further erosion is likely, these moderately steep soils are not suited to cultivated crops. Wooded areas should remain in trees. Other areas can be seeded to pasture if they are fertilized and otherwise well managed. The pasture will protect the soil if grazing is controlled. Bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza is a suitable pasture mixture. Sericea lespedeza is suited to the better fields on the lower slopes. Kudzu will protect these soils and provide pasture for very limited grazing. (Capability unit VIe-2.)

Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded (MdF2).—These soils are on short slopes—mostly those along drainageways. Their surface layer is reddish brown to grayish brown and is 3 to 10 inches thick. The subsoil is varied but is generally yellowish red and is 24 to 30 inches thick. In places the subsoil layer is poorly defined. Included with these soils are small gravelly areas and a few severely eroded areas. Shallow gullies are common, and a few deep gullies have formed.

Much of the acreage in these soils has been cultivated for a short time but is now mostly wooded. Small parts are in pasture or are idle. Wooded areas that have not been cleared are in mixed hardwoods and a few pines. Other areas are mostly in pines.

These soils are not suited to cultivation. Wooded areas should remain in trees. Open areas are best suited to pine trees. Kudzu will protect these soils and provide pasture for very limited grazing. To obtain an early protective cover, it is necessary to prepare the site before seeding kudzu or planting pine. (Capability unit VIIe-1.)

Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded (MaB3).—These severely eroded soils have a thinner, much finer textured surface soil than Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded.

Water infiltrates slowly and runs off in fairly large amounts. The surface soil, consisting mostly of subsoil material, is reddish-brown clay loam, 3 to 7 inches thick. The subsoil is red to yellowish red and is 30 to 42 inches thick. Shallow and moderately deep gullies are common. Included with these soils are a few small gravelly areas and small areas that have a sandy loam surface soil.

These soils have been cultivated to clean-tilled crops. Most of the acreage is now in pasture. The rest is cultivated, planted to pines, in nonfarm use, or is idle.

Though the surface soil is fine textured and slightly sticky and infiltration is slow, these soils are fairly well suited to cultivated crops. They are best suited to pasture or pine trees. Areas in crops or pasture require good management, including large additions of fertilizer.

If these soils are cultivated, strip rotations should be provided to add organic matter, to prevent excessive runoff, and to improve tilth. Deep-rooted perennials and good residue management of crops are especially beneficial. Grazing should be controlled on pasture. (Capability unit IIIe-1.)

Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded (MaC3).—These severely eroded soils have much more runoff than Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded. Their surface layer is reddish-brown clay loam, which consists mostly of material from the upper subsoil. It is 3 to 6 inches thick. The subsoil is red to yellowish red in color and is clay loam to clay in texture. It is 20 to 40 inches thick. Shallow and moderately deep gullies are common. A few gravelly areas and small areas of sandy loam are included.

Nearly all of the acreage has been cultivated to clean-tilled crops, but it is now mostly in pasture or in pines. Small areas are cultivated or are idle.

These soils are poorly suited to frequent cultivation because water infiltrates the sticky clay loam slowly and runs off rapidly and in large amounts. Pasture or pine trees are well suited to these soils. Fairly suitable crops are grain sorghums, oats, rye, or sericea lespedeza. Suitable pasture plants are bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza, or sericea lespedeza. Kudzu will protect these soils from erosion and provide pasture for controlled light grazing.

If needed for cultivated crops, these soils should be protected from erosion and improved in tilth and in moisture-supplying capacity by cropping systems that include deep-rooted perennials. If these soils are used for pasture, grazing should be closely controlled. (Capability unit IVe-1.)

Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded (MaD3).—These severely eroded soils are on medium to short, moderately steep slopes. Runoff is rapid and in large amounts. The surface soil, a reddish-brown clay loam 3 to 8 inches thick, is a mixture of the original surface soil and the upper part of the subsoil. The subsoil ranges from clay to clay loam, is yellowish red to red, and is 24 to 36 inches thick. In some areas, a very friable, light-colored layer is in the subsoil. Shallow and moderately deep gullies are common. Small gravelly areas and small areas of sandy loam are included.

Nearly all of the acreage has been cultivated to clean-tilled crops, but most of it is now in woods and in pasture. Some cleared areas are idle.

Frequent cultivation on these moderately steep slopes may cause further erosion, because water infiltrates slowly and runs off in large amounts. The soils are best suited to pine trees. If they are fertilized and otherwise managed well, these soils will produce pasture for protection and for limited grazing. Sericea lespedeza is a suitable pasture plant, and bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza is a suitable mixture. Kudzu will protect these soils and provide pasture for limited grazing. To obtain a satisfactory cover early, some fields need to be prepared for seeding pasture plants or for planting pine trees. (Capability unit VIe-2.)

Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded (MaE3).—These severely eroded soils are on short slopes, in most places near large drainageways. The surface soil is reddish-brown clay loam, generally 3 to 4 inches thick but ranging from 3 to 7 inches in thickness. The subsoil is yellowish red to red and 20 to 36 inches thick. It is more varied than the subsoil in Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded, and in many places has a more friable, lighter colored layer in its lower part. Shallow and moderately deep gullies are common. Included with this soil are some areas of gravelly soil, a few small areas of sandy loam, and a few areas with slopes of more than 25 percent.

Most of the acreage has been cultivated to clean-tilled crops but is now in pine trees or mixed hardwoods and a few pines. Small areas are idle or in pasture.

These soils are best suited to pines. They are not suited to cultivation and are poorly suited to pasture. If fertilized and otherwise managed well on the lower slopes, these soils will produce pasture for protection and some limited grazing. Bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza are suitable pasture mixtures. On the upper slopes or in rough fields within pastures, kudzu will protect these soils and provide very limited grazing. To obtain a satisfactory cover early, many areas need to be prepared before seeding pasture or planting pines. (Capability unit VIIe-1.)

Manteo series

The Manteo series consists of well-drained to excessively drained, medium acid soils that are shallow to bedrock. These soils formed in residuum from weathered sericitic schist that contained some basic rock. Slopes range from 2 to 25 percent, but the steeper slopes dominate.

The surface layer is gray channery silt loam in most places. It is underlain by a thin, discontinuous subsoil of yellowish-brown, firm silty clay. Disintegrated schist is at a depth ranging from 7 to 16 inches. These soils contain a medium amount of organic matter and are moderately low in fertility.

The Manteo soils occur with the Nason, Tatum, and Orange soils. They are shallower than those soils and have a thinner, much less distinct subsoil and a more varied profile.

The Manteo soils in Cherokee County are mostly in the northeastern part. Some of the acreage has been cultivated, but more of it is now in mixed hardwoods and

pines. Because of their thin root zone, limited moisture-supplying capacity, and strong slopes, these soils are not suited to intensive use.

Manteo channery silt loam, 2 to 10 percent slopes (MeC).—This is a shallow, well-drained to excessively drained soil that formed from schist. It has a medium-textured surface layer and a thin, discontinuous clayey subsoil. Thin, flat fragments of schist are numerous throughout the profile, especially in the surface layer.

Typical profile (in a moderately sloping, idle field near the Broad River, east of Gaffney):

A_p 0 to 7 inches, olive-gray (5Y 5/2) channery silt loam; weak, fine, granular structure; friable when moist; many fine roots and fragments of schist; medium acid; clear, smooth boundary.

B 7 to 11 inches, yellowish-brown (10YR 5/4) silty clay; moderate, medium, angular blocky structure; very firm when moist and plastic when wet; medium acid; gradual, wavy boundary.

C 11 inches +, disintegrated schist rock.

The surface soil ranges from 4 to 9 inches in thickness and from light olive gray to gray in color. The B horizon commonly is 3 to 6 inches thick, but it is missing in some places and is as much as 9 inches thick in other places. It ranges from pale yellow to olive brown in color and from silty clay to clay in texture. Many thin, flat fragments of schist are in the surface layer and constitute more than 10 percent of the whole profile in most places. The content of quartz and mica varies widely. Included are small areas of soils that are deeper, yellower, and less channery than this soil. A few eroded areas also are included, and in these areas the plow layer is yellower than that described because the underlying material is mixed with it.

Infiltration of water is medium to slow, and surface runoff is medium to rapid. Those B horizons that have formed are firm and very slowly permeable. But permeability is rapid in areas where a B horizon has not formed because the parent rock is deeply weathered and the subsurface layers are channery and slightly loose. The moisture-supplying capacity of this soil is low. The soil is medium in organic matter, moderately low in fertility, and medium acid.

Use and management.—This soil is not suited to frequent cultivation nor to deep-rooted plants. It is only fairly well suited to trees. It is used for and is fairly well suited to grain sorghum, oats, bahiagrass, bermudagrass, and similar crops and pasture plants. The soil responds only fairly well to lime and fertilizer. (Capability unit IVe-4.)

Manteo channery silt loam, 6 to 15 percent slopes, eroded (MeC2).—This moderately steep soil has more clay in the surface layer and much faster surface runoff than has Manteo channery silt loam, 2 to 10 percent slopes. Included with this soil are many severely eroded areas. These inclusions have a surface layer that consists mostly of gravelly, yellowish-brown clay.

This soil is unsuited to cultivation. It is best suited to trees, but maintaining trees is difficult and yields of wood products are low. Bermudagrass, bahiagrass, and annual lespedeza will provide a cover and some grazing. (Capability unit VIe-3.)

Manteo channery silt loam, 10 to 15 percent slopes (MeD).—This strongly sloping soil has faster runoff than Manteo channery silt loam, 2 to 10 percent slopes, and is slightly shallower to parent material. It is more varied in profile characteristics and has a less distinct subsoil. The thin, clayey subsoil is not continuous. In a few small severely eroded areas the surface layer is yellower and finer textured than elsewhere because it has been mixed with silty clay subsoil material.

The use of this soil is limited mostly to close-growing crops and trees. It is not suited to cultivation. It is best used for permanent pasture and trees. (Capability unit VIe-3.)

Manteo channery silt loam, 15 to 35 percent slopes (MeE).—Steeper slopes, faster surface runoff, and, in most places, a shallower and more varied profile distinguish this soil from Manteo channery silt loam, 2 to 10 percent slopes. A gravelly to rocky surface soil and a thin or weakly developed subsoil are common. Although little of the acreage has been cultivated, a few eroded spots with moderately deep gullies are included.

This soil is not suited to cultivation. It is best suited to trees, but pasture plants such as bermudagrass, bahiagrass, and annual lespedeza will provide cover and limited grazing on the less sloping areas. (Capability unit VIIe-2.)

Manteo channery silt loam, 15 to 35 percent slopes, eroded (MeE2).—This soil has much steeper slopes and faster surface runoff than Manteo channery silt loam, 2 to 10 percent slopes, and in most places, a shallower and more varied profile. Most of the acreage has been cultivated at one time. Included with this soil are many severely eroded areas that have a surface layer consisting chiefly of yellowish-brown, clayey subsoil material.

This soil is not suited to cultivation. Establishing a cover of trees is difficult and expensive, and yield of wood products is low. Pasture is impractical to improve, but bermudagrass, bahiagrass, and annual lespedeza provide cover and limited grazing in the less sloping areas. (Capability unit VIIe-2.)

Mecklenburg series

The Mecklenburg series consists of moderately deep to deep, well drained to moderately well drained, medium acid soils on uplands. These soils are gently sloping to steep and formed over gabbro, diabase, diorite, hornblende schist, and other basic rocks. They generally lie on low ridges and lower parts of slopes of high, broad ridges. In the less eroded areas, the surface layer is dark-brown to dark reddish-brown loam, 7 to 10 inches thick. The subsoil is firm, yellowish-red to reddish-brown clay, 20 to 36 inches thick. Yellowish and reddish mottles or splotches are common in the lower part of the subsoil, and most profiles have a varied amount of fine mica and small, dark concretions. Depth to weathered bedrock ranges from 3 to 20 feet or more.

These soils are moderately slow to slow in permeability and are moderate in moisture-supplying capacity. They contain a medium amount of organic matter and are moderate in fertility. Infiltration of water is slow to very slow. Surface runoff, therefore, is excessive, and erosion has been active on slopes not protected by permanent vegetation.

The Mecklenburg soils in this county are in the southeastern part and extend from State Highway 11 east-

ward through Wilkinsville to the Broad River. They are intermingled with Lloyd and Davidson soils in a few places and adjoin Iredell and Wilkes soils. They are more yellow than the Lloyd soils and are not so deep or well drained. They are not so red or so deep and well drained as the Davidson soils but have more clearly defined horizons. They are redder, browner, and deeper than Iredell and Wilkes soils but have a less plastic subsoil than the Iredell soils and more developed horizons than the Wilkes.

The native vegetation was mixed hardwoods and included redcedar. Areas that were once cultivated are now in planted pines or are in pines, cedars, mixed scrub hardwoods, vines, and shrubs that reseeded naturally.

Mecklenburg loam, 2 to 6 percent slopes, eroded (MnB2).—This is a moderately deep, well-drained soil that is on low ridgetops and adjacent gentle slopes and is underlain by dark-colored basic rocks.

Typical profile (in a gently sloping, idle field 2 miles southwest of Wilkinsville):

A_p 0 to 6 inches, dark reddish-brown (5YR 3/4) loam; medium, fine, granular structure; friable when moist; few fine roots; slightly acid; abrupt, smooth boundary.

B_{21} 6 to 17 inches, yellowish-red (5YR 4/8) clay; strong, medium, angular blocky structure; firm when moist and plastic when wet; few fine roots; medium acid; gradual, smooth boundary.

B_{22} 17 to 35 inches, yellowish-red (5YR 5/6) and yellowish-brown (10YR 5/8) clay; strong, medium, angular blocky structure; firm when moist and plastic when wet; medium acid; gradual, wavy boundary.

C 35 inches +, weathered basic rock; medium acid.

The surface layer ranges from 4 to 8 inches in thickness and from dark reddish brown to dark brown in color. The subsoil, ranging from 26 to 36 inches in thickness, is yellowish red to reddish brown. Rills are common. A few gravelly areas and some small severely eroded areas are included.

Use and management.—Most of this soil has been cultivated to cotton, corn, small grains, and hay. It is now in pasture or cultivated crops, but some small areas are idle or in pines.

This gently sloping soil is moderately fertile and fairly well suited to crops grown in the county. Because it is fine textured, sticky, and likely to erode, it should not be cultivated frequently. It is best suited to hay and pasture. Cotton, corn, small grains, grain sorghum, cowpeas, and alfalfa grow fairly well. Grasses, clovers, annual lespedeza, and sericea lespedeza are suitable pasture plants, but the soils need adequate additions of fertilizer and other good management. Seed sericea lespedeza or some other deep-rooted crop to improve permeability. Install a good water disposal system to protect this soil from further erosion. Control grazing so that a good cover is maintained and excessive compaction is prevented in areas that have a thin surface soil. (Capability unit IIe-3.)

Mecklenburg loam, 6 to 15 percent slopes, eroded (MnD2).—This moderately sloping to strongly sloping soil is along drainageways below ridges. Runoff and the hazard of further erosion are much greater than on Mecklenburg loam, 2 to 6 percent slopes, eroded. The surface soil is reddish-brown to dark-brown loam, 3 to 7 inches thick. The subsoil is yellowish-red and reddish-brown clay, 20 to 32 inches thick. Shallow gullies are common. A few gravelly areas and severely eroded spots are included.

Most of this soil has been cultivated to clean-tilled crops but is now in pasture or pines. Small areas are cultivated, idle, or in cutover mixed hardwoods.

If this soil is cultivated frequently, the high volume of runoff on the upper slopes may cause severe erosion. The most practical way to use this soil is to plant it to grasses and legumes for pasture or hay.

If fertilized and otherwise managed well, lower slopes produce grain sorghums, rye, cowpeas, and sericea lespedeza. Strict control of water is needed to prevent further erosion. Grazing should be controlled to maintain a complete cover and to prevent excessive compaction on the more eroded areas. (Capability unit IVe-2.)

Mecklenburg loam, 15 to 25 percent slopes (MnE).—This soil is in small areas along large drainageways. Because it is steeper and has more surface runoff than has Mecklenburg loam, 2 to 6 percent slopes, eroded, it is much more likely to erode than that soil. The surface layer, in most places, is dark-brown loam, 4 to 9 inches thick. The subsoil is predominantly yellowish-red to reddish-brown clay, 20 to 24 inches thick, but in a few places, it is lighter colored, contains less clay, and has less clearly defined lower boundaries. A few shallow gullies have formed. Some gravelly areas are included.

Most of this soil remains in mixed hardwoods. Many areas that were once heavily grazed or burned are now covered by mixed hardwoods, including redcedar, and a few pines. The few small areas that were once cleared are now in pasture, are in stands of pine and cedar, or are idle.

This soil is best suited to trees, but bermudagrass or kudzu will provide good cover and limited grazing if the soil is well fertilized and otherwise well managed. (Capability unit VIe-4.)

Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded (MkB3).—This soil is on ridgetops and adjacent gentle slopes. It has a thinner, much finer textured surface soil and more runoff than has Mecklenburg loam, 2 to 6 percent slopes, eroded. The surface soil is reddish-brown to dark-brown clay loam, 3 to 5 inches thick. It is a mixture of original surface soil and subsoil material. The subsoil is yellowish-red to reddish-brown clay, 20 to 30 inches thick. Water infiltrates the soil slowly. Shallow gullies are common. A few gravelly areas are included.

All of this soil was once cultivated to clean-tilled crops. It is now in cultivated crops, pasture, or pines, and small parts are idle. Though it responds well to fertilization and other good management, this soil should not be cultivated frequently, for infiltration is slow, the surface soil is heavy and sticky, and further erosion is likely. This soil is best suited to sericea lespedeza grown for hay or to pasture of locally grown grasses and legumes. If the soil is cultivated, erosion must be prevented by control of water, and by a long cropping system that includes stripcrops and deep-rooted perennials. Grazing should be controlled to maintain cover and prevent excessive compaction. (Capability unit IIIe-3.)

Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded (MkC3).—This moderately sloping soil is between ridges and stream breaks. It has much more

598952—62——3

runoff than has Mecklenburg loam, 2 to 6 percent slopes, eroded, and is moderately well drained. The surface layer, a mixture of the original surface soil and subsoil material, is reddish-brown to dark-brown clay loam, 3 to 5 inches thick. The subsoil is yellowish-red to reddish-brown clay, 20 to 28 inches thick. Water infiltrates the soil very slowly, runs off in large amounts, and forms many shallow and a few moderately deep gullies. A few gravelly areas are included.

All of this soil has been cultivated to cotton, corn, small grains, and hay. It is now mostly in pasture and pines, but some fields are cultivated and small areas are idle.

Though it responds fairly well to fertilizer, this soil is poorly suited to cultivation because of its heavy, sticky surface layer, low infiltration of water, and susceptibility to further erosion. It is best suited to sericea lespedeza grown for hay or to bermudagrass, whiteclover, and annual lespedeza grown for pasture. Grazing should be closely controlled so that a cover is maintained and excessive compaction is prevented. (Capability unit IVe-2.)

Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded (MkD3).—Most of this soil is on short slopes adjacent to drainageways. The reddish-brown to dark-brown clay loam surface layer is mostly subsoil material and is 3 to 5 inches thick. The subsoil is 20 to 26 inches thick and is yellowish red to reddish brown. In many places it is less clayey and lighter colored in the lower part of the subsoil than is Mecklenburg loam, 2 to 6 percent slopes, eroded. Shallow gullies are common, and a few moderately deep gullies have formed. A few gravelly areas are included.

All of this soil was cultivated to clean-tilled crops, but most of it is now in pasture or pines. Small parts are cultivated or are idle.

This soil is not suited to cultivation. Strong slopes, slow infiltration of water, and slow permeability limit the use of this soil to pines grown for pulpwood. Even a stand of pines is expensive and difficult to establish. If the soil is well fertilized and managed, bermudagrass mixed with whiteclover and annual lespedeza will provide a cover for the soil and pasture for limited grazing. (Capability unit VIe-4.)

Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded (MkE3).—This soil is in small areas on short slopes adjacent to large drainageways. The surface soil is dark reddish-brown to dark-brown clay loam, 3 to 8 inches thick, and is a mixture of the original loam surface soil and the upper part of the subsoil. The subsoil ranges from 20 to 24 inches in thickness and from yellowish red to reddish brown in color. The lower part of the subsoil on many steep slopes, and all of the subsoil in a few areas, is less clayey and lighter colored than normal and has less distinct lower boundaries. Shallow gullies are common, and a few moderately deep gullies have formed.

Included with this soil are (1) a few gravelly areas; (2) a few areas that are less than severely eroded and have a loam surface soil; and (3) a few areas where slopes are greater than 25 percent.

Most of this soil was cultivated for a few years but has returned to pines and redcedar, mixed hardwoods, or vines and shrubs. Small areas are idle or in pasture.

Because it is steep and severely eroded, this soil is not suited to cultivated crops or pasture and is only fairly well suited to trees. Extra care and expense are required to establish and maintain only a fair cover of loblolly pine for pulpwood. Bermudagrass, whiteclover, and annual lespedeza may provide a fair cover for the soil and pasture for very limited grazing. (Capability unit VIIe-3.)

Mixed alluvial land

This land consists of soil material that has been deposited along streams and is likely to be flooded at times.

Mixed alluvial land (0 to 2 percent slopes) (Mv).—Soil materials washed from uplands and terraces to the bottom lands along streams constitute this land, which is deep, well drained to somewhat poorly drained, and medium acid to strongly acid. These deposits range from loamy sand to fine sandy loam. Their color, depending on the content of organic matter, varies widely but is mostly grayish brown to dark yellowish brown. The deposited material extends to a depth of 3 feet to several feet, and the water table is generally below 3 feet. This land is subject to frequent overflows of short duration. This material contains some fine mica and a few small pebbles, and in small spots there are strata of gravel or small rocks.

Mixed alluvial land occurs with soils on bottom lands and adjoins soils on terraces and uplands. It is better drained than Mixed wet alluvial land. It does not have a definite profile like that in the Congaree, Chewacla, and Buncumbe soils and is less uniformly drained than those soils. Small areas of associated soils are included.

Infiltration of water is medium, and permeability is moderately rapid. This land is moderate in organic matter, in moisture-supplying capacity, and in fertility.

Most Mixed alluvial land was cultivated. It is now mostly in pasture and partly in cultivated crops or in woods. The land is easily tilled and is productive, but it is poorly suited to most cultivated crops because of the overflow hazard. It is best suited to pasture. Corn, oats, rye, annual lespedeza, and grain sorghums can be grown in areas less subject to overflow. If the land is cultivated, open ditches are necessary to improve surface drainage.

Suitable pasture mixtures are tall fescue and ladino clover, or dallisgrass, bahiagrass, or bermudagrass and crimson clover, white clover, and annual lespedeza. This land produces good yields if it is properly fertilized and otherwise well managed. (Capability unit IIw-2.)

Mixed wet alluvial land

This land is similar to Mixed alluvial land, but it is flooded more frequently and consists of less uniformly graded materials.

Mixed wet alluvial land (0 to 2 percent slopes) (Mw).—Deep, poorly drained, strongly acid deposits of mixed soil materials that have washed from uplands to bottom lands make up this land. These deposits are mostly along medium-sized and large streams where surface drainage is partly blocked or where stream channels are shallow.

This land ranges from loamy sand to fine sandy loam in most places, but small sandbars and gravelly or cobbly

areas are common. Color ranges from gray in the sandier areas to very dark grayish brown in wet areas that are high in organic matter. The thickness of the deposited material ranges from 3 feet to several feet. Frequently the water table remains for long periods at a depth of less than 3 feet. Surface drainage is slow, and overflow is frequent.

Mixed wet alluvial land occurs with soils on bottom lands and adjoins soils on terraces and uplands. It is wetter and less uniformly graded than Mixed alluvial land. It is less uniform in drainage and texture than the Congaree, Chewacla, and Buncombe soils. Small areas of associated soils are included.

Infiltration of water is medium, and permeability is moderately rapid to moderate. This land is moderate to low in organic matter, in moisture-supplying capacity, and in fertility. Because this land is in areas where floodwater is active, physical and mineral properties are variable.

Most Mixed wet alluvial land has been cultivated but is now in pasture or woods of low grade. It is poorly suited to cultivated crops because of the frequent overflow from streams and the slow surface runoff. The better areas are fairly well suited to pasture, and some areas are fairly well suited to trees.

Dallisgrass or bahiagrass planted with whiteclover and annual lespedeza is a fairly suitable seeding for pasture. Bermudagrass will provide protection and some grazing on the few droughty sandbars within pastures, but the land must be fertilized and managed well to obtain fair yields. Surface drainage by open ditches is needed in many areas. Moderate artificial drainage will make this land suitable for loblolly pine. (Capability unit IVw-3.)

Nason series

The Nason series consists of deep, well-drained, medium acid soils on gentle to steep upland slopes. These soils have formed from weathered sericitic schist. The surface soil ranges from very fine sandy loam, where the original soil remains, to silty clay loam, where most of the original very fine sandy loam has been washed away. The surface layer of these soils is 3 to 12 inches thick and is dark grayish brown to yellowish brown. If it is not eroded, the subsoil ranges from 30 to 45 inches in thickness and is mainly yellowish red in the upper part and yellowish red and brownish yellow in the lower part. Most profiles contain fine mica. Bedrock is at a depth of 36 to 60 inches or more.

The Nason soils are moderate in permeability and in moisture-supplying capacity but are low in fertility and in organic matter. Infiltration of water is slow in the very fine sandy loam and is very slow in the silty clay loam. Though easily worked, these soils are only fairly productive.

The Nason soils in Cherokee County are in the northeastern part, mostly east of Blacksburg. They occur with Tatum, Manteo, and Orange soils. Their surface soil is more gray and less brown than that of Tatum soils, and their subsoil is more yellow and less red.

Nason soils are deeper than the Manteo soils and have more distinct horizons. They are deeper, are more friable, and have more distinct horizons than the Orange soils but are less brown and olive than those soils.

The native vegetation on Nason soils was mixed hardwoods. Some areas that were once cultivated are in pines. Other areas that were cultivated briefly, heavily grazed, or burned are in mixed hardwoods and pines. An understory of vines and shrubs is common in woodland where trees are sparse.

Nason very fine sandy loam, 2 to 6 percent slopes (NaB).—This is a deep, well-drained, friable soil. It is on fairly broad upland ridges or adjacent gentle slopes.

Typical profile (in a gently sloping wooded area off State Highway No. 5, 4 miles southeast of Blacksburg):

- A_1 0 to 1 inch, dark-colored, very fine sandy loam; high content of organic matter; weak, fine, granular structure; medium acid; clear, wavy boundary.
- A_2 1 to 6 inches, grayish-brown (10YR 5/2) very fine sandy loam; weak, fine, granular structure; friable when moist; many fine roots; medium acid; clear, smooth boundary.
- B_1 6 to 10 inches, strong-brown (7.5YR 5/6) silty clay loam; weak, fine, crumb structure; friable when moist; numerous roots; medium acid; clear, wavy boundary.
- B_2 10 to 32 inches, yellowish-red (5YR 4/8) silty clay; moderate, medium, subangular blocky structure; firm when moist; medium acid; gradual, wavy boundary.
- B_{22} 32 to 45 inches, yellowish-red (5YR 5/6) and brownish-yellow (10YR 6/6) silty clay; moderate, medium, subangular blocky structure; firm when moist; medium acid; gradual, wavy boundary.
- C 45 inches +, weathered sericitic schist; medium acid.

The surface layer ranges from 4 to 10 inches in thickness and from dark grayish brown to yellowish brown in color. The subsoil is brown and yellowish-red silty clay, 30 to 40 inches thick. Rills are fairly common.

Included with this soil are a few gravelly areas, a few areas of silt loam, and a few severely eroded areas. Gravel of quartz and weathered rock occurs in many places but does not interfere with tillage.

Use and management.—Most of this soil has been cultivated to cotton, corn, small grains, annual lespedeza, and cowpeas. Now, most of it is cultivated or in pasture. Some of it is in woods, and small parts are idle.

Because of low fertility and slow infiltration of water, this soil is only fairly well suited to crops cultivated locally. Cotton, corn, grain sorghums, oats, rye, annual lespedeza, and cowpeas are suited. Suitable pasture plants are sericea lespedeza, annual lespedeza, and bermudagrass or bahiagrass mixed with whiteclover. Dallisgrass or tall fescue and ladino clover are fairly well suited. The soil must be fertilized and managed well to obtain good yields. If this soil is cultivated, use strip rotations that increase organic matter, prevent erosion, and improve fertility. (Capability unit IIe-2.)

Nason very fine sandy loam, 6 to 10 percent slopes, eroded (NaC2).—This soil has stronger slopes and more runoff than Nason very fine sandy loam, 2 to 6 percent slopes, and a slightly thinner surface soil. Shallow gullies are fairly common. Included with this soil are small gravelly areas, a few areas of silt loam, some severely eroded areas, and small areas that are not eroded.

Nearly all of this soil has been cultivated to cotton, corn, small grains, cowpeas, and other clean-tilled crops. Most of it is now in pasture or crops, and small parts are wooded or idle.

Because it is moderately sloping, has slow infiltration of water, and is low in fertility, this soil is only fairly suited to crops cultivated in the county. Grain sorghums, oats, rye, annual lespedeza, and cowpeas are fairly suitable for grain or hay. Sericea lespedeza, bermudagrass, bahiagrass, whiteclover, and annual lespedeza are suitable pasture plants. The soil is fairly well suited to dallisgrass or tall fescue mixed with ladino clover. This soil must be fertilized and otherwise managed well to obtain good yields. If the soil is cultivated, use strip rotations to increase organic matter, to prevent erosion, and to maintain fertility. Grazing should be controlled to maintain a good cover. (Capability unit IIIe-2.)

Nason very fine sandy loam, 10 to 15 percent slopes, eroded (NaD2).—This strongly sloping soil has more runoff than Nason very fine sandy loam, 2 to 6 percent slopes, and is much more likely to erode. The surface soil is grayish-brown to brown very fine sandy loam, 4 to 8 inches thick. The subsoil is reddish-brown to yellowish-red silty clay, 32 to 40 inches thick. Weathered bedrock is at a depth of 36 inches in places. A few shallow gullies have formed. Included with this soil are a few gravelly areas, a few areas of silt loam, and a few uneroded areas.

Most of this soil has been planted to corn, hay, pasture, and other crops that do not require intensive cultivation. A large part is now in pasture, and small parts are in pines or are idle.

This soil is not suited to frequent cultivation. If it is adequately fertilized and otherwise well managed, it will produce good yields of grain sorghums, rye, or cowpeas. To prevent the loss of soil and water and to maintain fertility, use long rotations of crops in strips and include close-growing legumes. Bermudagrass, bahiagrass, whiteclover, annual lespedeza, and sericea lespedeza are suitable pasture plants, but if yields are to be high, the soil must be fertilized well. (Capability unit IVe-1.)

Nason very fine sandy loam, 15 to 25 percent slopes (NaE).—This steep soil is in small areas on short slopes along drainageways. The surface soil is grayish-brown to brown very fine sandy loam, 4 to 8 inches thick. The subsoil is reddish-brown to yellowish-red silty clay, 30 to 36 inches thick. Weathered bedrock generally is at a depth of 36 inches.

Included with this soil are some gravelly areas, a few areas on slopes greater than 25 percent, a few severely eroded areas, and a few areas where shallow gullies have formed.

Most of this soil has remained in mixed hardwoods, but some of it was cleared and cultivated briefly to hay, oats, or rye. Areas once cleared are now mostly in pasture or pines. Small parts are idle or are in sericea lespedeza or kudzu.

This soil is best suited to trees. Permanent pasture furnishes protection and limited grazing if this soil is fertilized adequately and managed well. Bermudagrass or bahiagrass planted with whiteclover and annual lespedeza are suitable pasture plants. Some of the less steep slopes are suitable for sericea lespedeza, if land preparation is practical. (Capability unit VIe-2.)

Nason silty clay loam, 2 to 10 percent slopes, severely eroded (NsC3).—This soil has stronger slopes, a finer textured surface soil, and much more runoff than Nason very fine sandy loam, 2 to 6 percent slopes. The surface soil, a yellowish-brown clay loam, 3 to 5 inches thick, consists mostly of subsoil material. It is slightly sticky, and water infiltrates it very slowly. Shallow gullies are common, and many moderately deep gullies have formed. A few gravelly areas and small areas of very fine sandy loam are included.

All of this soil has been cultivated to cotton, corn, small grains, and other clean-tilled crops. Most of it is now in pasture or pines, and the rest is cultivated, idle, or in nonfarm use.

This soil is poorly suited to cultivated crops. A perennial cover of pines or pasture is the most practical use. Because it is fairly responsive, the soil on the more nearly level slopes will produce good yields of grain sorghums, oats, rye, annual lespedeza, or sericea lespedeza if it is well fertilized and managed. Suitable grazing plants are sericea lespedeza, annual lespedeza, kudzu, or bermudagrass mixed with whiteclover.

If this soil is cultivated, a long cropping system that includes perennials and uses stripcropping should be planned to control erosion and improve fertility. Grazing should be controlled to maintain a good cover. (Capability unit IVe-1.)

Nason silty clay loam, 10 to 25 percent slopes, severely eroded (NsE3).—This steep soil is on slopes along drainageways. Runoff is rapid and in large amounts. The surface soil, consisting mostly of subsoil material, is yellowish-brown clay loam, 2 to 4 inches thick. The subsoil is yellowish-red silty clay, 20 to 32 inches thick. Many moderately deep gullies have formed. Included with this soil are gravelly areas, a few small areas of very fine sandy loam, and small areas on short slopes of more than 25 percent.

Most of this soil has been cultivated to clean-tilled crops. Most of it is now in pines or pasture. The rest is idle.

This severely eroded, steep soil is not suited to cultivated crops. Wooded areas should be kept in trees, and open areas can be used best for pine trees. Establishing a good stand of pine is difficult, is expensive, and may be impractical. Small bare areas can be seeded to bermudagrass, whiteclover, annual lespedeza, or kudzu, but the grazing furnished will be very limited. (Capability unit VIIe-1.)

Orange series

The Orange series consists of shallow to moderately deep soils that are medium acid to strongly acid and somewhat poorly drained. These are gently sloping soils that formed over basic intrusions in sericitic schist.

The surface soil is light yellowish-brown silt loam, 3 to 8 inches thick. The subsoil is light yellowish-brown to pale-olive silty clay and ranges from 10 to 20 inches in thickness. Depth to weathered bedrock is generally 18 to 30 inches. Fine mica is common in most profiles, quartz fragments are on the surface of most areas, and fragments weathered from the underlying material are on the more eroded areas.

These soils are slowly permeable and are low in organic matter, moisture-supplying capacity, and fertility.

The Orange soils in Cherokee County are mostly in the northeastern part, in one area 1 mile west of Kings

Creek. They occur with Manteo and Nason soils, and to a lesser extent with Tatum soils. They have a more uniform subsoil than the Manteo soils but lack the channery texture and strong slopes. Orange soils are not so deep as the Nason or Tatum soils and do not have so friable a subsoil. They are not so red as the Tatum soils.

These soils formed under mixed hardwoods. They are now in mixed hardwoods, pine, and cultivated crops. Small parts are idle. One soil of this series was mapped in the county.

Orange silt loam, 2 to 6 percent slopes, eroded (OrB2).—This is a moderately deep, firm, somewhat poorly drained soil on uplands.

Typical profile (in a gently sloping woodland of young pines, off State Highway No. 5, 1 mile west of Kings Creek):

A_p 0 to 6 inches, light yellowish-brown (2.5Y 6/4) silt loam; weak, fine, granular structure; loose and fluffy; many small and medium roots; few fragments of quartz and parent rock; strongly acid; clear, wavy boundary.

B 6 to 21 inches, yellowish-brown (10YR 5/6) silty clay and a few spots of pale-olive (5Y 6/3) and light yellowish-brown (2.5Y 6/4) silty clay; weak and variable colors; weak, medium, angular blocky structure; hard when dry, firm when moist, and plastic when wet; few fragments of parent rock; distinct clay skins; medium acid; clear, wavy boundary.

C 21 inches +, deeply weathered to almost completely disintegrated sericitic schist that extends to varied depth.

Massive rock that is darker colored than the C horizon in the profile described is at a depth of 3 to 4 feet in a cut nearby. The A horizon ranges from 4 to 8 inches in thickness. The subsoil and the entire profile vary in thickness. Weathered bedrock is near the surface in some places, mainly on slope breaks. Included with this soil are small severely eroded areas that have a silty clay loam surface soil.

Use and management.—This soil is poorly suited to crops. Areas that have a silt loam surface soil at least 4 inches thick are fairly well suited to loblolly pine grown for pulpwood. If well fertilized, these same areas will produce fair yields of oats, rye, or annual lespedeza. Bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza are fairly suitable pasture mixtures. Grazing should be controlled so that a cover is maintained and areas having a thin surface soil are not compacted. (Capability unit IVe-2.)

Riverwash

Riverwash consists of soil material that has been deposited recently in and along the channels of large streams.

Riverwash (Rw).—This land type consists of fairly recent deposits of sand, silt, gravel, and assorted debris. Most of it is along the Broad River, but it also makes up small islands in the river in the northeastern part of the county. This coarse-textured land is in beachlike areas, is droughty, and is subject to flooding. It will not support vegetation. (Capability unit VIIIs–1.)

State series

The State series consists of deep, very friable, slightly acid soils that are well drained to moderately well drained. These soils are on nearly level second bottoms or low terraces. In this county they are 2 to 3 feet above the Broad River bottom lands. They have formed from fine-textured sandy materials brought down from the upper Piedmont and Blue Ridge Mountains.

The surface layer, to a depth of about 10 inches, is fine sandy loam ranging from grayish brown to very dark grayish brown, depending on the amount of organic matter. The subsoil is dark-brown to yellowish-brown fine sandy loam over loamy fine sand. The upper part of the subsoil is fairly clayey. Some small fragments of quartz and fine mica are in most profiles.

These soils are moderately rapid in permeability, low in organic matter, and moderate in moisture-supplying capacity and fertility. Most physical characteristics are variable.

The State soils are adjacent to Mixed alluvial land, the well-drained Congaree soil, the somewhat poorly drained Chewacla soil, and other soils on first bottoms.

State soils formed under mixed hardwoods, and areas of these soils are now in hardwoods of poor quality.

Only one State soil is mapped in Cherokee County.

State fine sandy loam (0 to 2 percent slopes) (Sa).—This is a deep, very friable, well drained to moderately well drained soil on second bottoms or low terraces. It has formed on the bottom lands of the Broad River, on slightly undulating slopes.

Typical profile (in a cultivated field on the west side of the Broad River, 2 miles north of the Pacolet River):

A_p 0 to 10 inches, dark-brown (10YR 3/3) fine sandy loam; moderate, coarse, granular structure; loose when dry and soft when moist or wet; moderate amount of roots; few fine flakes of mica; neutral to slightly acid; clear, wavy boundary.

B 10 to 37 inches, dark-brown (10YR 4/3) heavy fine sandy loam; weak, fine, blocky structure; very friable when moist; few medium roots; numerous flakes of very fine mica; very slightly acid; diffuse boundary.

C 37 to 60 inches +, yellowish-brown (10YR 5/4) loamy sand with a few, distinct, dark-brown (7.5YR 4/4) mottles and streaks; weak, fine, granular structure; loose when moist; slightly acid.

The surface layer ranges from 6 to 11 inches in thickness. From place to place the profile varies in color, in content of gravel or mica, and in depth to sandier materials. Some of the short slopes have as much as 3 percent gradient. Included with this soil are small areas of Mixed alluvial land and sandy Buncombe soils. This soil is likely to be flooded infrequently. It has a favorable supply of moisture.

Use and management.—All State fine sandy loam in this county has been cleared and cultivated. Most of it is now cultivated or in pasture, and small parts are in trees. This soil is easy to plow and is well suited to corn, grain sorghums, oats, and rye. Because of its location, it is best suited to pasture. It is well suited to mixtures of annual pasture plants. It is poorly suited to sericea lespedeza and is not suited to alfalfa. Large additions of fertilizer are needed for high yields. This soil is suited to loblolly pine and hardwoods. (Capability unit I-2.)

Stony land

This land type consists of soil material similar to that of the surrounding soils, and of rocks that have the same mineral composition as the rock underlying those soils.

Stony land (St).—This mapping unit is strongly sloping to steep and includes a few areas covered with small rock

and boulders. It is on short steep ridges or on rounded hills called mountains. The most prominent of these hills in the county are Thicketty, Whitaker, Draytonville, McGowans, and Saladback. The rocks that crop out on Draytonville and nearby Saladback, which are in the sericitic schist belt, are metamorphic granite and gneiss.

This land is scattered across the north-central part of the county. Nearly all of it is covered by fair to sparse stands of mixed hardwoods and some pine, and by vines and shrubs. The land is best used for trees, wildlife, and recreational areas. Protection from fire is needed if a good cover is to be maintained. (Capability unit VIIIs-1.)

Tatum series

The Tatum series consists of deep, well-drained, friable soils. These medium acid soils formed in residuum of weathered sericitic schist. They are on gentle to steep upland slopes.

The surface layer ranges from very fine sandy loam to silty clay, depending on the degree of erosion. In uneroded areas the surface layer is yellowish-brown to strong-brown very fine sandy loam, 6 to 12 inches thick. The subsoil is yellowish-red to red or yellowish-brown silty clay loam or clay. The surface layer and subsoil combined are 2 to 5 feet thick, and the depth to weathered bedrock ranges from 3 to 8 feet or more. Fine mica is common throughout most profiles.

These soils are low in organic matter. Water infiltrates the soil at a moderately slow to slow rate, and permeability is moderate.

Tatum soils make up about 20 percent of the county and are the most extensive soils. Much of the acreage is severely eroded. These soils are distributed in the northeastern part of the county in the schist belt. They occur with Nason, Manteo, Tirzah, and Orange soils. Tatum soils have a browner surface soil and a much redder subsoil than Nason soils. They are deeper than Manteo soils and have more distinct horizons. They are not so dark as Tirzah soils. Tatum soils are redder, are deeper, and have more distinct horizons than the Orange soils, which have a heavy, yellowish-brown subsoil. They are similar to Cecil soils in appearance but are slightly less friable, are more subject to sheet erosion, and are less subject to deep gullying.

These soils formed under mixed hardwoods. Woodland now is in oak, gum, maple, elm, sourwood, dogwood, and other hardwoods, and in loblolly and Virginia pines.

Tatum very fine sandy loam, 2 to 6 percent slopes, eroded (TmB2).—This soil is on broad ridgetops. It is deep, well drained, and underlain by sericitic schists.

Typical profile (in a moist, gently sloping, wooded area 2 miles northeast of Blacksburg):

- A_p 0 to 8 inches, dark yellowish-brown (10YR 4/4) very fine sandy loam; weak, fine, granular structure; friable when moist; many fine roots; medium acid; clear, wavy boundary.
- B_1 8 to 12 inches, yellowish-red (5YR 5/6) silty clay loam; weak, fine, subangular blocky structure; friable when moist; medium acid; clear, wavy boundary.
- B_{21} 12 to 26 inches, red (2.5YR 4/8) silty clay; moderate, medium, subangular blocky structure; firm when moist; medium acid; gradual, wavy boundary.
- B_{22} 26 to 52 inches, red (2.5YR 4/8) and yellowish-brown (10YR 5/8) silty clay; strong, medium, subangular blocky structure; firm when moist; medium acid; gradual, wavy boundary.
- C 52 inches +, decomposed sericitic schist.

The surface soil is from 4 to 8 inches thick. In most areas it is yellowish brown and contains subsoil material mixed with it by plowing. The subsoil is red and is 2 to 4 feet thick. A few gravelly areas and a few severely eroded areas are included.

Infiltration of water is medium to slow, and runoff is rapid. The hazard of further erosion is moderate.

Use and management.—All of this soil has been cultivated to cotton, corn, small grains, and other clean-tilled crops. It is now mostly in cultivated crops and pasture. Small areas are idle or in pines.

Because it is gently sloping, in good tilth, and well drained, this soil is suited to the crops that do not require a highly fertile soil or one with high moisture content. Pasture mixtures locally used are suited to this soil. Though it responds to fertilizer, this soil needs to be protected against loss of soil and water.

If this soil is cultivated, the cropping system should include fine-rooted plants seeded in strips so that sheet erosion is prevented and the moisture-supplying capacity is improved. (Capability unit IIe-1.)

Tatum very fine sandy loam, 2 to 6 percent slopes (TmB).—This soil has a more uniform and slightly thicker surface layer than has Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface layer is yellowish brown and is 6 to 10 inches thick. A few small areas of gravelly soil are included.

Mixed hardwoods originally covered this soil. Most of it is now in mixed hardwoods and pines. A few areas are in crops, pasture, or nonfarm use.

Because this soil is in slightly better tilth and holds more available moisture than Tatum very fine sandy loam, 2 to 6 percent slopes, eroded, it is better suited to crops. Water runs off rapidly and may cause erosion, but erosion can be prevented by moderate conservation practices and good management. (Capability unit IIe-1.)

Tatum very fine sandy loam, 6 to 10 percent slopes (TmC).—This strongly sloping soil is in small areas and has more rapid runoff than Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface layer is 6 to 10 inches thick, and the subsoil is 2 to 3 feet thick. Some areas of gravelly soils are included.

This soil was originally in mixed hardwoods, and most of it is still wooded. Some pines are growing in areas that have been heavily grazed or burned. Small areas are in pasture or crops.

This soil should not be cultivated so frequently as Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. It is best suited to pasture and to grain sorghums, oats, rye, and other small grains. Sericea lespedeza, or bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza, provides good pasture and cover. Tall fescue and ladino clover are fairly well suited. (Capability unit IIIe-1.)

Tatum very fine sandy loam, 6 to 10 percent slopes, eroded (TmC2).—This strongly sloping soil has more rapid runoff than Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface soil is 4 to 6 inches thick, and the subsoil is 2 to 3 feet thick. In most areas the surface soil contains clayey material plowed up from the

subsoil. Shallow gullies are common. A few severely eroded spots and a few small gravelly areas are included.

Nearly all of this soil has been cultivated. Most of it is now in pasture, pines, or cultivated crops. Small areas are idle or in nonfarm use. This soil is suited to most crops grown in the county, but moderate slopes and moderately rapid runoff may cause severe erosion if the soil is plowed frequently. It is best suited to pasture or to grain sorghums, oats, rye, and other small grains. Sericea lespedeza, or bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza, provides good pasture and cover. (Capability unit IIIe-1.)

Tatum very fine sandy loam, 10 to 15 percent slopes (TmD).—This soil is mostly on short slopes along medium sized to large drainageways. The surface layer is thicker than that of Tatum very fine sandy loam, 2 to 6 percent slopes, eroded, but slopes are much stronger and runoff is much more rapid. The subsoil ranges from 2 to 3 feet in thickness. In some places the B horizon is not distinct and ranges from red to yellowish red. Some gravelly areas are included.

Nearly all of this soil is in mixed hardwoods. A few small areas are in pasture and nonfarm use. Because of the strong slopes and severe erosion hazard, this soil should not be cultivated frequently. It is best suited to pasture or trees.

This soil responds to fertilizer and will produce good yields of sericea lespedeza, or bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. Grazing should be controlled to maintain cover and to increase the supply of available moisture.

If the soil is cultivated, a cropping system should be planned that includes strip rotations of close-growing perennials on three-fourths of the land so that severe erosion is prevented and good yields are maintained. (Capability unit IVe-1.)

Tatum very fine sandy loam, 10 to 15 percent slopes, eroded (TmD2).—This moderately steep soil has much more runoff than Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. In most areas the surface layer contains some subsoil material and is yellowish brown. The subsoil ranges from 2 to 3 feet in thickness and from red to yellowish red in color. A few moderately deep gullies have formed. Many small gravelly areas are included.

This soil was cultivated for a short time to corn, small grain, cotton, or other clean-tilled crops. Much of it is now in pasture, and some is in cultivated crops, in pines, or is idle.

This soil is best suited to a permanent cover of pasture or pines. Well suited are sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. These pasture plants will provide protection and grazing if the soil is well managed.

If this soil is needed for cultivated crops, it should be planted to grain sorghums, oats, or rye. Three-fourths of the acreage should be kept in close-growing perennials, planted in strips, to protect this soil from erosion and to improve the moisture-supplying capacity. (Capability unit IVe-1.)

Tatum very fine sandy loam, 15 to 25 percent slopes (TmE).—This soil is in the northeastern part of the county. It is on steep slopes between drainageways and more gently sloping Tatum soils. The surface soil and subsoil combined are thinner than in Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface layer is 6 to 10 inches thick, and the subsoil is 1 to 3 feet thick. In many places on the steeper slopes, the subsoil is less red than it is on the more gentle slopes.

Some gravelly areas are included, but the gravel does not seriously affect plowing. A few gullies have formed.

Nearly all of this soil remains in woods. It is not suited to cultivated crops. Sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza, will provide protection and limited grazing if this soil is managed well. (Capability unit VIe-2.)

Tatum very fine sandy loam, 15 to 25 percent slopes, eroded (TmE2).—This soil is in the northeastern part of the county on slopes between streams and less sloping Tatum soils. Runoff is much higher in volume and the erosion hazard far greater than on the Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface soil is 4 to 8 inches thick, and in many areas it is a reddish-brown mixture of the original sandy surface soil and the clayey subsoil. A few moderately deep gullies have formed. Included with this soil are a few severely eroded spots and some gravelly areas. The gravel does not interfere with occasional plowing.

Most of this soil has been cultivated briefly but is now in woods, is in pasture, or is idle. It is best suited to woods, but under good management, sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza will provide protection and limited grazing. (Capability unit VIe-2.)

Tatum very fine sandy loam, 25 to 35 percent slopes (TmF).—This soil is in the northeastern part of the county on short slopes, or breaks, along drainageways. The surface soil is 4 to 8 inches thick, and the subsoil is 1 to 3 feet thick. The color of the subsoil varies but is generally less red than in the more gently sloping Tatum soils. This soil is closely associated with the shallow Manteo soils. A few moderately deep gullies have formed, and some gravelly areas are included.

All of this soil is in woods, mostly mixed hardwoods and a few loblolly and Virginia pines. This very steep soil is not suited to crops and should remain in trees. (Capability unit VIIe-1.)

Tatum silty clay loam, 2 to 6 percent slopes, severely eroded (TaB3).—This soil has a finer textured surface soil, slower infiltration of water, and more rapid runoff than has Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The surface soil, consisting mostly of subsoil material, is silty clay loam, 3 to 6 inches thick. The subsoil is 2 to 3 feet thick. Shallow gullies are common, and a few moderately deep gullies have formed. A few gravelly areas and a few areas of very fine sandy loam are included.

This soil has been cultivated to cotton, corn, small grains, and hay. Most of it is now in pasture or cultivated crops, and some areas are in pines or are idle.

This severely eroded soil is much less suited to crops than Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. It will, however, produce fair yields of locally grown crops if it is adequately fertilized and otherwise well managed. If this soil is cultivated, use a 3-year cropping system and plant crops in strips. Keep two-thirds of

the strips in close-growing vegetation and only one-third in row crops. This will prevent excessive erosion, improve tilth, and increase the moisture-supplying capacity. To keep good pasture on this soil, add large amounts of fertilizer and manage the soil well. (Capability unit IIIe-1.)

Tatum silty clay loam, 6 to 10 percent slopes, severely eroded (TaC3).—This strongly sloping soil has more runoff and a finer textured surface soil than has Tatum very fine sandy loam, 2 to 6 percent slopes, eroded. The silty clay loam surface soil consists mostly of subsoil material and is 3 to 5 inches thick. The subsoil ranges from 20 to 30 inches in thickness and is a red silty clay. Shallow gullies are common, and a few moderately deep gullies have formed. Some gravelly areas and a few small areas of very fine sandy loam are included.

This soil has been cultivated to cotton, corn, small grains, hay, and other crops. It is now mostly in pasture or pines, but some areas are idle and some small areas are cultivated.

This soil is best suited to pines or pasture. It should not be cultivated frequently. Fairly good yields of grain sorghums, oats, rye, and annual lespedeza can be obtained if the soil is well fertilized and otherwise well managed. Suitable pasture plants are sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. If the soil is cultivated, intensive management is needed to prevent erosion and to maintain good tilth. (Capability unit IVe-1.)

Tatum silty clay loam, 10 to 15 percent slopes, severely eroded (TaD3).—This soil is on medium to short slopes near or at the heads of drainageways. The surface layer consists mostly of subsoil material and is 3 to 5 inches thick. The subsoil is 20 to 30 inches thick, and in some places it contains less clay than the subsoil of Tatum soils on lower slopes. Shallow gullies are common, and a few moderately deep gullies have formed. A few gravelly areas and a few areas of very fine sandy loam are included.

Nearly all of this soil has been cultivated to cotton, corn, small grains, hay, and other crops. Most of it is now in pines or pasture, and small parts are idle.

Because of the strong slopes and erosion hazard, this soil should not be cultivated. It is best suited to pines. Sericea lespedeza, kudzu, or bermudagrass mixed with whiteclover and annual lespedeza will provide cover and limited grazing if the soil is fertilized liberally and otherwise managed well. (Capability unit VIe-2.)

Tatum silty clay loam, 15 to 35 percent slopes, severely eroded (TaF3).—This soil is on short slopes along large drainageways. The surface soil is 2 to 4 inches thick. The subsoil is 15 to 24 inches thick and, in many places, contains less clay than the Tatum soils on gentle and moderate slopes. Shallow and moderately deep gullies are common. Gravelly areas and small areas of very fine sandy loam are included.

Most of this soil has been cultivated but is now in pines. Small parts are idle or in pasture.

This soil is not suited to cultivation. Its best use is for pines, but sites must be prepared to obtain a good cover from new plantings, and to improve the cover in naturally reforested stands. Low yields of wood products can be expected. (Capability unit VIIe-1.)

Tirzah series

The Tirzah series consists of deep, well-drained, friable soils on gentle to steep upland slopes. Though these soils are strongly acid, they formed over dark-colored intrusions of basic rock in the sericitic schist belt of the county. The surface soil is generally dark reddish-brown silt loam to clay loam, 3 to 10 inches thick. The subsoil, 20 to 40 inches or more thick, is dark red to red in the upper part. In the lower part it is dominantly yellowish red or reddish yellow. The weathered bedrock is at a depth of 3 to 5 feet.

These soils are moderate to moderately slow in permeability and are moderate in moisture-supplying capacity. They are medium in organic matter and fertility.

The Tirzah soils are mostly near Cherokee Falls, but they extend in a narrow belt from the south-central part of the county to the northeastern corner. They occur with the Tatum, Lloyd, and Manteo soils, but chiefly with Tatum soils. They are finer textured, redder, and stickier than Tatum soils and are easily distinguished from the shallow, channery, olive-gray and gray Manteo soils. They are finer textured and slightly darker than Lloyd soils, which formed mainly over gneiss.

The Tirzah soils formed under mixed hardwoods. The woodland is now in mixed hardwoods and loblolly, shortleaf, and Virginia pines.

Tirzah silt loam, 6 to 10 percent slopes, eroded (TrC2).—This is a deep, well-drained, dark-red soil formed on basic intrusions in the sericitic schist belt.

Typical profile (in a moist, moderately sloping site of young trees, 1 mile northeast of Cherokee Falls):

- A_{00} 1 to 0 inch, needles from Virginia pine.
- A_p 0 to 7 inches, reddish-brown (5YR 4/4) silt loam; weak, fine, granular structure; very friable when moist, soft when dry, and slightly sticky when wet; many roots; few small quartz pebbles; strongly acid; diffuse boundary.
- B_2 7 to 32 inches, dark-red (10R 3/6) silty clay; moderate, medium, subangular blocky structure; friable when moist, slightly hard but crumbly when dry, and slightly sticky when wet; many roots and root holes in top 10 inches; few small fragments of quartz; strongly acid; gradual, wavy boundary.
- B_3 32 to 50 inches, yellowish-red (5YR 5/6) silty clay; weak, medium, subangular blocky structure; soft when dry and slightly sticky when wet; many fragments of schist; strongly acid; gradual, wavy boundary.
- C 50 inches +, fragments of disintegrated schist rock and silt loam; structureless.

The surface soil is dark reddish brown and ranges from 3 to 8 inches in thickness. In a few small severely eroded areas, the surface soil is dark-red silty clay loam instead of silt loam. Color and texture boundaries are generally difficult to distinguish, especially the boundary between the A_p and B horizons. Water infiltrates this soil slowly and runs off in large amounts. A few moderately deep gullies have formed. Included with this soil are a few areas with slopes of less than 6 percent and, along the Broad River, a few areas of rounded quartz gravel.

Use and management.—Most of this soil has been cultivated to clean-tilled crops. It is now mostly in pines or pasture, but small parts are cultivated or are idle.

This soil is best suited to pasture or trees. It is suited to crops but should not be cultivated frequently. Suitable pasture plants are sericea lespedeza, and bermudagrass or bahiagrass mixed with white clover and annual lespedeza.

Suitable crops are corn, grain sorghums, small grains, grapes, and peaches. These soils need large additions of fertilizer for high yields.

If the soil is cultivated, alternate crops in strips and manage crop residue to control erosion and to maintain fertility. Control grazing to maintain a good cover. (Capability unit IIIe-1.)

Tirzah silt loam, 2 to 6 percent slopes, eroded (TrB2).—This gently sloping soil has less runoff than has Tirzah silt loam, 6 to 10 percent slopes, eroded. The surface soil is 4 to 8 inches thick. A few small gravelly areas are included.

Most of this soil is cultivated or in pasture. Small areas are in pines. This soil is best suited to the pasture mixtures commonly grown in the county. It produces good yields of corn, grain sorghums, small grains, grapes, and peaches if it is liberally fertilized. If the soil is cultivated, it requires only simple practices to control soil and water and to prevent erosion. (Capability unit IIe-1.)

Tirzah silt loam, 10 to 15 percent slopes, eroded (TrD2).—This strongly sloping soil has more surface runoff than has Tirzah silt loam, 6 to 10 percent slopes, eroded. The erosion hazard is greater, and more severely eroded areas are included. The subsoil is 20 to 36 inches thick.

Most of this soil has been cultivated to clean-tilled crops but is now in woods or pasture. Small parts are idle.

This soil responds to good management, but it is poorly suited to frequent cultivation because of the erosion hazard. It is best suited to pasture or pine trees.

The better fields are fairly well suited to grain sorghums, oats, rye, or sericea lespedeza grown for hay. Suitable pasture plants are sericea lespedeza, kudzu, and bermudagrass or bahiagrass mixed with white clover and annual lespedeza, or are tall fescue and ladino clover. Add large amounts of fertilizer for high yields.

If this soil is cultivated, it will require intensive practices to control excess water, prevent excessive loss of soil, and improve tilth. Grazing should be controlled to maintain a good cover. (Capibility unit IVe–1.)

Tirzah silt loam, 15 to 25 percent slopes, eroded (TrE2).—This soil is on short, steep slopes adjacent to drainageways. The subsoil is slightly more friable and more varied in thickness than the subsoil of Tirzah silt loam, 6 to 10 percent slopes, eroded. Water running off these steep slopes in large amounts causes many shallow and a few moderately deep gullies. Included with this soil are some areas with slopes of more than 25 percent and a few gravelly areas.

Most of this soil has been cultivated but is now in trees, pasture, or small idle areas. Areas that were cultivated only briefly are generally in mixed hardwoods and pines, and other areas are dominantly in pines.

This soil is not suited to cultivated crops. It is best suited to pine trees and is only fairly well suited to pasture. If this soil is fertilized and carefully managed, bermudagrass mixed with whiteclover and annual lespedeza may furnish cover for the soil and limited grazing. The better, less sloping fields can be seeded to sericea lespedeza for grazing. Some work must be done on most woodland sites that reforest naturally; sites that receive new plantings must be prepared carefully if they are to have a complete early cover. (Capability unit VIe-2.)

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Wickham series

The Wickham series consists of deep to moderately deep, gently sloping to moderately steep soils on stream terraces. These soils are well drained, friable, and medium acid. The surface soil ranges from dark grayish brown to brown and is 3 to 12 inches thick. The slightly sticky subsoil is yellowish brown to reddish brown and is 20 to 36 inches or more thick. Depth to the subtratum of unconsolidated sand, gravel, and clay ranges from 30 to 60 inches or more. Most profiles contain some fine mica.

These soils are moderate in permeability, moisture-supplying capacity, and natural fertility. They contain a medium amount of organic matter.

The Wickham soils are in small areas along medium-sized and large drainageways between soils on bottom lands and those on uplands. They occur with Altavista soils. Wickham soils are generally higher, better drained, and more red and brown than Altavista soils.

The native vegetation was mixed hardwoods, but most of the acreage has been cleared and cultivated. These soils are now in pasture or woods, and small parts are cultivated or idle.

Wickham sandy loam, 2 to 6 percent slopes (WcB).—This soil is deep, well drained, and friable. It occurs on stream terraces, mostly in small areas in the upper part of the Piedmont.

Typical profile (in a moist, gently sloping, cultivated field off Buffalo Creek, 4 miles west of Blacksburg):

- A_p 0 to 6 inches, dark-brown (10YR 4/3) sandy loam; weak, medium, granular structure; very friable when moist; many fine roots; few small quartz pebbles; medium acid; clear, wavy boundary.
- B_2 6 to 26 inches, reddish-brown (5YR 4/4) sandy clay; moderate, medium, subangular blocky structure; friable when moist and slightly sticky when wet; few roots or root holes in lower 12 inches; few small quartz pebbles; small amount of fine mica; slightly acid; clear, wavy boundary.
- B_3 26 to 38 inches, yellowish-brown (10YR 5/4) sandy clay loam with few, medium, distinct mottles and streaks of light yellowish brown (2.5Y 6/4) to light olive brown (2.5Y 5/6); weak, medium, subangular blocky structure; friable when moist and sticky when wet; medium acid; gradual, wavy boundary.
- C_1 38 to 48 inches, strong-brown (7.5YR 5/8) sandy clay loam with variable mottlings and streaks of reddish yellow (7.5YR 6/6) and olive yellow (5Y 6/6); structureless; medium acid; few quartz pebbles; spots of sandy material; gradual, wavy boundary.
- C_2 48 inches +, unconsolidated sand and rounded pebbles of quartz; medium acid.

The surface soil is 4 to 10 inches thick, and the subsoil is 15 to 30 inches thick. Most profiles contain some fine mica, and in some areas the B_3 layer is loose and contains small, rounded pebbles of quartz. Rounded pebbles of quartz are on the surface in a few areas. Included with this soil are small areas on slopes of less than 2 percent and some areas with a fine sandy loam surface soil.

Use and management.—Nearly all of this soil has been cultivated to cotton, corn, small grains, and hay. Most of it is now in pasture or pines, and the rest is cultivated or idle.

This soil responds fairly well to good management and is suited to most crops grown in the county. It is well suited to pasture or pines but needs to be fertilized and otherwise managed well. Because of poor air drain-

age, this soil is not suited to peaches. Cultivated fields require ordinary practices to prevent the loss of soil and water and careful management of crop residue to control erosion and the crusting of eroded parts. (Capability unit IIe–1.)

Wickham sandy loam, 2 to 10 percent slopes, eroded (WcC2).—This soil has more runoff than Wickham sandy loam, 2 to 6 percent slopes, and a thinner and finer textured surface soil. In most areas the surface soil contains a mixture of sandy loam and slightly sticky clayey subsoil material. It is reddish brown and 3 to 6 inches thick. In the more eroded spots, the reddish-brown sandy clay subsoil is exposed. Shallow gullies are common, and a few moderately deep gullies have formed. A few severely eroded areas and a few small gravelly areas are included.

This soil has been cultivated to clean-tilled crops but is now mostly in woods or pasture. Small parts are cultivated or idle.

This soil can best be used for pasture or pines. It is poorly suited to frequent cultivation. If the soil is liberally fertilized and is managed well, it will produce good yields of corn, grain sorghums, oats, rye, cowpeas, annual lespedeza, or sericea lespedeza. Grazing should be controlled to maintain good cover. If it is cultivated, this soil requires intensive practices to control erosion, as well as good management of crop residue to maintain fertility and tilth. (Capability unit IIIe-1.)

Wickham sandy loam, 10 to 25 percent slopes, severely eroded (WcE3).—Runoff is excessive on this severely eroded soil, and much of the original surface soil has washed away. Much clayey material from the subsoil has been mixed into the surface soil through plowing. Shallow gullies are common, and a few moderately deep gullies have formed. Included with this soil are small areas of less eroded Altavista soil and a few areas of gravelly soil.

Most of this soil has been cultivated to clean-tilled crops, but most of it is now wooded. Small parts are in pasture or are idle.

This soil is not suited to cultivation. The better, less sloping fields are fairly well suited to pasture, and the steeper areas are best suited to pine trees. Suitable pasture plants are sericea lespedeza, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. Kudzu will provide protection and very limited grazing, but grazing should be controlled so that a cover is maintained. (Capability unit VIIe–1.)

Wilkes series

The Wilkes series consists of shallow, moderately well drained to excessively drained, gently sloping to steep soils on uplands. Most of the acreage has slopes of more than 8 percent. These soils formed over dominantly dark-colored, mixed, basic and acidic rocks. They are medium acid.

The surface soil is grayish-brown to light olive-brown sandy loam. The subsoil (B horizon), a yellowish-brown, firm and plastic clay, is thin and discontinuous. Where it has developed, the B horizon is slowly permeable and has slow internal drainage. Wilkes soils are moderately well drained in these areas that have a clay B horizon, but they are excessively drained where this horizon has not formed.

These soils are medium in organic matter and moderately low in moisture-supplying capacity and in fertility.

The Wilkes soils in this county are in the southeastern part. They occur with Helena, Iredell, and Mecklenburg soils and to a lesser extent with the Manteo and Louisburg soils. The B horizon in the Wilkes soils is not so distinct as that in the Helena, Mecklenburg, and Iredell soils. Wilkes soils are finer in texture than are Louisburg soils and are less gravelly than Manteo soils.

Wilkes soils contain a medium amount of organic matter and are moderately low in moisture-supplying capacity and in natural fertility. A very small acreage is cultivated, and the rest is in pasture, is in woods, or is idle.

Wilkes sandy loam, 6 to 15 percent slopes (WkD).—This soil is shallow and moderately well drained to excessively drained. The subsoil is thin, plastic clay.

Typical profile (in a moist, moderately sloping, idle field 10 miles south of Gaffney, east of State Highway No. 18 and north of Thicketty Creek):

- A_p 0 to 6 inches, light olive-brown (2.5Y 5/4) sandy loam; weak, fine, crumb structure; very friable when moist; few quartz pebbles and fragments of underlying material; many small roots; medium acid; clear, wavy boundary.
- B 6 to 13 inches, yellowish-brown (10YR 5/6) clay; weak, medium, angular blocky structure; firm when moist and plastic when wet; no roots, but a few root holes down to lower boundary; few small fragments of rocks; some fine mica; medium acid; clear, wavy boundary.
- C 13 inches +, yellowish-brown (10YR 5/4), light olive-brown (2.5Y 5/4) and olive (5Y 5/3) clay loam material mixed with disintegrated basic rocks; structureless; fairly loose and permeable.

The surface soil ranges from 2 to 6 inches in thickness. The B horizon is absent in some places and is 9 or 10 inches thick in others, but it is generally 4 to 8 inches thick. Included with this soil are a few small areas of Helena and Iredell soils and a few areas on slopes of less than 6 percent.

Use and management.—This soil is best suited to trees or pasture, but it is too thin for sericea lespedeza, kudzu, or other deep-rooted plants. Suitable pasture plants are bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza. Crops requiring frequent cultivation are not suited to this soil, because water infiltrates the clay subsoil slowly, runs off the strong slopes rapidly, and causes severe erosion. The less sloping fields can be planted to corn, grain sorghums, oats, and rye.

This soil responds fairly well to good management, but it requires intensive practices if it is cultivated. It needs lime and large amounts of fertilizer if crops or pasture are grown. To prevent excessive erosion and improve tilth, plan a system of stripcropping in which 3 out of every 4 strips are planted to close-growing crops. Control grazing to maintain a close cover. (Capability unit IVe-4.)

Wilkes sandy loam, 2 to 6 percent slopes (WkB).—This gently sloping soil has a thicker surface soil and a more uniform subsoil than has Wilkes sandy loam, 6 to 15 percent slopes. The infiltration of water is medium, and runoff is moderate. A few very small areas of severely eroded soils are included.

This soil is fairly well suited to cultivated crops, pasture, or trees. It can be planted to cotton, corn, grain

sorghum, oats, or rye. Suitable pasture plants are bermudagrass or bahiagrass mixed with white clover and annual lespedeza, or tall fescue and ladino clover. Fertilizer must be added to obtain good yields. If this soil is cultivated, practices are needed to protect it from excessive erosion and to maintain fertility. Grazing should be controlled to maintain a cover and prevent excessive compaction, especially in the areas that have a clayey surface soil. (Capability unit IIIe-5.)

Wilkes sandy loam, 6 to 15 percent slopes, eroded (WkD2).—This soil has a thinner surface soil than has Wilkes sandy loam, 6 to 15 percent slopes. Water runs off in large amounts and washes away most of the sandy loam. Plowing then mixes the thin sandy surface layer with the clay subsoil material, and the resulting surface soil is finer textured than it was before plowing. Many shallow gullies have formed.

This soil is not suited to frequent cultivation. It is fairly well suited to permanent pasture, but it is poorly suited to sericea lespedeza, kudzu, or other deep-rooted plants. It is poorly suited to pine trees..

Although this soil responds fairly well to management, it is not suited to frequent cultivation. Suitable pasture plants are bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. Grazing should be closely controlled to maintain a good cover and to prevent excessive compaction, especially in areas having a clayey surface soil. (Capability unit VIe-3.)

Wilkes sandy loam, 15 to 35 percent slopes (WkF).—This steep soil has a sandier surface soil than Wilkes sandy loam, 6 to 15 percent slopes. In many places a B horizon has not formed. A few small gravelly areas and a few areas with slopes of more than 35 percent are included.

This soil is not suited to cultivated crops and should remain in trees, its best use. Under good management, bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza may provide limited grazing on less steep slopes. Because surface runoff is rapid and in large amounts, grazing should be closely controlled to maintain a complete cover. (Capability unit VIIe-2.)

Wilkes sandy loam, 15 to 25 percent slopes, eroded (WkE2).—The surface layer of this moderately steep soil in most places is a mixture of the original sandy surface soil and the clayey or gravelly underlying layers. The amount of runoff is large, and gullying is common. Many of the gullies are moderately deep. In many areas the B horizon is weak or has not formed.

This soil is not suited to cultivated crops and is poorly suited to sericea lespedeza, kudzu, pines, or other deep-rooted plants.

Wooded areas should be kept in trees, the best use for this soil. Other areas, if well managed, will support a protective cover and provide limited yields of pine trees or pasture. Bermudagrass mixed with whiteclover and annual lespedeza is the best suited pasture mixture.

Nearly all of this soil needs site preparation before a satisfactory cover can be established. Open areas will require extensive work and continued care if an early satisfactory cover of trees or grass is to be obtained. If this soil is seeded to pasture, grazing should be strictly controlled. (Capability unit VIIe-2.)

Worsham series

The Worsham series consists of deep to moderately deep, poorly drained, firm soils. These soils are in nearly level depressions on uplands, or at the base of slopes along or at the head of drainageways. They formed on residuum weathered from granite, gneiss, and schist. Slopes range from 0 to 10 percent, but dominant range in slope is from 0 to 6 percent.

The surface soil ranges from sandy loam to fine sandy loam but is sandy loam in most places. It is light brownish gray to black, depending on the amount of organic matter. The subsoil is gray and is generally sandy clay loam, 24 to 36 inches thick. A substratum of massive clay or sandy clay is at a depth of 35 to 45 inches. These are slowly permeable soils that are low in natural fertility.

The Worsham soils in Cherokee County are distributed in small areas throughout the county, mostly in the northwestern part. These soils occur with Appling, Cecil, and Madison soils. They can be easily distinguished from those soils by their position, poor drainage, and gray subsoil.

Worsham soils formed under mixed hardwoods. The present vegetation is mixed hardwoods, brush, and some pines.

Worsham sandy loam, 0 to 6 percent slopes (WoB).—This is a deep, poorly drained soil on nearly level upland slopes at the head of drainageways.

Typical profile (in a gently sloping, moist, idle field at the top of a drainageway that drains into Ross Creek, 2 miles north of State Highway No. 11) :

- A_p 0 to 7 inches, black (N 2/0) to very dark gray (N 3/0) sandy loam; weak, medium, crumb structure; loose when moist and soft when dry; many fine roots; few coarse fragments of quartz; strongly acid; clear, wavy boundary.
- A_2 7 to 10 inches, dark-gray (N 4/0) sandy loam; weak, fine, crumb structure; friable when moist; many medium-sized roots; few quartz grains; some fine mica; strongly acid; clear, wavy boundary.
- B_{21} 10 to 24 inches, dark-gray (N 4/0) sandy clay loam; moderate, medium, subangular blocky structure; hard when dry, firm when moist, slightly sticky but gritty when wet; few fragments of quartz; some fine mica; spots of darker and lighter colors; strongly acid; gradual, wavy boundary.
- B_{22g} 24 to 42 inches, gray (N 5/0) sandy clay loam to clay with a few, medium, distinct, dark-brown to strong-brown (7.5YR 4/4 to 5/6) mottles or spots; moderate, medium, angular blocky structure; hard when dry, firm and sticky when moist, and slick when wet; few large particles of sand; much fine mica; strongly acid; clear, wavy boundary.
- C_1 42 to 48 inches, light-gray (N 7/0) clay; massive (structureless); hard when dry, slightly plastic and sticky when wet; many small quartz pebbles in top part; much mica; spots of sandy clay; strongly acid.
- C_2 48 inches +, unconsolidated gray clay and sand; structureless.

The surface soil ranges widely in thickness and color. In dry areas, or old cultivated areas, the surface soil is light colored, but in wet, wooded areas it is dark. Some flats are surrounded by gentle slopes. Runoff is slow, but a few shallow gullies have been formed by water running off adjacent slopes.

Most of this soil has been cultivated but is now in pasture or in mixed hardwoods of poor quality. Small parts are idle, and some are ponded and used for irrigation, livestock, and fish.

This soil is slowly permeable and at times is flooded with water from adjoining slopes. It is not suited to cultivated crops and is poorly suited to pasture. Some of the better areas are suited to tall fescue mixed with ladino clover, and to bahiagrass or dallisgrass mixed with white clover and annual lespedeza. Large amounts of fertilizer should be applied, and most areas require drainage by open ditches. Suitable sites should be made into ponds to supply water for irrigation, livestock, or wildlife. Suitable hardwoods may produce salable wood products. (Capability unit Vw-1.)

Worsham sandy loam, 2 to 10 percent slopes, eroded (WoC2).—This soil is poorly drained and slowly permeable. Water runs off in large amounts and forms shallow to moderately deep gullies. The subsoil is thin in some areas.

Included with this soil are small areas of Appling, Cecil, and Madison soils. Also included are some areas on short slopes of more than 10 percent, a few severely eroded areas, and a few gravelly areas.

Much of this soil has been cultivated. Most of it is now in trees of poor quality, and small parts are in pasture or farm ponds.

This soil is not suited to cultivation. The better areas are best suited to pasture, but these areas need to be adequately fertilized and otherwise well managed to maintain a cover and to provide limited grazing. Bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza are suitable pasture plants.

The areas that are best suited to trees require site preparation for an early cover. If suitable sites are available, farm ponds should be constructed to supply water for irrigation, livestock, or wildlife. (Capability unit VIe-2.)

Use and Management of Soils

This section consists of three main parts. In the first part land capability classification is explained, the soils of the county are placed in capability units, and the use and management of these units are discussed. The second part compares the productivity of the soils by estimating yields for each soil under two levels of management and by comparative ratings of productivity. The third part discusses the wildlife in the county and tells how wildlife can be increased by improving food and cover.

Capability Groups of Soils

The capability classification is a grouping of soils that shows, in a general way, how suitable the soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soils are grouped at three levels, the capability class, subclass, and unit. Eight capability classes are in the broadest grouping, and these are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes there can be up to four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil will interfere with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the country, indicates that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses *w*, *s*, and *c*, because the soils in it have little or no susceptibility to erosion but have other limitations that limit their use largely to pasture, range, woodland, or wildlife habitats.

Within the subclasses are the capability units, which are groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping of soils for making many statements about their management. Capability units are generally identified by numbers assigned locally, for example, IIe-1 or IIIe-2.

Soils are classified in capability classes, subclasses, and units according to the degree and kind of their permanent limitations. Not considered in this classification are major projects of landforming or reclamation that would change the slope, depth, or other characteristics of the soil.

The eight classes in the capability system, and the subclasses and units in this county, are described in the list that follows.

Class I. Soils that have few limitations that restrict their use.

(No subclasses.)

Capability unit I-1.—Deep, well drained to moderately well drained soil material that is susceptible to not more than slight erosion.

Capability unit I-2.—Nearly level, deep, well drained to moderately well drained soils that are on terraces and have a friable, dark-brown to yellowish-brown subsoil.

Class II. Soils that have some limitations that reduce the choice of plants or require moderate conservation practices.

Subclass IIe. Soils subject to moderate erosion if they are not protected.

Capability unit IIe-1.—Deep, well-drained, friable soils that are gently sloping and slightly eroded to moderately eroded.

Capability unit IIe-2.—Deep, well-drained, friable soils that have a light-colored surface soil.

Capability unit IIe-3.—Moderately deep to deep, well-drained soil that has a firm, dark reddish-brown subsoil.

Capability unit IIe-4.—Moderately deep, moderately well drained to somewhat poorly drained soil that has a very firm, plastic clay subsoil.

Subclass IIw. Soils that have moderate limitations because of excess water.

Capability unit IIw-2.—Deep, well drained to moderately well drained, friable soils on bottom lands.

Class III. Soils that have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Subclass IIIe. Soils subject to severe erosion if they are cultivated and not protected.

Capability unit IIIe-1.—Deep, well-drained, friable soils that have a red subsoil and are moderately eroded on moderate slopes and severely eroded on gentle slopes.

Capability unit IIIe-2.—Deep, well-drained, friable soils that are gray or grayish brown and are moderately eroded on moderate slopes and severely eroded on gentle slopes.

Capability unit IIIe-3.—Deep to moderately deep soils that are moderately well drained to well drained and have a firm subsoil.

Capability unit IIIe-5.—Shallow soils that are moderately well drained to somewhat excessively drained and have a thin or discontinuous, firm, plastic subsoil.

Subclass IIIw. Soils that have severe limitations because of excess water.

Capability unit IIIw-2.—Deep, friable soils on bottom lands that are somewhat poorly drained to moderately well drained.

Subclass IIIs. Soils that have severe limitations of moisture capacity or tilth.

Capability unit IIIs-2.—Droughty soils on bottom lands.

Class IV. Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both.

Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.

Capability unit IVe-1.—Deep, well-drained, friable soils.

Capability unit IVe-2.—Deep to moderately deep soils that have a firm subsoil.

Capability unit IVe-4.—Shallow, poorly developed soils.

Subclass IVw. Soils that have very severe limitations for cultivation because of excess water.

Capability unit IVw-3.—Wet, rapidly permeable, mixed alluvial deposits on bottom lands.

Class V. Soils not likely to erode that have other limitations, impractical to remove without major reclamation, that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass Vw. Soils too wet for cultivation; drainage or protection not feasible.

Capability unit Vw-1.—Deep to moderately deep, nearly level, poorly drained soils on uplands.

Class VI. Soils that have severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIe. Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.

Capability unit VIe-2.—Deep, well-drained, friable soils on strong to moderately steep slopes.

Capability unit VIe-3.—Shallow or poorly developed soils on moderately steep to steep slopes.

Capability unit VIe-4.—Deep to moderately deep, well-drained soils that have a firm subsoil.

Class VII. Soils that have very severe limitations that make them unsuitable for cultivation without major reclamation, and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIe. Soils very severely limited, chiefly by risk of erosion if protective cover is not maintained.

Capability unit VIIe-1.—Severely eroded or steep soils that have a friable subsoil.

Capability unit VIIe-2.—Eroded, sloping, shallow, or poorly developed soils.

Capability unit VIIe-3.—Severely eroded, sloping soils that have a firm subsoil.

Capability unit VIIe-4.—Very severely eroded soils that have a friable subsoil.

Class VIII. Soils and landforms that have limitations that preclude their use, without major reclamation, for commercial production of plants, and restrict their use to recreation, wildlife, water supply, or esthetic purposes.

Subclass VIIIs. Rock or soil materials that have little potential for production of vegetation.

Capability unit VIIIs-1.—Unproductive, rocky or droughty areas.

Management of soils by capability units

In the following pages the soils in the county are placed in capability units and the use and management of these units are discussed.

CAPABILITY UNIT I–1

Deep, well drained to moderately well drained soil material that is susceptible to not more than slight erosion

This capability unit consists of only Local alluvial land. The total area of this land in the county is about 510 acres, but the separate areas are generally less than 2 acres in size. Local alluvial land is distributed throughout the county in low areas and at drainage heads in the uplands. Slopes range from 0 to 3 percent.

The upper layer of soil ranges from loamy sand to fine sandy loam in texture and is 15 to 40 inches or more thick. Most of it is very friable and grayish brown. It is well drained except where drainageways are artificially or naturally blocked. Surface runoff is slow, permeability

is moderately rapid, and moisture-supplying capacity is moderate. The soil contains a medium amount of organic matter and is moderately fertile.

Local alluvial land can be cultivated frequently and produces high yields of corn, grain sorghums, oats, rye, cowpeas, soybeans, vegetables, and other shallow-rooted plants. The moderately well drained areas are not suited to cotton or to alfalfa, sericea lespedeza, and other deep-rooted plants. Because of poor air drainage and frost hazard, this soil is not suited to peaches and grapes. The thick, recent deposits of coarser textured material are not suited to annual lespedeza or to other plants with fine, shallow roots. Areas of this coarse material, however, can be used for vegetated outlets in meadows. Good mixtures for hay or pasture are bahiagrass or bermudagrass and crimson clover, or white clover and annual lespedeza, or tall fescue and ladino clover. Sericea lespedeza can be seeded for pasture or hay in well-drained areas.

Partly because of its thick root zone, this land is easily worked. It is productive but needs additions of lime and fertilizer. If the land is cultivated, crop residue must be managed so that organic matter and moisture-supplying capacity are maintained. This land is suited to supplemental irrigation.

CAPABILITY UNIT I–2

Nearly level, deep, well drained to moderately well drained soils that are on terraces and have a friable, dark-brown to yellowish-brown subsoil

Altavista fine sandy loam, 0 to 2 percent slopes.
State fine sandy loam.

These soils have a total area of about 288 acres. They are on bottom lands along medium-sized and large streams in small, low areas and in generally adjacent higher areas.

These soils have a dark grayish-brown to olive-brown surface layer that ranges from fine sandy loam to silt loam and is 5 to 12 inches thick. The subsoil is 20 to 36 inches or more thick. Permeability and the moisture-supplying capacity are moderate. These soils contain a moderate amount of organic matter and are moderately low in natural fertility.

They are fairly well suited to most crops grown locally and can be cultivated frequently. Because of location, however, they are more widely used for pasture and trees than for crops. They are not well suited to cotton and grapes and are unsuited to peaches or alfalfa. Supplemental irrigation can be used where needed.

These soils require additions of lime and fertilizer and respond well to these amendments. Crop residue should be managed well so that the content of organic matter and moisture-supplying capacity are increased and good tilth maintained. Regulate grazing on pasture so that a good cover is maintained.

CAPABILITY UNIT IIe–1

Deep, well-drained, friable soils that are gently sloping and slightly eroded to moderately eroded

Cecil sandy loam, 2 to 6 percent slopes.
Cecil sandy loam, 2 to 6 percent slopes, eroded.
Lloyd loam, 2 to 6 percent slopes, eroded.
Madison and Cecil sandy loams, 2 to 6 percent slopes.
Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded.
Tatum very fine sandy loam, 2 to 6 percent slopes.
Tatum very fine sandy loam, 2 to 6 percent slopes, eroded.
Tirzah silt loam, 2 to 6 percent slopes, eroded.
Wickham sandy loam, 2 to 6 percent slopes.

These soils are distributed throughout the county, but much of the acreage is in large areas in the northern half. The total area amounts to about 39,000 acres.

The surface layer of these soils is grayish brown to dark reddish brown. It is a sandy loam or silt loam in most places but is loam in small areas. It is very friable and ranges from 4 to 12 inches in thickness. A reddish, friable, clayey subsoil provides a thick root zone.

These soils are medium acid. Infiltration of water is good, and permeability and moisture-supplying capacity are moderate. These soils are fairly low in organic matter and in natural fertility.

The soils in this unit are well suited to cultivated crops and to supplemental irrigation. Alfalfa should be planted on only the most fertile fields. Peaches and grapes can be grown because air drainage is adequate. The slightly sticky Lloyd soil should not be cultivated so frequently as the other soils in this unit, and it is not so well suited to annual pasture plants or pine trees. The Tatum soils are slightly less productive than the other soils. The location of the Wickham soil limits its use.

These soils need additions of lime and fertilizer, and they respond well to these amendments. Management should provide terracing, outlets in meadows, and short cropping systems that include close-growing crops. Cultivation should follow the contour of the land. Alternate strips of noncultivated, close-growing crops are adequate on the long slopes. A cropping system commonly used consists of a terrace interval in a row crop alternated with a terrace interval in small grain followed by annual lespedeza (fig. 10). Rotations that last 2 years are commonly used on small fields. Some farmers prefer a cropping system that consists of 2 years of tall fescue and ladino clover, or 2 years of bahiagrass and crimson clover, followed by 2 years of row crops.

***Figure 10.*—Two-year strip rotation of row crop and small grain followed by annual lespedeza for hay, seed, or soil improvement (gently sloping Cecil sandy loam).**

CAPABILITY UNIT IIe-2

Deep, well-drained, friable soils that have a light-colored surface soil

Altavista fine sandy loam, 2 to 6 percent slopes, eroded.
Appling sandy loam, 2 to 6 percent slopes.
Appling sandy loam, 2 to 6 percent slopes, eroded.
Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded.
Nason very fine sandy loam, 2 to 6 percent slopes.

These soils have a total area of about 8,400 acres, which is distributed throughout the county. They are on broad ridgetops and adjacent gentle slopes.

The surface layer of these soils ranges from very fine sandy loam to coarse sandy loam and is 5 to 12 inches thick. It is grayish brown to dark yellowish brown. This layer is slightly thicker and lighter colored than the surface layer of soils in capability unit IIe-1. The subsoil is mottled red and yellowish brown and is less permeable in the lower part than is the subsoil of soils in unit IIe-1. The subsoil of soils in unit IIe-2, however, is friable and provides a thick root zone.

The soils of capability unit IIe-2 are medium acid and are low in organic matter and fertility. Infiltration of water is good, and permeability and moisture-supplying capacity are moderate.

The soils in this unit are suited to most crops cultivated locally and to annual pasture. Because the lower part of the subsoil is not permeable and air drainage is poor, these soils warm up slowly in spring. They are suited to supplemental irrigation. The Nason soil is slightly less productive than the rest of these soils. The use of the Altavista soil is limited because of its location. The Lockhart soil is poorly suited to annual lespedeza and other fine, shallow-rooted crops.

Under good management, these soils produce good yields of cotton, corn, grain sorghums, small grains, peaches, and grapes, as well as local pasture mixtures or hay. Alfalfa is fairly well suited to only the better areas of Appling soils. Sericea lespedeza, and bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza are suitable pasture plants.

These soils respond to lime, large additions of fertilizer, good management of crop residue, and the use of legumes. Runoff should be controlled by well-planned disposal systems that consist of terraces and vegetated meadow outlets. All tillage should follow the contour of the land. A cropping system that provides alternate strips in noncultivated, close-growing crops is adequate on long slopes. A commonly used cropping system consists of a terrace interval in a row crop alternated with a terrace interval in a small grain that is followed by annual lespedeza or cowpeas. If smaller fields are cultivated, 2-year field rotations are commonly used. On fields that are not required for intensive cultivation, a suitable cropping system consists of a mixture of bahiagrass and crimson clover, or of tall fescue and ladino clover, grown for 2 or more years and followed by 2 years of row crops.

CAPABILITY UNIT IIe-3

Moderately deep to deep, well-drained soil that has a firm, dark reddish-brown subsoil

Mecklenburg loam, 2 to 6 percent slopes, eroded, is the only soil in this capability unit. The total area of this soil is about 410 acres, and this acreage is all in the southeastern part of the county.

The surface layer is dark-brown to dark reddish-brown loam, 4 to 10 inches thick. The subsoil is firm, yellowish-red to dark reddish-brown clay that provides a moderately thick root zone. Infiltration of water and permeability are moderately slow, and surface runoff is moderate. The soil is medium acid. The content of organic matter is medium, and the moisture-supplying capacity and fertility are moderate.

This soil is fairly well suited to crops grown locally, but it cannot be cultivated so frequently as the soils of capability unit IIe-1, mainly because of its moderately high surface runoff. It is not so well suited to trees, as the soils in unit IIe-1, and it is poorly suited to annual pasture plants and to supplemental irrigation.

Under careful management, this soil will produce good yields of grain sorghums, oats, or rye, and mixtures of suitable pasture plants. It is poorly suited to corn, cotton, peaches, grapes, and alfalfa.

For high yields, lime this soil and apply large amounts of fertilizer. Sericea lespedeza or other deep-rooted plants and grasses will increase organic matter and slow the speed of runoff. If the soil is cultivated, it should be protected by well-planned systems of water disposal and by crop rotations. All tillage should follow the contour of the land.

A cropping system in which every other terrace interval is in a noncultivated, close-growing crop and the terrace between is in a row crop provides the minimum acceptable protection on this soil. The system generally used is a terrace interval in a row crop alternated with an interval planted to a crop of oats or rye that is followed by annual lespedeza. In small fields, 2-year rotations are generally used. This soil is well suited to 2 years of tall fescue and ladino clover, or 2 years of bahiagrass and crimson clover followed by 2 years of row crops.

CAPABILITY UNIT IIe-4

Moderately deep, moderately well drained to somewhat poorly drained soil that has a very firm, plastic clay subsoil

Iredell fine sandy loam, 2 to 6 percent slopes, is the only soil in this capability unit. The total area of this soil in the county is 790 acres, nearly all of which is in the southeastern part.

The surface layer is dark grayish-brown to very dark grayish-brown fine sandy loam, 6 to 12 inches thick. The subsoil is yellowish-brown to olive-brown, firm, plastic clay. The root zone is moderately thick. Infiltration of water is moderately slow and permeability is slow. The content of organic matter is medium, and the moisture-supplying capacity and fertility are moderate.

Under good management, this soil produces fair yields of most shallow-rooted plants. Because of its plastic clay subsoil, this soil is poorly suited to deep-rooted plants and to some annual pasture plants. Although the surface layer is friable and easy to work, cultivation is restricted at times because of excess moisture. This soil is suited to cotton, small grains, grain sorghums, and corn. Suitable pasture plants are tall fescue mixed with ladino clover; bermudagrass or bahiagrass mixed with white clover and annual lespedeza; dallisgrass; and ryegrass.

Not suited are peaches and alfalfa, and grapes and sericea lespedeza grow poorly.

This soil requires lime and large additions of fertilizer. For higher yields add an extra amount of potash. Runoff should be controlled by a good system of water disposal that provides vegetated outlets in meadows. All tillage should follow the contour. Terraces should be low and on a broad base, and the terrace intervals should be close. Terraces, however, are hard to build and require regular maintenance because of the plastic subsoil. This soil is not suited to supplemental irrigation.

If row crops are planted, one-half of a field should be in close-growing crops. A system generally used is one or two terrace intervals in a row crop, and equal intervals in a small grain that is followed by annual lespedeza. On small fields a 2- or 3-year cropping system may be used.

In the 3-year system, plant a row crop and follow it with a small grain and annual lespedeza; harvest the small grain and annual lespedeza the second year, and allow the lespedeza to volunteer the third year. This soil is well suited to 2 years of tall fescue and ladino clover, or 2 years of bahiagrass and crimson clover followed by 2 years of row crops.

Dams should be constructed with care because the surface layer is shallow and the heavy clay subsoil swells and shrinks.

CAPABILITY UNIT IIw-2

Deep, well drained to moderately well drained, friable soils on bottom lands

Congaree fine sandy loam.
Congaree silt loam.
Mixed alluvial land.

These soils have a total area of 12,717 acres in this county, including about 11,160 acres of Mixed alluvial land. They are distributed throughout the county, generally in narrow fields along streams.

The surface layer ranges from loamy sand to silt loam but is mostly fine sandy loam. This deposited material is mostly grayish brown to dark yellowish brown. It is only a few to several feet thick. The subsurface material is of varied texture but is mostly fine sandy loam to silt loam. The normal water table is below a depth of 3 feet, and damaging overflows are fairly infrequent.

These soils are on slopes of 0 to 2 percent, and surface runoff is slow but adequate. Permeability is moderate to moderately rapid. These soils contain a medium amount of organic matter and are moderate in moisture-supplying capacity and fertility.

Although they can be cultivated, these soils are not generally used for cultivated crops, because many of the fields are narrow and are subject to overflow from streams. They are best suited to pasture, to crops that do not require much cultivation, and to high-yielding crops such as corn. Except for the higher, deeper areas of Congaree soil, these soils are poorly suited to sericea lespedeza, alfalfa, or other deep-rooted plants. Because of the size and location of fields, these soils are not suited to cotton, grapes, or peaches. They produce, however, good yields of truck crops, corn, grain sorghums, oats, rye, and annual pasture.

These soils need lime, large amounts of fertilizer, and regular additions of organic matter. If fields are cultivated continuously, cover crops should be included in the cropping system. Supplemental irrigation can be used if necessary.

CAPABILITY UNIT IIIe-1

Deep, well-drained, friable soils that have a red subsoil and are moderately eroded on moderate slopes and severely eroded on gentle slopes

Cecil clay loam, 2 to 6 percent slopes, severely eroded.
Cecil sandy loam, 6 to 10 percent slopes.
Cecil sandy loam, 6 to 10 percent slopes, eroded.
Davidson loam, 2 to 10 percent slopes, eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Lloyd loam, 6 to 10 percent slopes, eroded.
Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded.
Madison and Cecil sandy loams, 6 to 10 percent slopes.
Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded.
Tatum silty clay loam, 2 to 6 percent slopes, severely eroded.
Tatum very fine sandy loam, 6 to 10 percent slopes.
Tatum very fine sandy loam, 6 to 10 percent slopes, eroded.
Tirzah silt loam, 6 to 10 percent slopes, eroded.
Wickham sandy loam, 2 to 10 percent slopes, eroded.

These soils have a total area of 27,155 acres. They are distributed throughout most of the county, generally in the northern half.

The surface layer ranges from sandy loam to silty clay loam but is mostly sandy loam and clay loam. This layer is 3 to 12 inches thick. It is grayish brown in moderately eroded areas and reddish brown in severely eroded areas. The subsoil is friable and provides a thick to moderately thick root zone. In eroded areas, the surface layer and subsoil have been mixed by plowing.

These soils are medium acid and are low in organic matter. Moisture-supplying capacity and fertility are moderately low, and permeability is moderate. The rate of water infiltration ranges from medium in the sandy loams to slow in the silty clay loam. Surface runoff is moderate. These soils have good air drainage.

These soils are suited to most crops grown locally. They are however, more difficult to manage than the soils in capability unit IIe-1, partly because their moderate slopes and their clay loam surface soil make them susceptible to erosion. The control of water is more difficult than on the soils in unit IIe-1, and the use of machinery on the steeper slopes is not practical. Hay or pasture grows better than cultivated crops on the sticky loams or clay loams. Only the best fields are suited to alfalfa. The sandy loams are fairly well suited to annual pasture plants.

The sandy loams in this unit are fairly well suited to supplemental irrigation if they have a good ground cover. If the sandy loams are clean tilled, the supplemental irrigation must be carefully managed. Sites suitable for ponds are numerous on the soils in this unit.

These soils need lime, large amounts of fertilizer, and regular additions of organic matter. Deep-rooted perennials are also beneficial. Loss of water and soil should be prevented by a complete system of water disposal, including terraces and outlets. All tillage should follow the contour of the land.

If row crops are planted, plant only one-third of the field to row crops and plant all crops in strips. A system generally used is one terrace interval in a row crop and two terrace intervals in small grain followed by lespedeza; or one terrace interval in a row crop, one in

grain and lespedeza, and one in volunteer lespedeza. Three-year cropping systems, in which row crops are grown 1 year, are commonly used on small fields. For less intense use, tall fescue and ladino clover, or bahiagrass and crimson clover, can be grown for 4 years and followed by 2 years of a row crop. If grass is grown for 3 or more years, 2 years of row crops is considered safe. On the severely eroded soils, grazing should be controlled to maintain a good cover and to protect against excessive compaction.

CAPABILITY UNIT IIIe-2

Deep, well-drained, friable soils that are gray or grayish brown and are moderately eroded on moderate slopes and severely eroded on gentle slopes

Appling sandy loam, 6 to 10 percent slopes.
Appling sandy loam, 6 to 10 percent slopes, eroded.
Lockhart clay loam, 2 to 6 percent slopes, severely eroded.
Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded.
Nason very fine sandy loam, 6 to 10 percent slopes, eroded.

These soils have a total area of about 4,200 acres distributed throughout the county.

The surface layer of these soils is dominantly sandy loam, 4 to 8 inches thick, but it ranges from coarse sandy loam to very fine sandy loam, 3 to 12 inches thick. It is lighter colored and slightly thicker than the surface layer of the soils in capability unit IIIe-1. The subsoil is more yellowish brown and less permeable than that of the soils in unit IIIe-1. It is friable and provides a thick root zone.

These soils are medium acid and low in organic matter and fertility. Infiltration of water ranges from medium in the sandy loams to slow in the clay loam, and surface runoff is moderate. These soils are moderately permeable and moderately low in moisture-supplying capacity.

These soils are fairly well suited to most crops grown locally. Though they are friable and easily cultivated, they need more intensive control of water than the soils in unit IIe-2 because they are steeper and have more surface runoff. Air drainage is good on most of these soils. Areas of sandy loam are suited to supplemental irrigation if it is carefully managed. Pond sites are numerous.

Cotton, corn, grain sorghums, oats, rye, and grapes are suited to these soils. Peaches are grown mainly on Appling soils. Suitable pasture plants are sericea lespedeza or tall fescue mixed with ladino clover, bahiagrass or bermudagrass mixed with crimson clover, or white clover mixed with annual lespedeza.

These soils need lime and large amounts of fertilizer. Add organic matter regularly and plant sericea lespedeza or another deep-rooted legume periodically to improve fertility. If lespedeza is cut regularly for hay, add extra potash to the soil. If the soil is cultivated, build a good system of terraces and provide vegetated outlets in meadows to conserve soil and water. Till the soil along the contour of the fields.

Plan 3-year cropping systems in which one out of every three terrace intervals is in a row crop and the other two are in close-growing crops. Typical cropping systems are one terrace in a row crop and the next two terrace intervals in small grain and annual lespedeza; or one terrace interval in a row crop, one in small grain followed by annual lespedeza, and one in volunteer annual lespedeza. Many farmers prefer field crop rotations on small fields. If row crops are not badly needed, cropping systems are preferred that consist of 4 years of grass or legumes followed by 2 years of row crops. The close-growing crops can be 4 years of tall fescue mixed with ladino clover, 4 years of bahiagrass mixed with crimson clover, or 4 years of sericea lespedeza.

Control grazing to maintain a good cover and to protect against excessive compaction on severely eroded areas.

CAPABILITY UNIT IIIe-3

Deep to moderately deep soils that are moderately well drained to well drained and have a firm subsoil

Helena sandy loam, 2 to 10 percent slopes, eroded.
Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded.

These soils have a total area of about 535 acres in this county. All of this acreage is in the southeastern part.

The surface soil ranges from grayish-brown and pale-olive sandy loam to reddish-brown and dark-brown clay loam. It is 3 to 7 inches thick. The subsoil is firm and provides a moderately thick root zone. These soils are less well drained than are the soils in unit IIIe-1, and they are thinner and much less permeable.

These soils are medium to low in organic matter and moderately low in fertility and moisture-supplying capacity. Infiltration of water is medium into the sandy loam and very low into the clay loam. Surface runoff is in large amounts.

These soils respond fairly well to good management, but their use is limited. The Helena soil warms up late in spring, and the Mecklenberg soil has poor tilth. Both soils are in small fields and are better suited to perennial pasture than to cultivated crops. They are not suited to annual pasture or to supplemental irrigation. Severely eroded areas are subject to compaction by livestock or farm machinery and are poorly suited to deep-rooted plants and pine trees. Sites suitable for farm ponds are numerous. Dams, however, should be constructed with care because these soils are thin and have varied characteristics and because their subsoil is heavy and clayey.

Corn, grain sorghums, oats, and rye are the most suitable cultivated crops. Cotton and cowpeas grow fairly well on the better areas of the Helena soil. The better fields produce fairly good yields of sericea lespedeza. Pasture plants commonly grown in the county are fairly well suited.

These soils need lime and large additions of fertilizer for good yields. Add organic matter regularly to improve tilth and moisture-supplying capacity. If the soils are cultivated, build a good system of terraces and provide vegetated outlets to control runoff. The least acceptable protection is provided by a 3-year system of stripcropping that consists of 2 years of close-growing crops and 1 year of a row crop. In this system, the close-growing crop in the second year is plowed under before the row crop is planted. Where the surface soil is thin, control grazing strictly to maintain a good cover and to prevent excessive compaction.

CAPABILITY UNIT IIIe-5

Shallow soils that are moderately well drained to somewhat excessively drained and have a thin or discontinuous, firm, plastic subsoil

Wilkes sandy loam, 2 to 6 percent slopes, is the only soil in this capability unit. It has a total area of 395 acres in the county and is in the southeastern part. This soil is on ridgetops and their gentle side slopes.

This soil has a surface layer that is mostly light olive-brown sandy loam, 4 to 12 inches thick. The subsoil is generally thin and ranges from 4 to 15 inches in thickness. It is mostly yellowish-brown plastic clay. The subsoil provides a thin to very thin root zone and in many places is underlain by basic and acidic, rocky material that is disintegrated and droughty.

This soil has varied physical characteristics, but most of it is medium in organic matter and moderately low in moisture-supplying capacity and natural fertility. Infiltration of water is medium, and permeability is generally slow, but where a B horizon has not formed, it is rapid. Surface runoff is fairly rapid, and shallow gullies are common.

This soil is better suited to perennial cover than to cultivated crops. It is in small fields, and the root zone is too shallow for pine trees, kudzu, or other deep-rooted plants. Areas of thin, sandy surface soil are subject to moderate compaction by livestock. The construction of dams for ponds is impractical because of the thin, heavy clay and loose rocky material. The soil is too thin and clayey to be terraced by machine.

This soil is poorly suited to cultivated crops, but of these, corn, cotton, grain sorghums, oats, rye, and cowpeas are best suited. Sericea lespedeza is planted frequently for hay or pasture, but yields are low. Bahiagrass or bermudagrass mixed with whiteclover and annual lepedeza is a good pasture mixture. Tall fescue, ladino clover, ryegrass, and crimson clover grow fairly well on better fields.

This soil needs lime and large amounts of fertilizer to assure good yields. Legumes require additions of extra potash. Regular additions of organic matter will help maintain tilth and improve the moisture supply. If this soil is cultivated, provide a system of low, plow-built terraces with vegetated outlets to dispose of water. A cropping system generally used is one terrace in a row crop and two in oats or rye followed by annual lespedeza. A common practice is to leave volunteer lespedeza on another interval. The small fields are better suited to a field instead of a terrace cropping system. On these fields, after 2 years of close-growing crops, plant a row crop. Grazing should be controlled to maintain a good cover and to prevent excessive compaction on the thin, sandy surface soil.

CAPABILITY UNIT IIIw-2

Deep, friable soils on bottom lands that are somewhat poorly drained to moderately well drained

Chewacla silt loam is the only soil in this capability unit. This soil has a total area of about 750 acres. It is nearly level and is in fairly narrow strips along medium-sized and large streams.

The surface layer of this soil is silt loam, 10 to 20 inches thick. It ranges from dark grayish brown to dark brown in color, depending on its content of organic matter. It is friable and fairly well drained. The color of the subsoil varies, but it is generally dark grayish brown and grayish brown. Also varied is the distinctness of mottling in the subsoil, which is generally slick when wet. The water table is seldom less than 36 inches from the surface, and the root zone, therefore, is fairly thick.

This soil is moderately high in organic matter, moisture-supplying capacity, and fertility. Adjoining streams overflow it, and water runs off of some areas fairly slowly.

This soil is well suited to some cultivated crops. Because of excessive moisture and possible overflow, it is best suited to summer-growing crops and to permanent pasture. Suitable crops are corn for grain or silage, grain sorghums, and annual lespedeza. Truck crops grow well in most places. The soil produces good yields of oats, but they are likely to be damaged by overflow. Suitable pasture plants are tall fescue or dallisgrass mixed with whiteclover and annual lespedeza. Bahiagrass is suited to most areas, but bermudagrass should be planted only in the better drained areas. Cotton, peaches, grapes, sericea lespedeza, and alfalfa are not suited to this soil.

Especially if legumes are grown, this soil needs lime and large amounts of fertilizer. If cultivated continuously, it needs regular additions of organic matter to maintain tilth and moisture-supplying capacity. Plant a winter cover crop to furnish hay or silage and to protect cultivated fields from erosion. Dig open ditches to drain some of the more poorly drained areas. Some areas need deep ditches. Control grazing so that a complete cover is maintained and wet areas are not damaged by trampling. If it is well managed, this soil is well suited to supplemental irrigation of truck crops, annual grazing crops, cultivated crops, or pasture.

CAPABILITY UNIT IIIs-2

Droughty soils on bottom lands

Buncombe loamy sand is the only soil in this capability unit. It has a total area of 477 acres and is on nearly level slopes along the Broad River.

This soil has a surface layer of pale yellowish-brown to dark yellowish-brown loamy sand. The subsoil is pale-brown to dark grayish-brown loamy fine sand. Layers of mixed sand and gravel are at a depth greater than 4 feet in most places.

This soil is medium acid to strongly acid. It is low in organic matter, moisture-supplying capacity, and natural fertility. Infiltration of water is medium and surface runoff is slow. Permeability is rapid.

This soil is poorly suited to crops grown locally, but some small areas next to good cultivated soils are fairly well suited to rye, cowpeas, bahiagrass, and sericea lespedeza for feed and hay. Areas of this soil surrounded by areas of other soils in pasture can be seeded to bahiagrass, bermudagrass, or sericea lespedeza for grazing. Pine trees are fairly well suited.

This soil produces fair yields of pasture and hay if lime and fertilizer are added. Cultivated areas need regular additions of organic matter to improve moisture-supplying capacity and fertility. Control grazing to maintain a cover.

CAPABILITY UNIT IVe-1

Deep, well-drained, friable soils

Appling sandy loam, 10 to 15 percent slopes, eroded.
Cecil sandy loam, 10 to 15 percent slopes.
Cecil sandy loam, 10 to 15 percent slopes, eroded.
Cecil clay loam, 6 to 10 percent slopes, severely eroded.
Davidson loam, 10 to 25 percent slopes, eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Lloyd loam, 10 to 15 percent slopes, eroded.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded.
Lockhart clay loam, 6 to 10 percent slopes, severely eroded.
Madison and Cecil sandy loams, 10 to 15 percent slopes.
Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded.
Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded.
Nason very fine sandy loam, 10 to 15 percent slopes, eroded.
Nason silty clay loam, 2 to 10 percent slopes, severely eroded.
Tatum very fine sandy loam, 10 to 15 percent slopes.
Tatum very fine sandy loam, 10 to 15 percent slopes, eroded.
Tatum silty clay loam, 6 to 10 percent slopes, severely eroded.
Tirzah silt loam, 10 to 15 percent slopes, eroded.

These soils have a total area of about 33,000 acres in the county and are well distributed.

These soils are moderately to severely eroded. The surface layer is grayish brown on the less eroded, steep slopes and is reddish brown on severely eroded, moderate slopes. Where erosion is severe, the surface layer is generally a mixture of subsoil material and the remaining surface soil. The subsoil is yellowish red, red, or yellowish brown. It is friable and provides a thick to moderately thick root zone. Gravelly areas and gullied areas are fairly numerous.

These soils are medium acid, low in organic matter, and moderately low in fertility. Infiltration of water is slow in the clay loams to medium in the sandy loams. Surface runoff is fairly rapid and in large amounts. These soils are moderately low to low in moisture-supplying capacity.

These soils are limited in use by poor tilth and the hazard of erosion. They are poorly suited to crops that require frequent plowing but are suited to sericea lespedeza, kudzu, pine trees, or other deep-rooted crops. The steeper slopes are suited only to permanent pasture, woods, or other perennial cover. If hay or other crops that require little cultivation are needed, the less steep slopes can be used. Many sites suitable for ponds are on these soils. The best suited pasture plants are sericea lespedeza, kudzu, and bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza.

These soils require careful management but respond well to it. To obtain good yields, add lime and fertilizer. If these soils are needed for cultivated crops, use long cropping systems that include close-growing perennials planted in strips. Control runoff by building a good system of terraces and outlets. A commonly used cropping system that provides minimum acceptable protection consists of one terrace in a row crop and three terraces in oats and rye followed by annual lespedeza. Volunteer lespedeza may be allowed to grow for 2 years. Small fields are better suited to sericea lespedeza for hay or pasture and to kudzu for pasture. Control grazing closely to maintain a good cover.

CAPABILITY UNIT IVe-2

Deep to moderately deep soils that have a firm subsoil

Iredell fine sandy loam, 6 to 10 percent slopes, eroded.
Mecklenburg loam, 6 to 15 percent slopes, eroded.
Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded.
Orange silt loam, 2 to 6 percent slopes, eroded.

These soils have a total area of about 1,785 acres in this county, most of which is in the southeastern part.

The surface layer of these soils is loam to clay loam, 3 to 6 inches thick. It is dark reddish brown and yellowish brown to olive brown. The firm subsoil is slightly plastic to plastic and provides only a shallow root zone.

These soils are medium acid. They contain little organic matter and are fairly low in fertility. Water infiltrates slowly and runs off rapidly and in large amounts, especially on the steeper slopes. Permeability is slow to very slow, and moisture-supplying capacity is low.

Most areas of these soils are poorly suited to deep-rooted crops, pine trees, and crops that require frequent plowing. They will produce fair yields of fine-rooted pasture grasses. Some of the less eroded areas on the more gentle slopes can be cultivated or planted to pines. Terracing is difficult because of the thin clay subsoil, although there are some sites suitable for ponds. The dams for these ponds are difficult to construct.

The Orange soil is suited to oats, rye, and annual lespedeza. The Mecklenburg and Iredell soils are suited to grain sorghums, small grains, and annual lespedeza. Cotton can be grown on the Iredell soil, but the Mecklenburg soils are not well suited to cotton. Suitable pasture plants on the soils in this unit are bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza.

These soils are only fairly responsive. They require additions of lime and fertilizer and other good management. If these soils are cultivated, use long cropping systems in which crops are planted in strips. A common system is one that provides one strip in a row crop and three strips in a small grain followed by annual lespedeza. Allow volunteer lespedeza to grow the third and fourth years on the close-growing strips. Keep small fields in grass or woods. Control grazing carefully to maintain a cover and to prevent excessive compaction where the surface layer is thin.

CAPABILITY UNIT IVe-4

Shallow, poorly developed soils

Manteo channery silt loam, 2 to 10 percent slopes.
Wilkes sandy loam, 6 to 15 percent slopes.

These soils have a total area of about 2,180 acres in the county and are distributed from the south-central part to the northeastern corner.

The surface layer of these soils is sandy loam and channery silt loam, 3 to 12 inches thick. It is olive gray to light olive brown. The yellowish-brown subsoil is silty

clay loam to clay; it is thin and discontinuous and provides a poor root zone. Small areas of quartz gravel and fragments of underlying basic and acidic rocks are on the surface of the Wilkes soil. The surface layer of the Manteo soil contains flat fragments from the underlying sericitic schist.

Water infiltrates these soils fairly slowly and runs off in large amounts. Permeability is slow where a clayey subsoil has formed but is moderately rapid where the B horizon is thin or discontinuous. These soils are generally low in organic matter, fertility, and moisture-supplying capacity. On the more gentle slopes, the Wilkes soil is moderate in moisture-supplying capacity and fertility except where a fairly distinct B horizon has developed.

These soils are poorly suited to deep-rooted plants and to pine trees. Nongravelly areas that have a thick surface layer are in fairly good tilth. The gentle slopes can be plowed only infrequently. In some places low plow-built terraces can be constructed. The best uses for these soils are perennial sod crops and trees, but these do not grow very well. Some sites are suitable for ponds, but thin profiles and the varied, rocky material makes the construction of dams hazardous.

Though these soils are generally not suited to crops, the best suited crops are cotton, corn, grain sorghums, oats, rye, annual lespedeza, and sericea lespedeza. The best suited pasture plants are bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza. Sericea lespedeza will furnish fair pasture on the better areas of these soils.

These soils are only fairly responsive and require lime and fertilizer as well as other good management. Cropping systems are needed that last a long time and provide for crops in strips. Where terracing is impractical, cultivate on the contour. A common cropping system consists of one strip in a row crop and three strips in oats, rye, or other close-growing crop followed by annual lespedeza. Allow volunteer lespedeza to grow in the close-growing strips the third and fourth years. Instead of oats or rye, the close-growing strips may be seeded to bahiagrass mixed with whiteclover and annual lespedeza. On the better fields, the close-growing crops can be tall fescue and ladino clover. Small fields and gravelly areas are best suited to pasture or trees.

Grazing should be carefully controlled to maintain a cover and to prevent excessive compaction of clayey surface layers.

CAPABILITY UNIT IVw-3

Wet, rapidly permeable, mixed alluvial deposits on bottom lands

Mixed wet alluvial land is the only mapping unit in this capability unit. It has a total area of about 4,200 acres in the county and is well distributed.

This deposited material ranges from loamy sand to fine sandy loam and is a few to several feet thick. Many small sandbars, gravelly areas, and cobbly areas occur. Color varies widely, depending upon content of organic matter. Sandy areas are gray, and areas high in organic matter are dark grayish brown.

Much of the time the water table is at a depth of less than 3 feet, and streams flood this land frequently. Infiltration of water is medium, and permeability is moderate to moderately rapid. Surface runoff is slow. Organic matter, moisture-supplying capacity, and fertility are moderate to low.

This land is not suited to cultivated crops unless it is drained. Drained areas respond fairly well to lime and fertilizer. Open-ditch drains are most practical but require constant maintenance. Most of the land is fairly well suited to pasture. Suitable pasture mixtures are bahiagrass or dallisgrass and white clover, or tall fescue and ladino clover. Bahiagrass or bermudagrass provides a protective cover on dry sandy washout areas.

CAPABILITY UNIT Vw-1

Deep to moderately deep, nearly level, poorly drained soils on uplands

Worsham sandy loam, 0 to 6 percent slopes, is the only soil in this capability unit. It is in small areas at heads of drainageways and in depressions on uplands throughout the county. Most slopes are less than 4 percent. The total area in the county is about 1,600 acres.

This soil varies in color but is mostly light brownish gray to black, depending on the content of organic matter. It also varies in thickness. The surface layer is 8 to 20 inches or more thick, and the subsoil is 24 to 36 inches thick. The surface layer ranges from sandy loam to fine sandy loam but is mostly sandy loam. The gray subsoil is sticky sandy clay loam. It is firm and slowly permeable. This soil is strongly acid and is low in fertility.

This soil is too wet for cultivated crops and is poorly suited to pasture. Most areas receive surface runoff from adjoining slopes, but the soil can be drained by open ditches. Add lime and fertilizer to improve fertility. For pasture, plant tall fescue mixed with ladino clover, or bahiagrass or dallisgrass mixed with white clover and annual lespedeza.

Hardwoods will grow in some places on this soil. Some sites are suitable for ponds.

Control grazing to prevent damage by trampling.

CAPABILITY UNIT VIe-2

Deep, well-drained, friable soils on strong to moderately steep slopes

Appling sandy loam, 15 to 25 percent slopes, eroded.
Cecil clay loam, 10 to 15 percent slopes, severely eroded.
Cecil sandy loam, 15 to 25 percent slopes.
Cecil sandy loam, 15 to 25 percent slopes, eroded.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Lloyd loam, 15 to 25 percent slopes.
Lockhart clay loam, 10 to 15 percent slopes, severely eroded.
Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded.
Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded.
Madison and Cecil sandy loams, 15 to 25 percent slopes.
Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded.
Nason very fine sandy loam, 15 to 25 percent slopes.
Tatum silty clay loam, 10 to 15 percent slopes, severely eroded.
Tatum very fine sandy loam, 15 to 25 percent slopes.
Tatum very fine sandy loam, 15 to 25 percent slopes, eroded.
Tirzah silt loam, 15 to 25 percent slopes, eroded.
Worsham sandy loam, 2 to 10 percent slopes, eroded.

The total area of these soils is about 40,300 acres, and more than 10,000 acres of this is severely eroded. The slightly eroded to moderately eroded soils are on steep slopes, and the severely eroded soils are on strong slopes.

The surface layer of these soils ranges from sandy loam to clay loam or clay in texture and from gray to reddish brown in color. The subsoil is red to yellowish-red clay loam or clay. It is friable and provides a deep to moderately deep root zone.

Infiltration of water is medium to slow, permeability is moderate, and moisture-supplying capacity is moderate to low. Surface runoff is rapid and in large amounts on the clay loams unless they are protected by vegetation. The soils of this unit are medium acid, low in organic matter, and moderately low in fertility. The tilth of the clay loams is poor.

Because of the severe erosion hazard, the strong to moderately steep slopes are not suited to cultivated crops. Many sites are suitable for construction of farm ponds. Annual lespedeza or other fine-rooted crops are poorly suited to the Lockhart soils, and sericea lespedeza or other deep-rooted plants are poorly suited to the Worsham soil.

These soils respond to additions of fertilizer and to other good management. They are suited to locally grown pasture mixtures, and to sericea lespedeza, kudzu, or pine trees. Suitable pasture plants are tall fescue mixed with ladino clover, and bahiagrass or bermudagrass mixed with white clover and annual lespedeza. Kudzu provides limited grazing. Grazing should be controlled to maintain a cover at all times, and to prevent compaction in areas with a fine-textured surface layer.

CAPABILITY UNIT VIe–3

Shallow or poorly developed soils on moderately steep to steep slopes

Manteo channery silt loam, 10 to 15 percent slopes.
Manteo channery silt loam, 6 to 15 percent slopes, eroded.
Wilkes sandy loam, 6 to 15 percent slopes, eroded.

The total area of these soils in the county is about 3,890 acres. This is distributed from the south-central part to the northeastern corner.

These soils are moderately well drained to excessively drained. The surface layer is channery silt loam and sandy loam, 5 to 12 inches or more thick, and is gravelly in spots. This layer is olive gray to light olive brown. The subsoil (B horizon) is firm but is thin and discontinuous, and the root zone is shallow. Permeability is slow where a clayey subsoil has formed but is moderately rapid where the subsoil is thin. Surface runoff is excessive and causes a severe erosion hazard. Gullies are common unless the soils are protected by a good cover. These soils are fairly low in organic matter, moisture-supplying capacity, and fertility.

These soils are not suited to cultivated crops. They are best suited to plants that provide a perennial or permanent cover. Because of the thin root zone, they are best suited to shallow-rooted crops. Many farm pond sites are on these areas, but dam construction is difficult because of thin soils and variable, rocky underlying material.

These soils respond only fairly well to good management and require intensive practices. Cleared areas are fairly well suited to limited grazing or to the planting of pine trees. Bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza are suitable pasture plants. Sericea lespedeza or kudzu is poorly suited. Grazing should be rigidly controlled to maintain a safe cover at all times.

CAPABILITY UNIT VIe–4

Deep to moderately deep, well-drained soils that have a firm subsoil

Iredell clay loam, 6 to 10 percent slopes, severely eroded.
Mecklenburg loam, 15 to 25 percent slopes.
Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded.

These soils have a total area of about 1,490 acres in the county and are in the southeastern part.

The surface layer of these soils is loam or clay loam, 3 to 7 inches thick. It is dark brown to dark reddish brown. The subsoil is firm clay loam or clay that provides a moderately thick to fairly thin root zone. Infiltration is slow, permeability is moderately slow, and surface runoff is moderately rapid and in large amounts. These soils are meduim acid. The loam is moderate in organic matter, moisture-supplying capacity, and fertility, and the clay loams are low in these properties. The tilth is fair on the loam and is poor on the clay loams.

These soils are not suited to cultivated crops. They are suited to plants that provide perennial or permanent cover. They are best suited to shallow, fine-rooted pasture grasses and clovers. Areas that have a moderately thin subsoil are poorly suited to deep-rooted plants and to pine trees. Sericea lespedeza and other deep-rooted plants can be grown in areas that have a moderately thick root zone, and these plants improve the soil by penetrating deeply and loosening the subsoil. Many sites are suitable for farm ponds, but dams must be constructed carefully because of the thin soil and heavy clay. Locally grown pasture plants are suited to these soils, but the clay loams require more care for maintenance than the loam. Commonly used pasture mixtures are tall fescue and ladino clover, bahiagrass or bermudagrass and crimson clover, and white clover and annual lespedeza. Sericea lespedeza or kudzu provides limited grazing.

These soils respond to good management but need lime and large yearly applications of fertilizer. Legumes require extra potash. Grazing should be carefully managed to maintain a good cover at all times and to prevent compaction of the clay loams.

CAPABILITY UNIT VIIe–1

Severely eroded or steep soils that have a friable subsoil

Cecil clay loam, 15 to 25 percent slopes, severely eroded.
Cecil sandy loam, 25 to 35 percent slopes.
Gullied land, friable materials, 10 to 35 percent slopes.
Lloyd loam, 25 to 35 percent slopes.
Lockhart clay loam, 15 to 25 percent slopes, severely eroded.
Lockhart coarse sandy loam, 25 to 35 percent slopes.
Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded.
Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded.

Nason silty clay loam, 10 to 25 percent slopes, severely eroded.
Tatum silty clay loam, 15 to 35 percent slopes, severely eroded.
Tatum very fine sandy loam, 25 to 35 percent slopes.
Wickham sandy loam, 10 to 25 percent slopes, severely eroded.

These soils are distributed throughout the county. Their total area is about 37,840 acres, including 16,311 acres of gullied land.

These soils vary in slope, texture, and degree of erosion but are mostly eroded sandy loams on steep slopes and clay loams or silty clay loams on moderately steep slopes. The surface layer ranges from 3 to 12 inches in thickness. It is generally grayish brown to reddish brown and red but, in a few places, is yellowish brown. The subsoil is red to yellowish-red, friable clay loam that provides a fairly thin to thick root zone. In many places, the lower part of the root zone lacks plant nutrients.

Infiltration of water is medium to slow, and runoff is rapid except where it is slowed by a good cover. This runoff carries damaging silt deposits to lower areas. Permeability and moisture-supplying capacity are moderate. These soils are low in organic matter and are moderately low in fertility. Tilth is good in the sandy loams but is poor in the clay loams.

The erosion hazard is severe on sandy loams, and the clay loams and gullied land need site preparation to produce a satisfactory cover of pasture or pine trees.

These soils are not suited to cultivated crops, and pasture on them is poor. Their best crop is pine trees. Although they respond fairly well to lime, fertilizer, and good management, yields are limited. Some severely eroded areas and gullied land can support only a protective cover of kudzu or pine trees. Kudzu will provide limited grazing on better areas. Sericea lespedeza will grow on the more gentle slopes where seedbeds can be prepared. Pasture plants suitable for some areas are bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza. Crimson clover will grow on the sandy loams.

Many farm pond sites are on these soils, but most of them receive too much silt from watersheds. Ponds are practicable where watersheds have remained in woodland.

CAPABILITY UNIT VIIe-2

Eroded, sloping, shallow, or poorly developed soils

Louisburg sandy loam, 10 to 35 percent slopes, eroded.
Manteo channery silt loam, 15 to 35 percent slopes.
Manteo channery silt loam, 15 to 35 percent slopes, eroded.
Wilkes sandy loam, 15 to 25 percent slopes, eroded.
Wilkes sandy loam, 15 to 35 percent slopes.

These soils have a total area of about 19,200 acres in this county, and they are distributed from the south-central part to the northeastern corner.

The surface soil is gray to olive-gray or olive-brown sandy loam and channery silt loam, 3 to 7 inches thick. The B horizon is very thin and generally discontinuous. In the Louisburg soil the subsoil is gritty, friable, and yellowish red to yellowish brown, but in the Manteo and Wilkes soils the subsoil is firm and yellowish brown. The root zone of the soils in this unit is thin. Its lower boundary consists of disintegrated underlying rock or loose, droughty material, which is very low in plant nutrients.

These soils are medium acid. They are low in organic matter, moisture-supplying capacity, and fertility. Infiltration of water is medium to slow, permeability is slow to rapid, and surface runoff is rapid. Tilth is favorable except in some areas of Manteo channery silt loams.

These soils are too steep and shallow for cultivated crops. They are best suited to a permanent, perennial cover. Because they have a shallow root zone, these soils are poorly suited to pine trees. They are fairly well suited to bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza. Sericea lespedeza grows fairly well on the more gentle slopes of the deeper Louisburg soil. Kudzu will provide cover and very limited grazing on most of the Louisburg soil. Annual lespedeza and other fine-rooted crops are better suited to the Manteo and Wilkes soils. Many farm pond sites are on these soils, but dams are difficult to construct because of the shallow soil, heavy clay, coarse sandy strata, and variable, rocky underlying material. Many ponds have failed where excavation has been extensive inside the water area.

Although these soils respond to fertilization and other management, yields are low. Establish a good cover of pasture or pines. Grazing should be carefully controlled to maintain a complete cover and to control erosion.

CAPABILITY UNIT VIIe-3

Severely eroded, sloping soils that have a firm subsoil

Gullied land, firm materials.
Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded.

Gullied land, firm materials, has an area of about 7,270 acres and makes up almost the entire acreage of 8,050 acres in this capability unit. Most of the acreage of this unit is distributed from the south-central part of the county to the northeastern corner.

The surface soil is mostly dark reddish-brown clay loam, but in many areas between gullies it is grayish-brown sandy loam. The subsoil is a firm clay loam or clay that provides a fairly shallow root zone. Water infiltrates these soils slowly and runs off rapidly in large amounts. This runoff is often concentrated locally on gullied land. These soils are low in organic matter, moisture-supplying capacity, and fertility. Tilth is very poor, except in areas of sandy loam.

This land is too shallow and is in too poor tilth for cultivated crops. It is poorly suited to pasture and only fairly well suited to pine trees. Pine trees have been damaged by disease and insects. Although sites for farm ponds occur, the construction of dams is generally impractical because of the shallow profiles and the heavy clay and silt. Bermudagrass or bahiagrass mixed with whiteclover and annual lespedeza are pasture plants suitable for some areas. Pines or kudzu will grow in some areas of the sandy loam between gullies.

These soils require intensive management to establish a cover of pasture or pines. Grazing will be very limited and must be strictly controlled to maintain a cover. Yields of wood products will be low. To establish a cover of trees on the gullied land, extensive site preparation is required. Land smoothing is expensive and hazardous because the soils are shallow and contain much heavy clay.

CAPABILITY UNIT VIIe–4

Very severely eroded soils that have a friable subsoil

This capability unit consists of only Gullied land, friable materials, 2 to 10 percent slopes.

The total area of this land in the county is about 1,274 acres. It is distributed throughout the county in small individual areas, except for a large area of basic material near Asbury and Wilkinsville.

The surface soil is reddish-brown clay loam in most places, but between gullies, in some places, it is grayish-brown sandy loam. The subsoil is friable, red or yellowish-red clay loam or clay. The root zone is generally adequate for deep-rooted plants grown locally, but, in many places, the lower part lacks plant nutrients and is somewhat unstable. Infiltration of water is slow, and surface runoff is excessive and locally concentrated. Permeability is moderate to moderately slow. This land is low in organic matter, moisture-supplying capacity, and fertility. Tilth is poor, except in some areas of sandy loam between gullies.

This land is unsuited to cultivated crops and is poorly suited to pasture or trees in its present condition. However, many areas can be reclaimed. If they were properly smoothed, most areas would be suited to perennial or permanent cover crops. Some areas eventually could be seeded to pasture or perhaps planted to cultivated crops. They would be fairly well suited to sericea lespedeza, to kudzu, or to bahiagrass or bermudagrass mixed with whiteclover and annual lespedeza. They would also be suited to pine trees and to plantings for wildlife food and cover.

This land responds fairly well to good management, but it requires lime and large applications of fertilizers. Prepare seedbeds carefully so that a complete cover will be established. Control surface runoff, including that from adjoining areas, by terraces, diversions, or mulching. Protect plants from grazing or trampling in their early stages. Control grazing closely on the established pasture. Mulch perennials or pines, if practical, to speed the establishment of a cover.

CAPABILITY UNIT VIIIs–1

Unproductive, rocky or droughty areas

Riverwash.
Stony land.

This capability unit has a total area of about 1,420 acres. Stony land covers about 1,160 acres, and the rest is Riverwash. Stony land consists of rocky soil material on high ridges and low mountains, and Riverwash is along the Broad and the Pacolet Rivers. Riverwash is practically barren. Stony land supports a sparse vegetation, which is mostly mixed hardwoods with a few pines and various shrubs, grass, vines, and lichens.

Because of sparse stands, slow growth, and difficulty of harvesting, the land in this unit is useful only for recreation and wildlife. It should be protected from forest fires to maintain cover, improve growing conditions, and increase wildlife population.

Estimated Yields and Suitability

The first part of this subsection lists the estimated average acre yields of principal crops for each soil in the county. The second part deals with the relative suitability of soils for specified crops.

Estimated yields

In table 3 are estimated average acre yields of principal crops under two levels of management. In columns A are listed yields to be expected under the management now prevailing in the county; in columns B are yields to be expected under the highest level of management that is practical. On the whole, yields in columns B are notably higher than those in columns A. However, for some crops, especially commercial crops of high value, there may be little or no difference between estimates in columns A and B, as the prevailing management of these crops more nearly approaches the highest level of management believed practical.

The yields given in columns A are based on observation made by members of the soil survey party, on information obtained by interviews with farmers and agricultural workers who have had experience with the soils and crops of the area, and on comparisons with yield tables for counties in South Carolina having soils similar to those in Cherokee County. Because data giving specific crop yields for individual soils are not generally available, the yields given in columns A are based on a summation of local experience. They are considered fairly reliable estimates of the crop production that may be expected under the management commonly practiced.

The yields in columns B are based largely on estimates made by men who have had experience with the soils and the crops of the county. In making the estimates, these men considered the known deficiencies of the soils and then estimated the increase in crop yields that might result if these deficiencies were corrected within practical

TABLE 3.—*Estimated average acre yields of the*

[Yields in columns A are those obtained under prevailing management; those in columns B are yields

Soil	Capability unit	Corn		Cotton (lint)		Grain sorghum		Oats		Wheat	
		A	B	A	B	A	B	A	B	A	B
		Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Altavista fine sandy loam, 0 to 2 percent slopes	I-2	20	40	200	350	20	40	20	45	15	35
Altavista fine sandy loam, 2 to 6 percent slopes, eroded	IIe-2	18	38	240	400	20	38	20	45	15	32
Appling sandy loam, 2 to 6 percent slopes	IIe-2	20	40	250	550	25	50	25	50	16	32
Appling sandy loam, 2 to 6 percent slopes, eroded	IIe-2	18	38	235	500	22	45	22	40	16	32
Appling sandy loam, 6 to 10 percent slopes	IIIe-2	15	35	235	480	20	40	20	45	15	30
Appling sandy loam, 6 to 10 percent slopes, eroded	IIIe-2	14	30	200	450	15	30	15	40	12	30
Appling sandy loam, 10 to 15 percent slopes, eroded	IVe-1										
Appling sandy loam, 15 to 25 percent slopes, eroded	VIe-2										
Buncombe loamy sand	IIIs-2	12	20			12	20	15	30		
Cecil clay loam, 2 to 6 percent slopes, severely eroded	IIIe-1	18	36	220	500	25	45	20	45	14	28
Cecil clay loam, 6 to 10 percent slopes, severely eroded	IVe-1	16	30	200	450	20	40	20	40	14	25
Cecil clay loam, 10 to 15 percent slopes, severely eroded	VIe-2										
Cecil clay loam, 15 to 25 percent slopes, severely eroded	VIIe-1										
Cecil sandy loam, 2 to 6 percent slopes	IIe-1	25	50	285	600	27	55	35	75	20	45
Cecil sandy loam, 2 to 6 percent slopes, eroded	IIe-1	25	45	280	585	25	50	22	55	16	32
Cecil sandy loam, 6 to 10 percent slopes	IIIe-1	23	42	275	525	23	45	20	50	16	30
Cecil sandy loam, 6 to 10 percent slopes, eroded	IIIe-1	22	40	265	500	22	42	20	45	15	30
Cecil sandy loam, 10 to 15 percent slopes	IVe-1	20	30	260	425	20	38	20	38	15	25
Cecil sandy loam, 10 to 15 percent slopes, eroded	IVe-1	18	30	260	420	18	38	18	38	15	25
Cecil sandy loam, 15 to 25 percent slopes	VIe-2										
Cecil sandy loam, 15 to 25 percent slopes, eroded	VIe-2										
Cecil sandy loam, 25 to 35 percent slopes	VIIe-1										
Chewacla silt loam	IIIw-2	25	55			40	80	25	60		
Congaree fine sandy loam	IIw-2	45	90			40	70	30	70	15	25
Congaree silt loam	IIw-2	45	90			40	80	30	75	15	25
Davidson loam, 2 to 10 percent slopes, eroded	IIIe-1	25	60	285	580	25	60	25	60	15	45
Davidson loam, 10 to 25 percent slopes, eroded	IVe-1	20	35	250	400	20	30	20	45	13	25
Gullied land, firm materials	VIIe-3										
Gullied land, friable materials, 2 to 10 percent slopes	VIIe-4										
Gullied land, friable materials, 10 to 35 percent slopes	VIIe-1										
Helena sandy loam, 2 to 10 percent slopes, eroded	IIIe-3	15	30	200	400	18	35	20	38	15	30
Iredell clay loam, 6 to 10 percent slopes, severely eroded	VIe-4										
Iredell fine sandy loam, 2 to 6 percent slopes	IIe-4	15	35	200	500	20	40	25	50	15	30
Iredell fine sandy loam, 6 to 10 percent slopes, eroded	IVe-2	15	30	200	470	18	30	25	45	12	25
Lloyd clay loam, 2 to 6 percent slopes, severely eroded	IIIe-1	18	37	200	450	15	30	25	50	15	30
Lloyd clay loam, 6 to 10 percent slopes, severely eroded	IVe-1	17	32	225	450	18	35	22	45	13	25
Lloyd clay loam, 10 to 15 percent slopes, severely eroded	IVe-1	15	30	200	370	15	30	20	40		
Lloyd clay loam, 15 to 25 percent slopes, severely eroded	VIe-2										
Lloyd loam, 2 to 6 percent slopes, eroded	IIe-1	25	60	285	550	25	50	27	65	17	35
Lloyd loam, 6 to 10 percent slopes, eroded	IIIe-1	20	40	260	500	20	40	25	50	15	30
Lloyd loam, 10 to 15 percent slopes, eroded	IVe-1					18	30	20	40		
Lloyd loam, 15 to 25 percent slopes	VIe-2										
Lloyd loam, 25 to 35 percent slopes	VIIe-1										
Local alluvial land	I-1	50	90	285	400	27	55	30	75	15	30
Lockhart clay loam, 2 to 6 percent slopes, severely eroded	IIIe-2	15	35	200	400	15	35	18	40	10	25
Lockhart clay loam, 6 to 10 percent slopes, severely eroded	IVe-1	12	20	180	350	13	25	15	35		
Lockhart clay loam, 10 to 15 percent slopes, severely eroded	VIe-2										
Lockhart clay loam, 15 to 25 percent slopes, severely eroded	VIIe-1										
Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded	IIe-2	20	40	225	475	20	40	20	50	15	30
Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded	IIIe-2	15	35	200	450	15	35	18	40	10	25
Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded	IVe-1	12	20	150	350	12	20	15	35		
Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded	VIe-2										
Lockhart coarse sandy loam, 25 to 35 percent slopes	VIIe-1										
Louisburg sandy loam, 10 to 35 percent slopes, eroded	VIIe-2										
Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded	IIIe-1	18	36	250	550	25	45	20	50	15	30
Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded	IVe-1	20	30	200	500	20	40	20	45	15	25
Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded	VIe-2					15	30	20	35		
Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded	VIIe-1										
Madison and Cecil sandy loams, 2 to 6 percent slopes	IIe-1	25	50	285	600	27	55	25	60	17	35
Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded	IIe-1	25	45	280	585	25	50	22	55	16	32

See footnote at end of table.

principal crops under two levels of management

to be expected under improved management. Absence of figure indicates crop is not commonly grown]

Peaches		Grapes		Fescue		Bermudagrass		Bahiagrass		Dallisgrass		Sericea lespedeza		Alfalfa		Annual lespedeza	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Bu.	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
				100	160	100	150	90	180	80	180	0. 8	1. 6			0. 4	1. 0
		3. 0	5. 0	100	150	100	160	90	175	80	170	. 8	1. 8			. 4	. 9
275	485	3. 0	6. 0	100	160	110	175	100	180	60	105	1. 0	2. 0	1. 0	2. 0	. 4	1. 0
260	475	2. 7	5. 5	95	155	110	170	100	175	60	100	1. 0	1. 9			. 4	. 9
250	475	2. 7	6. 0	90	150	110	165	100	175	60	100	1. 0	1. 9	1. 0	1. 8	. 4	. 9
240	450	2. 5	4. 5	85	140	100	160	95	165			1. 0	1. 8			. 4	. 9
				75	130	90	150	85	150			. 8	1. 6				
						85	140	80	140			. 7	1. 5				
						90	150	90	140								
285	450	2. 5	5. 0	100	150	100	150	90	160	60	120	1. 0	1. 8	1. 5	2. 5	. 4	1. 0
250	475	2. 0	4. 2	100	140	95	140	85	140	60	100	. 8	1. 6			. 4	. 9
				90	135	80	135	80	130			. 7	1. 4				
300	500	4. 0	7. 0	110	180	110	180	100	180	80	140	1. 0	2. 0	2. 0	4. 0	. 5	1. 2
285	490	2. 0	5. 0	105	170	105	170	95	180	75	130	1. 0	2. 0	2. 0	4. 0	. 6	1. 3
280	480	1. 5	4. 0	100	160	100	165	95	170	70	120	. 9	1. 9	1. 5	3. 5	. 5	1. 2
275	475	1. 4	3. 9	95	150	95	150	95	160	65	110	. 9	1. 8	1. 4	3. 4	. 5	1. 1
240	400	1. 2	3. 6	80	130	90	140	95	140			. 9	1. 5			. 4	1. 0
235	390	1. 2	3. 5	80	120	90	135	90	130			. 8	1. 4			. 4	1. 0
				80	115	85	130	85	120			. 7	1. 4				
				80	110	85	120	85	115			. 6	1. 3				
				120	185	100	175	100	180	100	180					1. 0	2. 0
				120	205	130	195	100	200	120	200					1. 0	2. 0
				120	210	130	190	100	200	120	200					1. 0	2. 0
300	490	4. 0	7. 0	120	190	110	185	100	180	80	140	1. 2	2. 5	2. 0	3. 5	. 6	1. 3
250	420	3. 5	5. 0	100	150	100	160	85	150	50	100	1. 0	2. 0				
225	430	3. 0	5. 0	90	140	100	150	90	165			1. 0	1. 5			. 4	1. 0
								80	140	60	90					. 3	1. 0
		3. 0	6. 0	100	160	100	160	95	180	120	200	1. 0	1. 5			. 8	1. 8
		2. 5	4. 0	95	150	95	150	90	160	110	160	. 9	1. 4			. 7	1. 5
250	450	2. 9	5. 5	100	150	100	150	75	150	50	100	1. 0	2. 2	1. 5	2. 5	. 5	1. 0
225	425	2. 3	4. 5	90	125	90	125	25	125			1. 0	2. 0			. 5	. 9
200	375	2. 0	3. 5	85	115	85	115	70	110			1. 0	1. 8			. 4	. 8
300	500	4. 0	7. 0	120	170	110	175	100	170	80	150	1. 2	2. 5	2. 0	4. 0	. 6	1. 5
275	450	2. 5	4. 5	110	165	100	170	90	165	75	135	1. 2	2. 3	1. 7	3. 6	. 5	1. 1
250	430	1. 5	3. 1	100	150	90	160	80	160	70	120	1. 0	2. 0			. 4	. 9
				90	140	80	150	75	150			1. 0	1. 9				
				110	175	110	180	100	180	85	160					. 5	1. 3
250	400	2. 0	5. 0	100	150	90	150	90	160			1. 0	2. 0			. 5	1. 2
250	375	1. 5	3. 5	95	140	85	140	90	150			1. 0	1. 9			. 4	1. 0
				80	120	75	125	80	130			. 9	1. 6				
275	475	3. 0	6. 0	100	160	120	175	110	180			1. 0	2. 0			. 5	1. 2
265	460	3. 0	5. 5	90	150	100	160	100	170			1. 0	2. 0			. 4	1. 0
		2. 5	3. 5			80	140	90	160			. 9	1. 9				
						75	130	80	150			. 8	1. 6				
285	500	3. 5	6. 5	100	150	100	150	90	160	75	130	1. 0	1. 8	1. 8	3. 5	. 4	1. 0
250	450	1. 7	4. 7	100	145	95	140	85	140	60	100	. 8	1. 6	1. 5	2. 5	. 4	. 9
				90	140	90	135	85	130			. 7	1. 4				
320	550	4. 0	7. 0	110	175	110	175	100	180	80	140	1. 0	2. 0	2. 0	4. 0	. 5	1. 2
320	550	3. 0	6. 0	105	170	105	170	95	180	75	130	1. 0	2. 0	2. 0	4. 0	. 6	1. 3

TABLE 3.—*Estimated average acre yields of the principal*

Soil	Capability unit	Corn		Cotton (lint)		Grain sorghum		Oats		Wheat	
		A	B	A	B	A	B	A	B	A	B
		Bu.	*Bu.*	*Lb.*	*Lb.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*	*Bu.*
Madison and Cecil sandy loams, 6 to 10 percent slopes	IIIe–1	23	42	275	500	23	45	20	50	16	30
Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded	IIIe–1	22	40	250	500	20	40	18	45	15	30
Madison and Cecil sandy loams, 10 to 15 percent slopes	IVe–1	20	32	235	325	20	35	20	40	15	25
Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded	IVe–1	18	30	220	315	18	30	18	35	15	20
Madison and Cecil sandy loams, 15 to 25 percent slopes	VIe–2										
Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded	VIe–2										
Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded	VIIe–1										
Manteo channery silt loam, 2 to 10 percent slopes	IVe–4	10	20	125	300	12	26	15	35		
Manteo channery silt loam, 6 to 15 percent slopes, eroded	VIe–3										
Manteo channery silt loam, 10 to 15 percent slopes	VIe–3										
Manteo channery silt loam, 15 to 35 percent slopes	VIIe–2										
Manteo channery silt loam, 15 to 35 percent slopes, eroded	VIIe–2										
Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded	IIIe–3	13	30	175	350	18	40	18	45	15	30
Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded	IVe–2	12	25	150	300	15	30	15	35	12	25
Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded	VIe–4										
Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded	VIIe–3										
Mecklenburg loam, 2 to 6 percent slopes, eroded	IIe–3	20	40	250	400	20	45	20	50	15	32
Mecklenburg loam, 6 to 15 percent slopes, eroded	IVe–2	15	25	200	275	15	35	15	40		
Mecklenburg loam, 15 to 25 percent slopes	VIe–4										
Mixed alluvial land	IIw–2	30	60			35	65	30	70		
Mixed wet alluvial land	IVw–3	15	45			15	40				
Nason very fine sandy loam, 2 to 6 percent slopes	IIe–2	18	35	200	500	23	45	23	45	16	32
Nason very fine sandy loam, 6 to 10 percent slopes, eroded	IIIe–2	16	30	180	425	20	40	20	40	15	30
Nason very fine sandy loam, 10 to 15 percent slopes, eroded	IVe–1	15	25	160	300	18	30	18	36		
Nason very fine sandy loam, 15 to 25 percent slopes	VIe–2										
Nason silty clay loam, 2 to 10 percent slopes, severely eroded	IVe–1	15	25	150	300	18	35	20	40	15	25
Nason silty clay loam, 10 to 25 percent slopes, severely eroded	VIIe–1										
Orange silt loam, 2 to 6 percent slopes, eroded	IVe–2							20	40		
Riverwash	VIIIs–1										
State fine sandy loam	I–2	30	70			35	75	30	70		
Stony land	VIIIs–1										
Tatum silty clay loam, 2 to 6 percent slopes, severely eroded	IIIe–1	16	35	200	460	20	40	20	45	14	28
Tatum silty clay loam, 6 to 10 percent slopes, severely eroded	IVe–1	15	25	200	350	18	35	18	40	13	25
Tatum silty clay loam, 10 to 15 percent slopes, severely eroded	VIe–2										
Tatum silty clay loam, 15 to 35 percent slopes, severely eroded	VIIe–1										
Tatum very fine sandy loan, 2 to 6 percent slopes	IIe–1	20	47	250	500	24	52	20	55	15	32
Tatum very fine sandy loam, 2 to 6 percent slopes, eroded	IIe–1	18	44	240	500	22	45	18	45	14	30
Tatum very fine sandy loam, 6 to 10 percent slopes	IIIe–1	18	40	240	470	22	40	18	45	14	30
Tatum very fine sandy loam, 6 to 10 percent slopes, eroded	IIIe–1	16	38	225	450	20	40	16	40	13	28
Tatum very fine sandy loam, 10 to 15 percent slopes	IVe–1	16	28	200	400	20	30	16	35	13	25
Tatum very fine sandy loam, 10 to 15 percent slopes, eroded	IVe–1	15	25	200	350	18	28	15	30	12	25
Tatum very fine sandy loam, 15 to 25 percent slopes	VIe–2										
Tatum very fine sandy loam, 15 to 25 percent slopes, eroded	VIe–2										
Tatum very fine sandy loam, 25 to 35 percent slopes	VIIe–1										
Tirzah silt loam, 2 to 6 percent slopes, eroded	IIe–1	20	42	250	400	20	40	25	55	20	35
Tirzah silt loam, 6 to 10 percent slopes, eroded	IIIe–1	18	35	225	300	18	35	20	47	18	30
Tirzah silt loam, 10 to 15 percent slopes, eroded	IVe–1	15	25	200	250	15	25	18	40	10	20
Tirzah silt loam, 15 to 25 percent slopes, eroded	VIe–2										
Wickham sandy loam, 2 to 6 percent slopes	IIe–1	20	40	275	550	25	50	22	55	20	35
Wickham sandy loam, 2 to 10 percent slopes, eroded	IIIe–1	18	35	250	525	20	40	20	45	18	30
Wickham sandy loam, 10 to 25 percent slopes, severely eroded	VIIe–1										
Wilkes sandy loam, 2 to 6 percent slopes	IIIe–5	12	25	150	350	14	27	15	30		
Wilkes sandy loam, 6 to 15 percent slopes	IVe–4	10	22	140	300	12	25	12	25		
Wilkes sandy loam, 6 to 15 percent slopes, eroded	VIe–3										
Wilkes sandy loam, 15 to 25 percent slopes, eroded	VIIe–2										
Wilkes sandy loam, 15 to 35 percent slopes	VIIe–2										
Worsham sandy loam, 0 to 6 percent slopes	Vw–1										
Worsham sandy loam, 2 to 10 percent slopes, eroded	VIe–2										

[1] Estimated number of days 1 acre will support 1 animal unit (1 cow, steer, or horse; 5 hogs; or 7 sheep) without damage to the pasture

crops under two levels of management—Continued

Peaches		Grapes		Fescue		Bermudagrass		Bahiagrass		Dallisgrass		Sericea lespedeza		Alfalfa		Annual lespedeza	
A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Bu.	*Bu.*	*Tons*	*Tons*	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Cow-acre-days* [1]	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
300	530	2. 4	5. 0	100	160	100	160	95	170	70	120	0. 9	1. 9	2. 0	3. 0	0. 5	1. 2
250	500	2. 2	4. 5	95	150	95	150	85	170	65	115	. 8	1. 6	1. 8	2. 8	. 4	1. 0
280	450	1. 3	3. 8	80	130	95	150	95	160	------	------	. 9	1. 8	------	------	. 4	1. 0
275	440	1. 2	3. 6	80	120	90	140	90	150	------	------	. 8	1. 7	------	------	. 4	1. 0
------	------	------	------	80	110	85	130	85	135	------	------	. 7	1. 5	------	------	------	------
------	------	------	------	80	115	85	120	85	130	------	------	. 6	1. 5	------	------	------	------
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	80	140	85	150	80	150	------	------	------	------	------	------	. 3	. 8
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	70	120	75	130	70	130	------	------	------	------	------	------	. 2	. 6
------	------	------	------	------	------	70	120	65	120	------	------	------	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	90	150	90	150	90	150	75	130	1. 0	1. 8	1. 0	1. 8	. 5	1. 3
------	------	------	------	85	130	85	130	85	130	70	110	1. 0	1. 6	1. 0	1. 5	. 4	1. 2
------	------	------	------	80	115	80	115	80	115	------	------	. 8	1. 2	------	------	------	------
200	300	2. 5	5. 5	100	160	100	160	90	170	80	140	1. 0	2. 0	1. 0	2. 0	. 6	1. 5
180	250	2. 0	4. 0	80	140	80	140	80	140	------	------	1. 0	1. 8	1. 0	1. 8	. 5	1. 3
------	------	------	------	60	120	60	120	60	120	------	------	. 8	1. 5	------	------	------	------
------	------	------	------	100	160	110	175	90	180	100	190	------	------	------	------	. 5	1. 2
------	------	------	------	100	160	------	------	80	160	100	190	------	------	------	------	. 4	1. 0
250	400	2. 5	5. 2	95	150	100	160	95	180	80	120	1. 0	1. 8	1. 0	1. 7	. 4	1. 0
225	380	2. 4	4. 0	85	140	100	140	90	160	50	85	. 9	1. 6	------	------	. 3	. 9
200	350	1. 0	3. 5	80	120	90	130	80	140	------	------	. 8	1. 5	------	------	. 3	. 7
------	------	------	------	75	110	85	120	75	130	------	------	. 7	1. 4	------	------	------	------
200	350	1. 5	3. 2	85	125	100	130	90	140	60	75	1. 0	1. 7	------	------	. 4	. 9
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	85	135	100	165	90	175	60	75	1. 0	1. 7	------	------	. 4	. 9
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	115	175	125	180	95	190	110	180	------	------	------	------	. 8	1. 6
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
275	400	2. 3	4. 8	100	140	100	140	90	140	60	120	1. 0	1. 7	1. 0	2. 0	. 4	1. 0
265	350	2. 0	3. 7	90	130	90	135	85	130	70	110	. 9	1. 5	1. 4	3. 0	. 3	. 9
------	------	------	------	85	110	85	110	80	120	------	------	. 8	1. 3	------	------	------	------
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
285	485	3. 0	6. 0	90	155	100	160	85	175	55	100	1. 0	2. 0	1. 0	2. 0	. 4	1. 0
275	450	3. 0	5. 7	90	150	95	150	80	170	55	90	. 8	1. 6	. 8	1. 8	. 4	. 9
275	450	3. 0	5. 0	85	140	95	150	80	165	50	90	. 9	1. 8	. 8	1. 8	. 4	. 9
250	440	2. 5	4. 0	80	130	90	140	75	150	50	85	. 8	1. 6	. 7	1. 6	. 3	. 8
250	300	1. 5	3. 5	80	120	90	130	75	140	------	------	. 8	1. 6	. 7	1. 6	. 3	. 8
225	290	1. 4	3. 2	75	115	85	120	70	130	------	------	. 7	1. 5	------	------	. 3	. 7
------	------	------	------	70	110	80	120	65	120	------	------	. 6	1. 4	------	------	------	------
------	------	------	------	70	110	75	110	60	115	------	------	. 6	1. 3	------	------	------	------
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
250	500	3. 0	6. 0	120	180	100	180	100	180	80	140	1. 2	2. 4	2. 0	3. 3	. 6	1. 2
225	425	2. 4	5. 0	110	170	95	175	95	175	75	130	1. 0	2. 0	1. 6	3. 0	. 5	1. 0
200	300	2. 2	3. 5	100	140	90	160	90	150	70	110	. 8	1. 0	------	------	. 4	. 8
------	------	------	------	95	130	90	140	85	140	------	------	------	------	------	------	------	------
200	300	2. 5	5. 5	100	160	100	160	100	160	80	140	1. 0	2. 0	1. 8	3. 6	. 5	1. 2
200	275	2. 4	4. 2	90	150	90	150	90	150	75	120	. 9	1. 8	1. 5	3. 0	. 4	1. 1
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	2. 5	5. 0	90	150	90	175	100	175	60	100	------	------	------	------	. 4	1. 0
------	------	2. 0	4. 0	80	140	80	150	80	150	------	------	------	------	------	------	. 4	1. 0
------	------	------	------	------	------	75	150	80	150	------	------	------	------	------	------	------	------
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
------	------	------	------	75	130	80	140	85	140	------	------	------	------	------	------	------	------
------	------	------	------	100	160	------	------	100	160	110	175	------	------	------	------	. 4	. 9
------	------	------	------	70	120	70	140	70	140	------	------	------	------	------	------	------	------

TABLE 4.—*Suitability rating*

[Number 1 means soil is well suited; 2 means fairly well

Soil type	Row crops		Small grains					Fruits	
	Corn	Cotton	Grain sorghum	Barley	Oats	Rye	Wheat	Grapes	Peaches
Altavista fine sandy loam	2	3	2	3	2	2	3	3	4
Appling sandy loam	2	2	2	2	2	1	2	2	2
Buncombe loamy sand	4	4	4	4	4	3	4	4	4
Cecil sandy loam	1	1	1	1	1	1	1	1	1
Cecil clay loam [1]	2	2	2	2	2	2	2	2	2
Chewacla silt loam	2	4	3	4	3	3	4	4	4
Congaree fine sandy loam and silt loam	1	4	2	2	1	1	3	4	4
Davidson loam	1	2	1	1	1	1	1	1	1
Helena sandy loam	3	3	2	3	2	2	3	3	3
Iredell fine sandy loam	3	2	2	2	1	1	2	3	4
Iredell clay loam [1]	4	4	3	4	3	3	4	4	4
Lloyd loam	1	2	1	1	1	1	1	1	1
Lloyd clay loam [1]	2	3	2	2	2	2	2	2	1
Local alluvial land	1	3	1	2	1	1	2	4	4
Lockhart coarse sandy loam	3	2	2	3	2	2	3	3	3
Lockhart clay loam [1]	3	3	3	4	3	3	4	3	3
Louisburg sandy loam	3	3	2	4	3	3	4	3	4
Madison and Cecil sandy loam	1	1	1	1	1	1	1	1	1
Madison and Cecil clay loam [1]	2	2	2	2	2	2	2	2	2
Manteo channery silt loam	4	4	3	4	3	3	4	4	4
Mecklenburg loam	3	3	2	3	2	2	2	3	3
Mecklenburg clay loam [1]	3	4	3	3	2	3	3	4	4
Mixed alluvial land	2	4	2	3	2	2	3	4	4
Mixed wet alluvial land	4	4	4	4	4	4	4	4	4
Nason very fine sandy loam	3	2	2	3	2	2	3	2	3
Nason silty clay loam [1]	4	3	3	4	3	3	4	4	4
Orange silt loam	4	4	3	4	3	3	4	4	4
State fine sandy loam	2	4	2	3	2	2	4	4	4
Tatum very fine sandy loam	2	2	2	2	2	2	2	2	2
Tatum silty clay loam [1]	3	3	3	3	3	3	3	3	3
Tirzah silt loam	2	3	2	2	1	1	2	2	2
Wickham sandy loam	2	2	1	2	1	1	2	2	3
Wilkes sandy loam	3	3	3	4	3	3	4	3	4
Worsham sandy loam	4	4	4	4	4	4	4	4	4

[1] Ratings are for soil types that have been severely eroded, and their surface soil is a mixture of the original surface soil and the subsoil.

limits. The estimates in columns B may be considered production goals, or yields that may be obtained under good management in years of normal weather. A comparison of yields in columns B with those in columns A indicates the response of a soil to good management. On practically all soils in the county, more intensive management will bring increased yields.

Although the requirements of good management vary according to the soils, these practices must be followed to obtain yields in columns B:

1. Proper choice of crops and cropping systems.
2. Correct application of adequate amounts of commercial fertilizer, lime, and manure.
3. Proper tillage.
4. Return of organic matter to the soil.
5. Adequate systems for controlling water.
6. Maintenance of the productivity and workability of soils.
7. Conservation of soil material, plant nutrients, and soil moisture.
8. Use of seed of good quality and of varieties suggested for the area.

Relative suitability of the soils for crops

Table 4 lists the relative suitability of soil types for specified crops by index numbers. Soil types that have index number 1 are the most desirable for a given crop. For these soils, yields are more dependable, hazards are less than for other soils in the county, and the least management is required. Soil types having index number 2 are fairly well suited to crops, but they are moderately limited by excess moisture, lack of moisture, shallow root zone, low fertility, or some other factor. Index number 3 indicates that a given crop cannot be expected to produce good yields without intensive management that generally does not pay. Number 4 indicates that the soil type is not suited to the particular crop.

The rating for the clay loams in table 4 are for soil types that have been severely eroded and have a surface layer that is a mixture of the original surface soil and the subsoil. The other ratings are for soil types that have not been materially affected by accelerated erosion and are not more than gently sloping.

Plan the use of all soils, regardless of suitability rating, according to their capabilities.

of soil types for specified crops

suited; 3 means poorly suited; and 4 means not suited]

Grasses					Legumes					
Bahiagrass	Bermuda-grass	Dallis-grass	Fescue	Ryegrass	Crimson clover	Annual lespedeza	Sericea lespedeza	Alfalfa	Whiteclover	Cowpeas
2	2	3	2	2	3	2	2	3	2	2
1	1	3	2	2	2	2	1	2	3	1
3	3	4	4	3	4	4	3	4	4	3
1	1	2	1	1	1	2	1	1	2	1
2	2	3	2	2	2	2	2	3	2	2
1	2	1	1	1	4	1	4	4	1	3
1	1	1	1	1	2	1	2	3	1	2
1	1	1	1	1	1	1	1	1	1	1
2	2	3	3	2	2	2	2	3	2	2
2	2	2	2	1	3	1	3	4	2	2
3	4	4	4	3	4	3	4	4	3	4
1	1	1	1	1	1	1	1	1	1	1
2	2	3	2	3	3	2	2	3	2	3
1	1	1	1	1	1	1	3	4	1	2
1	1	3	3	3	2	3	1	3	3	2
2	2	3	3	2	3	2	2	4	2	3
2	2	4	4	4	3	4	3	4	4	3
1	1	2	1	1	1	2	1	1	2	1
2	2	3	2	2	2	2	2	3	2	2
3	3	4	4	3	4	3	4	4	3	3
2	2	2	2	1	2	1	2	3	1	2
3	3	2	2	2	3	2	3	4	2	3
2	2	2	2	2	3	2	4	4	2	3
3	4	3	3	4	4	3	4	4	3	4
2	2	3	3	2	2	2	2	3	2	2
3	3	4	3	3	3	3	3	4	3	3
3	3	3	3	3	3	3	4	4	3	3
2	2	2	2	2	2	2	3	4	2	2
2	2	2	2	2	2	2	1	3	2	2
3	3	4	3	3	3	2	2	3	3	3
1	1	1	1	1	1	1	1	2	1	1
1	1	2	2	1	1	2	1	3	2	1
2	3	3	3	2	3	2	3	4	3	3
3	4	3	3	4	4	3	4	4	3	4

Management of Soils for Wildlife [2]

The kinds and numbers of wildlife in an area are greatly affected by soils, topography, and land use. Much of the acreage in the northwestern quarter of the county consists of the gently sloping, less eroded soils in capability subclass IIe. Soils of this kind generally produce many bobwhite quail, either as a natural byproduct of farming or as a result of management to attract quail and help them multiply. Also in this part of the county are fields where doves are plentiful. Interest in songbirds and other nongame wildlife has increased in this area, which has a dense rural population.

In the southeastern quarter of the county, the steeply sloping and eroded woodland (soils in subclasses VIe and VIIe) provides a good habitat for forest game. The hardwoods attract squirrels, and deer are coming in from national forests in neighboring counties. This part of the county has large numbers of cottontail rabbits and provides good hunting in winter for profit, pleasure, and food.

In the northeastern quarter of the county, the opportunities for increase in game population have been reduced by the trend toward industrialization in the Blacksburg-Cherokee Falls area. The southwestern quarter of the county has some excellent locations, in the broad bottom lands along Thicketty Creek, that could be made into duck fields.

Before Cherokee County was farmed, many of the streams were clear, deep, and contained good pan fish. But the land was farmed without regard for conservation, and many of the streambeds were filled with silt and the waters muddied. Consequently most of the game fish disappeared. Also, Thicketty Creek and other streams have been polluted by sewage and industrial waste.

The county is well supplied with good sites for farm ponds, and many ponds have been built. These ponds supply much water for supplemental irrigation and for livestock. According to the records of work units, there are more than 300 farm ponds in Cherokee County and these ponds average about 2½ acres in size. Nearly all of these ponds have been constructed in the last 15 years and are stocked with fish (fig. 11).

[2] This section was written by WILLIAM W. NEELY, biologist, Soil Conservation Service.

Figure 11.—**Farm pond that has been stocked with bream and bass.**

Ponds stocked with fish provide food, recreation, and income for the farmer. The income is from the sale of fish and of fishing privileges. To produce enough of the right kind of fish, the farmer should (1) practice soil conservation on the watershed to prevent silting and muddiness, (2) divert excess runoff water from large watershed areas around the pond, (3) clear the pond basin of trees and brush, (4) remove all wild fish (apply rotenone before stocking), (5) stock the pond with 1,000 bluegill and 100 bass fingerlings per surface acre of water, (6) apply a mineral fertilizer of nitrogen, phosphate, and potash in a 4-4-1 ratio regularly from March to October. This increases the growth of plankton, which shades out submerged pondweeds and also increases the supply of fish food.

Most sites suitable for duck fields in the county are in the southeastern part, where siltation has produced flat bottom lands. To make a duck field, a dike or low levee is constructed around a flat area, and browntop millet or another annual crop is planted. Shallow flooding in the fall and winter produces proper feeding conditions for wild ducks. The sale of hunting privileges on duck fields is another source of farm income.

Figure 12.—**Woodland borders and inaccessible areas are suitable places to seed bicolor lespedeza or other plants that furnish food for wildlife.**

Sites for duck fields are not so numerous in the remainder of the county. The narrow draws and valleys could be flooded to the proper depth (8 to 12 inches), but the resulting sites would be too small. Also, because of the greater human population, these areas are less attractive to wild ducks than those in the southeastern part of the county.

The farmer can manage his land and water to favor almost any kind of wildlife. For example, a strip of bicolor lespedeza 15 feet wide and 350 feet long, on a field border or in an opening in the woods, will provide enough food for a covey of bobwhite quail (fig. 12). Bicolor lespedeza is suited to many of the soils in Cherokee County.

Wildlife management according to capability units

Practices of wildlife management in Cherokee County have such wide suitability that it is not necessary to designate management for each soil. Management can be prescribed for a capability unit or even groups of capability units.

Capability unit I-1.—The soil in this unit can be seeded to annual and perennial plants that are well suited to wildlife food and cover. Because this capability unit consists of desirable cropland and there are only about 510 acres of it in the county, only small parts can be managed for wildlife. Only a few sites are suited to farm ponds.

Capability units IIe-1, IIe-2, and IIe-3.—The soils in these units are suited to annual and perennial plants used for wildlife food and cover. They are well suited to sericea, bicolor, japonica, and annual lespedezas, and to tick clover, millets, fescue, small grains, grain sorghum, and multiflora rose. The plantings can be made as field borders or in odd areas. Openings in woods may be used for bicolor or japonica lespedezas. A few sites suitable for farm ponds occur.

Capability unit IIe-4.—Except that it is not so well suited to perennials, the soil in this capability unit has about the same suitability for wildlife management as the soils in units IIe-1, IIe-2, and IIe-3.

Capability unit IIw-2.—The soils in this unit have a few sites that are suitable for duck fields. The soils are also suited to plantings of browntop millet, which is good food for ducks, doves, and quail. Because overflow is likely, sites for bicolor lespedeza must be carefully selected. These soils are good for planting grazing crops for deer.

Capability units IIIe-1, IIIe-2, IIIe-3, and IIIe-5.—The soils in these capability units are suited to the same plants used for wildlife food and cover as are the soils in units IIe-1, IIe-2, and IIe-3, but the plants need more fertilizer. Protect the borders of cultivated fields from erosion by seeding plants for wildlife food and cover. Many good sites for ponds occur. To prevent silting and muddiness in ponds and streams, conserve the soil on watersheds.

Capability unit IIIw-2.—Because of the high water table, the soil in this unit is not suited to bicolor and japonica lespedezas or to other perennials. Some sites suitable for duck fields occur. If it is drained, this soil is suited to browntop millet and other annuals that furnish food for wildlife. Winter crops are more likely to be drowned.

Capability unit IVe-1.—The soils in this unit have about the same suitability for wildlife food and cover as the soils in units IIe-1, IIe-2, IIe-3, and IIe-4, but plantings are more difficult to establish because of the steeper slopes and erosion. Perennials are more suitable than annuals. Apply large amounts of fertilizer, and mulch galled areas. Good sites for farm ponds occur.

Capability units IVe-2 and IVe-4.—The soils in these units are poorly suited to annuals and perennials grown for wildlife food and cover. Because the Manteo, Orange, and Wilkes soils are shallow, sites on these soils are not suitable for ponds. Stands of scrubby pines are favored habitats for rabbits, but these stands give little protection from predatory animals.

Capability unit IIIs-2.—The soil in this capability unit is on bottom lands of the Broad River and consists of sands deposited by that river. These sands are infertile and droughty and are not suitable for wildlife management. Although it is in locations favorable for duck fields, the soil is too porous to hold water when flooded.

Capability unit Vw-1.—Areas of Worsham soil in this unit are suitable for fish ponds, and the soil material is good for dam construction. Because of slopes, the soil is not suitable for duck fields. Many small areas have grown up thickly in briers and make good escape cover for rabbits.

Capability unit IVw-3.—Some of the most desirable sites for duck fields occur on the soil in this unit. This soil generally requires drainage before browntop millet can be grown for duck feed. Smartweed can be grown without drainage, but this plant may not be wanted because it requires burning. A few sites for duck fields occur in the woodland. Because it is wet, this soil is not suited to management for quail. Areas in hardwoods make good habitats for squirrels.

Capability units VIe-2, VIe-3, VIe-4, VIIe-1, VIIe-2, VIIe-3, and VIIe-4.—Soils in these capability units make up about 44 percent of the land acreage in the county. Because they are not suited to cultivation, they have great value for wildlife management. Suitable practices, however, have not been fully developed for these soils. Good habitats for rabbits could be made on these soils, and the number of rabbits could be greatly increased, if plantings were made for food and thorny plants were grown to protect the rabbits from predatory animals.

Because the soils in these units are steep and rough, large plantings for wildlife cannot be made. In most areas, however, there are small areas of better soils where an eighth acre of food and cover plants can be grown. Quail can be produced, but the woods, brush, and steep slopes are not desirable in hunting. Areas in hardwoods have good dens and food for squirrels. In fall and winter the squirrels feed on beechnuts, dogwood berries, hickory nuts, and acorns. In spring and summer they feed on the cambium and buds of cottonwood, on black cherries, on the seeds and buds of elms, maple, and tuliptree, and on mushrooms. Some sites suitable for ponds occur, but slopes in these areas generally are steep and runoff is rapid. Many soils in these units are too shallow to be suitable for ponds. Gullies and galled areas cause silting and muddiness.

Capability unit VIIIs-1.—Most of the acreage in this capability unit is too stony for farming and too shallow for timber production. Bicolor lespedeza can be planted by hand in a few areas. Brambles and brush cover most of the land, which is best left in its natural state to be a refuge area for wildlife.

Use and Management of Woodland[3]

Originally the Piedmont was covered by hardwoods or by mixtures of pines and hardwoods that contained enough pines to reseed abandoned farmland. After the land was cleared and fields were subsequently abandoned, the original hardwood forest was replaced by stands of pines.

But now the pine stands that invaded these areas are being replaced naturally by hardwoods. Better protection from fire, heavy cutting of pine in mixed pine-hardwood stands, and littleleaf disease in the pines have hastened the natural succession of hardwoods. Frequently, the pines in the mixed pine-hardwood stands have been cut and an overstory of poor quality hardwoods has been left.

The total number of species in the forests of Cherokee County is essentially the same as the number at the time of settlement, but the numbers of trees in these species are now in different proportions in many stands.

Loblolly pine, shortleaf pine, and Virginia pine are the most important commercial trees in Cherokee County. Slash pine has been introduced by planting. Sweetgum and yellow-poplar are the more important hardwood species.

Steady progress has been made in recent years in the management and use of woodland in Cherokee County. More care is given existing woodland, and new areas have been wooded as the pulp and paper industry has expanded. The value of wood products has increased. There are now three tree farmers in the county farming a total of 4,846 acres of trees.

Based on seedling purchases during the 5-year period ending June 30, 1960, it is estimated that plantings have been established on approximately 25,000 acres in Cherokee County. The number of seedlings planted has increased steadily from 131,500 seedlings in 1955-1956 to 2,164,912 in 1959-1960. Seedling mortality is decreasing because knowledge about planting has increased.

During the 5-year period ending June 30, 1960, an average of 23 wildfires has occurred yearly. The average acreage burned each year was 1,278 acres.

Suitability of Soils for Trees

In the Piedmont and Coastal Plain, as well as elsewhere, the soil properties that affect the growth of trees

[3] By G. E. Smith, woodland conservationist, Soil Conservation Service.

are the thickness of the surface layer and subsoil, moisture-holding capacity, aeration, consistence, texture, supply of plant nutrients, and surface drainage.

Within an area of about the same kind of climate there are many differences in the soils. These differences in soils affect suitability for trees and determine the kinds of trees that will grow on a particular site. Some species of trees are more tolerant to some soil conditions than are other species. Flowering dogwood, for example, grows throughout most of the eastern part of the United States in association with many other hardwoods and with conifers. It grows in a variety of soils ranging from deep, moist ones along streambanks to those that are light and well drained on uplands. Other trees may be much more sensitive than flowering dogwood to changes in the soils.

All trees require food and water, but conifers generally will grow on poor land where hardwoods will not. To make their own food, pines require little besides water and sunlight. Pines, as a class, can thrive on soil that would be too deficient in potassium, phosphorus, and nitrogen for most hardwoods. Hardwoods grow well in deep, rather loose, crumbly soil that provides plenty of room for roots. Hardwoods need much water and do best where the soil absorbs it readily and is loose and deep enough so that the roots can take in this water easily.

Foresters suggest that Virginia (scrub) pine be grown on barren land; loblolly pine, shortleaf pine, and redcedar on poor to moderately poor soils; and yellow-poplar and black walnut on the best soils.

Longleaf pine is suited to dry sandy loams and other sandy soils. Loblolly pine grows in the better, wetter sites, and some of the largest trees are at the edge of swamps. Shortleaf pine grows where the soil is steep and shallow, but it will also grow on tight, wet soils. Although these pines prevent erosion, neither loblolly nor shortleaf will grow well in severely eroded areas. Loblolly pine is more resistant to littleleaf than is shortleaf pine. Various hardwoods, such as walnut, are often interplanted among other trees in small wooded areas.

Slash pine grows best along the edges of depressions and on the better drained lowlands in the lower part of the Coastal Plain. It also grows well on the better sandy loams in the middle and upper parts of the Coastal Plain and in the Piedmont. Planted stands of slash pine in the Piedmont beyond the natural range of this tree have grown successfully to pulpwood and small sawlog sizes. Some of these trees have been damaged by ice.

Protecting and Improving Woodland

Burning, erosion, uncontrolled grazing, overcultivation, and other forms of land abuse have led to drastic deterioration of soils. Such abuses lower fertility, increase acidity, and cause undesirable physical changes in the soil. In addition, trees on damaged soil become more susceptible to disease and to the growth of harmful fungi. Woodland should be conserved by protecting the trees from fire, overgrazing, disease, and insects. The soil should be conserved by protecting it from erosion and by planting trees that return plant nutrients to the soil.

Protection from fire

The leaves, twigs, and branches from trees should be protected from fire, for this litter supplies minerals and organic matter to the soil and protects it from erosion. Hardwood litter decomposes rapidly and returns large amounts of nutrients to the surface soil. Nitrogen, a most important nutrient, can be depleted by fire or by continuous removal of trees and litter.

Natural barriers and physical features influence, to a large extent, the development of a fire protection system. The spacing and location of firebreaks are determined by roads, sloughs, swamps, drainage systems, eroded areas, slope, and other features. The type of fire-fighting equipment selected depends upon the acreage to be protected, the location of this acreage, and the ease or difficulty in operation of the equipment.

Protection from overgrazing

Pine woodland can be grazed without significant damage if grazing is properly managed. Continuous heavy grazing should be avoided because of the danger of erosion and the chance that the cattle lose weight. Where erosion is prevalent, grazing should be prevented entirely.

Overgrazing is injurious to any kind of soil. It packs the soil, eliminates the circulation of air in the soil, and destroys the soil structure. Rain runs off quickly instead of soaking in. The trees get less water than they should, and the surface soil is washed away. Fine-textured, poorly drained, eroded soils and soils that have a plastic subsoil are most likely to be damaged by grazing.

Protection from erosion

Soil loss from erosion reduces the productive capacity of cleared land and lowers the quality of the woodland sites. Overflows and excess water, disease, heavy cutting, or anything that causes the death or removal of trees may result in eventual erosion. If erosion is a hazard on woodland, do not disturb the litter more than necessary, even during logging. See that loggers lay out roads and skid trails properly and drain them well. Lay out skid trails across slopes to reduce the danger of erosion. Lay brush and limbs on slopes to help hold the soil. After a heavy cutting, the forest floor may be dried by the sun and wind. This drying makes the soil more susceptible to erosion. Leave a border of low trees or shrubs around the outer edge of the forest to keep out drying winds.

Generally only severe erosion injures pine seedlings. Slight erosion may even favor pine reproduction, but eroded areas where the subsoil is fully exposed may require planting.

Protection from diseases and insects

Damage to trees by disease and insects generally is more severe on soils that are poorly suited to trees than on soils that are well suited. Careful management is required to reduce losses.

Littleleaf is a disease affecting shortleaf pine and, to a lesser extent, loblolly pine. Littleleaf may be caused by a deficiency or imbalance of plant nutrients and by a root fungus (*Phytophthora cinnamomi* Rands).

A toxic condition caused by an imbalance of iron and manganese, or other ions, in soil solution may be the primary cause of littleleaf. Soils derived from a mixture of acidic rock and basic manganiferous rock materials may not contain nutrients that are favorable for maintaining pure stands of pines over long periods. These soils probably should be kept in a mixture of hardwoods and pines. The litter from hardwood trees adds calcium to the soil and reduces acidity. The litter from pines adds silicon, increases soil acidity, and causes damaging quantities of manganese to accumulate in the soil. Littleleaf may be prevented by increasing the number of hardwoods in a mixed stand.

The amount of littleleaf disease among shortleaf pine growing on soils on Carolina slate is much less than in younger stands on heavier soils derived from basic igneous rocks. Littleleaf is practically unknown on well-drained soils, especially those that have a fairly deep surface soil. It is likely on soils that are poorly drained, severely eroded, shallow, or are highly variable in porosity, permeability, compactness, or plasticity, and usually low in fertility. Plans for timber management on these soils should account for prevention of this disease.

Spot die-out is a relatively new disease that infects young loblolly pine. The cause of this disease is not known. It appears to kill the most trees on soils that have a dense, compact subsoil and little or no original surface soil.

Sweetgum stands in the county have recently declined because of the effects of dieback. Insufficient soil moisture is one of the main causes of this disease. Root rot (*Fomes annosus*) may also be brought on by unfavorable soil conditions. Until recently only redcedar in the southeastern part of the county has been damaged by root rot, but now it kills some slash pine outright and weakens the roots of others enough to cause windthrow.

Nematodes sometimes infest seedlings on very sandy soil, especially on soil previously used for agricultural crops. These worms cause knots on the roots, check growth almost entirely, and cause an unhealthy appearance and high mortality.

Injury to pines from Nantucket tip moth (*Rhyacionia frustrana*) is greatest on old fields, especially on soil not well suited to loblolly and shortleaf pines. Slash pine is not very susceptible to attack by the tip moth.

Pines that have been weakened by fire, drought, overmaturity, lightning, wind, or generally poor growing conditions are especially susceptible to injury by pine engraver beetles (*Ips* species), black turpentine beetle (*Dendroctonus terebrans*), and the southern pine beetle (*Dendroctonus frontalis*).

Cankers affect hardwoods. Hispidus canker attacks many species of oak, but it is most common on southern red, northern red, scarlet, white, and chestnut oaks. Hypoxylon canker affects mostly old oaks or trees that have suffered from prolonged drought.

Improving woodland

The most practical way to rebuild the soil in wooded areas is to include in the forests trees that return nutrients to the soil. Such species as dogwood, hickory, yellow-poplar, redbud, and redcedar return large quantities of nutrients to the soil annually through their litter.

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Studies have been made of the quantity of various elements returned to the forest floor annually in leaf material under pure pine, pine-hardwoods, and hardwood stands. In Cherokee County, these stands have about the same amount of litter fall annually, or 4,000 to 5,000 pounds (oven dry) per acre. Analyses of the freshly fallen leaf material show that (1) pines return to the soil the least amounts of nitrogen, calcium, and magnesium; (2) a mixture of pine and hardwoods returns about twice as much of those nutrients as do pines; and (3) hardwoods return about twice as much nitrogen and almost four times as much calcium and magnesium as do pines. Under hardwood vegetation, animals that live in the soil increase, add organic matter, and improve the physical structure of the soil. Generally, an increase in the amount of hardwoods in an area improves the soil in that area.

Woodland Suitability Groups

The soils in Cherokee County have been placed in 13 woodland suitability groups, according to their suitability for trees and their need for woodland management. The soils in each group are similar in major soil characteristics. Each group of soils has been rated for its potential production of trees, degree of plant competition, seedling mortality, equipment limitation, erosion hazard, and windthrow hazard. This information is discussed in this subsection and is compiled in table 5.

The potential production of soils in each group is expressed by a site index, which is the total height, in feet, of the dominant trees in a stand at 50 years of age. The site index indicates the potential growth of individual tree species when site conditions are favorable. In some instances, however, intensive woodland management is needed to attain the potential. The site indexes were determined from soil-woodland site field studies by the Soil Conservation Service and the South Carolina State Commission of Forestry.

Plant competition is rated according to the degree that undesirable plants invade the woodlots. Competition is *slight* if unwanted plants do not cause a special problem. It is *moderate* if the invaders delay but do not prevent the establishment of a normal, fully stocked stand. Seedbed preparation is generally not needed, and simple methods can be used to prevent undesirable plants from invading. Competition is *severe* if trees cannot regenerate naturally. Where competition is severe, carefully prepare the site and use management that includes controlled burning, spraying with chemicals, and girdling.

Seedling mortality is the failure of seedlings to grow after adequate natural seeding, or after suitable seedlings have been planted. It is affected by the nature of the soil and by other environmental factors. The ratings given for trees in the discussions of woodland groups and in table 5 are for trees that are in a normal environment. Mortality is *slight* if not more than 25 percent of the planted seedlings die, or if the trees ordinarily regenerate naturally in places where there are sufficient seeds. It is *moderate* if 25 to 50 percent of the planted seedlings die, or if trees do not regenerate naturally in numbers needed for adequate restocking. In some places, replanting will be necessary to fill open spaces. Mortality is *severe* if more than 50 percent of the planted seedlings

TABLE 5.—*Woodland*

[Dashed lines indicate site index has

Woodland suitability groups and soils	Site index[1]			Important species
	Loblolly pine	Shortleaf pine	Virginia pine	
Group 1: Droughty loamy sand on river bottom— Buncombe loamy sand (Bc).	----------	----------	----------	Loblolly pine, shortleaf pine, and hardwoods on bottom land.
Group 2: Somewhat poorly drained to moderately well drained silt loam— Chewacla silt loam (Ch).	110	90	----------	Loblolly pine, shortleaf pine, and hardwoods on bottom land.
Group 3: Well-drained sandy loams and silt loams on bottom land— Congaree fine sandy loam (Co). Congaree silt loam (Cr). Mixed alluvial land (Mv). State fine sandy loam (Sa).	90–100	90–100	----------	Loblolly pine, shortleaf pine, and hardwoods on bottom land.
Group 4: Well-drained sandy loams on stream terraces— Altavista fine sandy loam (AfA, AfB2). Local alluvial land (Ln). Wickham sandy loam (WcB, WcC2, WcE3).	90	70–80	----------	Loblolly pine, shortleaf pine, and hardwoods on terraces.
Group 5: Deep, friable, well-drained sandy loams that are on nearly level to strongly sloping uplands— Appling sandy loam (ApB, ApB2, ApC, ApC2). Cecil sandy loam (CdB, CdB2, CdC, CdC2). Lockhart coarse sandy loam (LrB2, LrC2). Madison and Cecil sandy loams (MdB, MdB2, MdC, MdC2). Nason very fine sandy loam (NaB, NaC2). Tatum very fine sandy loam (TmB, TmB2, TmC, TmC2).	80	70	70	Loblolly pine, shortleaf pine, Virginia pine, and hardwoods on uplands.
Group 6: Deep, friable, well-drained sandy loams that are on strongly sloping to steep uplands— Appling sandy loam (ApD2, ApE2). Cecil sandy loam (CdD, CdD2, CdE, CdE2, CdF). Lockhart coarse sandy loam (LrD2, LrE2, LrF). Madison and Cecil sandy loams (MdD, MdD2, MdE, MdE2, MdF2). Nason very fine sandy loam (NaD2, NaE). Tatum very fine sandy loam (TmD, TmD2, TmE, TmE2, TmF).	70–80	60–70	60–70	Loblolly pine, shortleaf pine, Virginia pine, and hardwoods on uplands.
Group 7: Deep, friable, well-drained silty clay loams and clay loams that are nearly level to steep and severely eroded— Cecil clay loam (CcB3, CcC3, CcD3, CcE3). Lloyd clay loam (LcB3, LcC3, LcD3, LcE3). Lockhart clay loam (LoB3, LoC3, LoD3, LoE3). Madison and Cecil clay loams (MaB3, MaC3, MaD3, MaE3). Nason silty clay loam (NsC3, NsE3). Tatum silty clay loam (TaB3, TaC3, TaD3, TaF3).	70–80	60	60–70	Loblolly pine, Virginia pine, and shortleaf pine.
Group 8: Deep, friable, well-drained loams and silt loams underlain by dominantly basic rocks— Davidson loam (DaC2, DaE2). Lloyd loam (LdB2, LdC2, LdD2, LdE, LdF). Tirzah silt loam (TrB2, TrC2, TrD2, TrE2).	70–80	60–70	60–70	Loblolly pine, shortleaf pine, and Virginia pine.
Group 9: Shallow, moderately well drained to excessively drained soils that have a thin, discontinuous subsoil— Louisburg sandy loam (LuE2). Manteo channery silt loam (MeC, MeC2, MeD, MeE, MeE2). Wilkes sandy loam (WkB, WkD, WkD2, WkE2, WkF).	60–80	60–80	60–80	Loblolly pine, shortleaf pine, and Virginia pine.
Group 10: Deep to moderately deep, moderately well drained to well drained sandy loam, loam, and clay loam that have a firm subsoil— Helena sandy loam (HaC2). Mecklenburg loam (MnB2, MnD2, MnE). Mecklenburg clay loam (MkB3, MkC3, MkD3, MkE3).	[2] 60–80	[2] 50–80	[2] 50–80	Loblolly pine, shortleaf pine, Virginia pine, and redcedar.

See footnotes at end of table.

suitability groups of soils

not been determined for species]

Interpretation for woodland conservation					Remarks
Plant competition	Seedling mortality	Equipment limitations	Erosion hazard	Windthrow hazard	
Severe	Moderate to severe.	Slight	Slight	Slight	Plant competition may be severe if preferred hardwoods are grown.
Slight to severe	Moderate to severe.	Moderate	Slight	Slight	Subject to overflow.
Slight to severe	Slight to moderate	Slight	Slight	Slight	Subject to overflow.
Slight to severe	Slight to moderate	Slight to severe	Slight to severe	Slight to moderate	For all severely eroded soils, site index is 20 less than that given.
Severe	Slight	Slight	Slight to moderate	Slight	
Severe	Slight to moderate	Moderate to severe.	Moderate to severe.	Slight to moderate	The steepest Cecil sandy loam has a shallow root zone.
Severe	Slight to severe	Moderate to severe.	Severe	Moderate to severe.	
Severe	Slight to moderate	Slight to severe	Moderate to severe.	Slight to moderate	
Severe	Slight to moderate	Moderate to severe.	Severe	Slight to moderate	
Severe	Slight to severe	Slight to severe	Slight to severe	Slight to severe	

TABLE 5.—*Woodland suitability*

Woodland suitability groups and soils	Site index			Important species
	Loblolly pine	Shortleaf pine	Virginia pine	
Group 11: Moderately deep to shallow, moderately well drained fine sandy loam, silt loam, and clay loam that have a very firm, plastic clay subsoil— Iredell fine sandy loam (IrB, IrC2). Iredell clay loam (IcC3). Orange silt loam (OrB2).	[2] 40–70	[2] 40–60	[2] 40–60	Loblolly pine, shortleaf pine, Virginia pine, and redcedar.
Group 12: Poorly drained soils on uplands and bottom land— Worsham sandy loam (WoB, WoC2). Mixed wet alluvial land (Mw).	70–90	70–90	----------	Loblolly pine, shortleaf pine, hardwoods on bottom land.
Group 13: Miscellaneous land Gullied land (Ga, GfC, GfF). Riverwash (Rw). Stony land (St).	([3])	([3])	([3])	Varied but containing species of pine and hardwoods.

[1] Site index is the total height of dominant and codominant trees at 50 years of age. Site indexes shown were determined from field studies by the Soil Conservation Service and the South Carolina State Commission of Forestry. They are tentative and subject to revision.

die, or if trees do not ordinarily reseed naturally in places where there are enough seeds. In areas that have severe mortality, plant seedlings where the seeds do not grow, prepare special seedbeds, and use good methods of planting to assure a full stand of trees.

Equipment limitations are rated according to the degree that soils restrict or prevent the use of forestry equipment. Limitations are *slight* if there are no restrictions on the type of equipment or on the time of year that equipment can be used. They are *moderate* where slopes are moderately steep or where heavy equipment is restricted by wetness in winter and early in spring. In some areas the firm, clayey subsoil may be excessively wet and may be exposed by erosion. Equipment limitations are *severe* on moderately steep soils that are stony and have rock outcrops. They are also severe on wet bottom lands and low terraces in winter and early in spring.

Erosion hazard is rated according to the risk of erosion on well-managed woodland. The hazard of erosion is *slight* where only a slight loss of soil is expected. Generally, soils have only slight erosion if slopes range from 0 to 2 percent and runoff is slow or very slow. Erosion hazard is *moderate* where there would be a moderate loss of soil if runoff were not controlled and the vegetative cover were not adequate for protection. It is *severe* where steep slopes, rapid runoff, slow infiltration and permeability, and past erosion make the soil susceptible to severe erosion.

Windthrow hazard depends on the development of roots and on the ability of the roots to hold trees firmly. If the hazard is *slight*, the trees are firmly rooted and will not fall over in a normal wind. If *moderate*, roots develop enough to hold the trees firmly except when the soil is excessively wet and the wind is strong. Windthrow hazard is *severe* if roots do not provide enough stability to prevent the trees from blowing over when they are not protected by other trees.

WOODLAND SUITABILITY GROUP 1

Buncombe loamy sand is the only soil in this group. This soil is deep, loose, and excessively drained; it occurs on bottom lands along rivers. Infiltration of water and permeability are rapid, and the available water-holding capacity is low. This soil contains little organic matter and is low in fertility.

Loblolly or shortleaf pine is the preferred pine, but many bottom-land hardwoods also grow on this soil. Site indexes have not been estimated.

Plant competition is severe on this soil. Prescribed methods of burning, applying chemicals, clearing, disking, or other practices may be necessary to control competing vegetation or to prepare seedbeds. Plant competition may be severe in areas where preferred hardwoods are wanted, but the hazard is slight if a preference of species is unimportant and mixed stands containing hardwoods are acceptable.

Mortality of seedlings varies from moderate for tolerant species to very severe for intolerant species. The limited supply of moisture increases seedling mortality. Special site preparation, superior planting methods, and replanting are often necessary to establish selected species.

There are no limitations in the use of equipment on this soil. The hazards of erosion and windthrow are slight.

WOODLAND SUITABILITY GROUP 2

Chewacla silt loam is the only soil in this group. This soil is deep,friable, and somewhat poorly drained to moderately well drained. It occurs on bottom lands along rivers. Infiltration of water is slow, permeability is moderate, and the available water-holding capacity is high. The supply of moisture ranges from very good to excessive. This soil is flooded for short periods. It contains a moderate amount of organic matter and is high in natural fertility.

groups of soils—Continued

Interpretation for woodland conservation					Remarks
Plant competition	Seedling mortality	Equipment limitations	Erosion hazard	Windthrow hazard	
Severe	Slight to moderate	Slight to severe	Slight to severe	Slight to severe	
Severe	Slight to severe	Moderate	Slight to moderate	Slight to moderate	Have poor content of moisture at times.
Varied	Varied	Varied	Varied	Varied	

[2] Site index in some places may be lower than that given.

[3] Varied.

Loblolly, shortleaf, and other pines are suited to areas that are artificially drained, but drainage is not feasible in many places. Sweetgum, blackgum, sycamore, ash, elm, water oak, and hickory occur in areas that are not artificially drained.

This soil can produce large amounts of sawtimber and pulpwood. The site index is 110 for loblolly pine and 90 for shortleaf pine.

Hardwoods that are not wanted and other vegetation compete severely with pine and selected hardwoods. Plant competition, however, is not a problem if certain species are not preferred. Controlled drainage, planned clearing, brush cutting, disking, furrowing, prescribed burning, application of herbicides, or other practices are necessary to eliminate or control competing vegetation, or to prepare sites for seedlings.

Seedling mortality during overflows may be severe; it varies according to the species and the duration and season of overflow. Limitations to the use of equipment are moderate because of the fine texture of the surface soil, the high water table, and overflow hazard. Windthrow and erosion hazards are slight.

WOODLAND SUITABILITY GROUP 3

The soils in this group are deep, very friable, well-drained fine sandy loams and silt loams on bottom lands. Infiltration of water is moderate to slow, and permeability is moderate to rapid. These soils hold a moderate to large amount of water and supply it readily to roots of trees. The organic-matter content is moderate, and natural fertility is moderate to high. The soils in this group are:

Congaree fine sandy loam.
Congaree silt loam.
Mixed alluvial land.
State fine sandy loam.

These soils can produce a relatively large amount of pulpwood and sawtimber. The site index for loblolly pine is 90 to 100, and for shortleaf pine it is 90 to 100. Site indexes for hardwoods on bottom lands have not been estimated.

Unwanted hardwoods and other vegetation compete severely with pine and with selected hardwoods, but plant competition is not a special problem unless certain species are preferred. Land clearing, brush cutting, disking, furrowing, prescribed burning, or application of herbicides are necessary to eliminate or control competing vegetation, or to prepare sites for seedlings. Seedling mortality is generally slight, but after floods it may be moderate. Equipment limitations and hazards of windthrow and erosion are slight. During droughts, sweetgum is susceptible to dieback.

WOODLAND SUITABILITY GROUP 4

The soils in this group are deep, friable, well-drained sandy loams and fine sandy loams on stream terraces. They are generally infiltrated by water at a moderate rate, but infiltration is slow in eroded areas. They are moderate to slow in permeability. Their water-holding capacity is moderate, and their moisture supply is generally very good but is limited in the severely eroded areas. The soils of this group are:

Altavista fine sandy loam, 0 to 2 percent slopes.
Altavista fine sandy loam, 2 to 6 percent slopes, eroded.
Local alluvial land.
Wickham sandy loam, 2 to 6 percent slopes.
Wickham sandy loam, 2 to 10 percent slopes, eroded.
Wickham sandy loam, 10 to 25 percent slopes, severely eroded.

Loblolly pine, shortleaf pine, and hardwoods that grow on bottom lands are preferred trees. Yellow-poplar and sweetgum are the more desirable hardwoods. The site index for loblolly pine is 90, and for shortleaf pine it is 70 to 80. The site index of the severely eroded Wickham soil, however, is 20 less than that of the rest of these soils.

Unwanted hardwoods and other vegetation compete severely with pine and selected hardwoods. To control competing vegetation or to prepare sites for seedlings, follow prescribed practices for land clearing, brush cutting, disking, furrowing, burning, or application of herbicides. If certain species are not preferred, plant competition is not a special problem.

The hazards of seedling mortality, equipment limitation, erosion, and windthrow are slight except on the severely eroded Wickham soil.

The severely eroded Wickham soil has many hazards. Seedling mortality is moderate because of the limited moisture supply. Some replanting may be needed to establish well-stocked stands. Slopes and erosion interfere seriously with the use of equipment, and the hazard of further erosion is severe. If possible, lay out access roads on the contour and avoid constructing firebreaks or performing any other operations that disturb effective ground cover. The windthrow hazard is moderate. Trees exposed by thinning may be subject to windfall during high winds.

WOODLAND SUITABILITY GROUP 5

The soils in this group are deep, friable, well-drained sandy loams that are on nearly level to strongly sloping uplands. These soils are:

Appling sandy loam, 2 to 6 percent slopes.
Appling sandy loam, 2 to 6 percent slopes, eroded.
Appling sandy loam, 6 to 10 percent slopes.
Appling sandy loam, 6 to 10 percent slopes, eroded.
Cecil sandy loam, 2 to 6 percent slopes.
Cecil sandy loam, 2 to 6 percent slopes, eroded.
Cecil sandy loam, 6 to 10 percent slopes.
Cecil sandy loam, 6 to 10 percent slopes, eroded.
Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded.
Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded.
Madison and Cecil sandy loams, 2 to 6 percent slopes.
Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded.
Madison and Cecil sandy loams, 6 to 10 percent slopes.
Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded.
Nason very fine sandy loam, 2 to 6 percent slopes.
Nason very fine sandy loam, 6 to 10 percent slopes, eroded.
Tatum very fine sandy loam, 2 to 6 percent slopes.
Tatum very fine sandy loam, 2 to 6 percent slopes, eroded.
Tatum very fine sandy loam, 6 to 10 percent slopes.
Tatum very fine sandy loam, 6 to 10 percent slopes, eroded.

The infiltration of water is moderate in the Cecil soils, moderate to rapid in the Appling soils, rapid in the Lockhart soils, and slow in the Nason soils. Permeability is moderate to moderately slow. The water-holding capacity is moderate, and the moisture-supplying capacity is good to very good. The soils contain a moderate amount of organic matter. The fertility of these soils is generally moderate but is low in the Lockhart coarse sandy loams.

Loblolly, shortleaf, and Virginia pines are preferred trees, and hardwoods can be grown on uplands. These soils can produce a moderate amount of sawtimber and pulpwood. The site index is 80 for loblolly pine, 70 for shortleaf pine, and 70 for Virginia pine. Site indexes have not been estimated for hardwoods.

Unwanted hardwoods and other vegetation compete severely with pines and selected hardwoods. Land clearing, brush cutting, disking, furrowing, prescribed burning, application of herbicides, and other practices are necessary to eliminate or control competing vegetation, or to prepare sites for seedlings.

There are no special problems of seedling mortality, equipment limitations, or windthrow. Normally, the hazard of continued erosion is slight to moderate on the strongly sloping and eroded sites.

WOODLAND SUITABILITY GROUP 6

The soils in this group are deep, well-drained, friable sandy loams on uplands. These soils are strongly sloping to steep and slightly to moderately eroded. Their supply of water is limited by slope and erosion. Infiltration of water is generally moderate but is slow in the Nason soils. The soils of this group are moderately slow to moderately rapid in permeability and moderate to low in available water-holding capacity. Their content of organic matter and natural fertility are moderately low. The soils in the group are:

Appling sandy loam, 10 to 15 percent slopes, eroded.
Appling sandy loam, 15 to 25 percent slopes, eroded.
Cecil sandy loam, 10 to 15 percent slopes.
Cecil sandy loam, 10 to 15 percent slopes, eroded.
Cecil sandy loam, 15 to 25 percent slopes.
Cecil sandy loam, 15 to 25 percent slopes, eroded.
Cecil sandy loam, 25 to 35 percent slopes.
Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded.
Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded.
Lockhart coarse sandy loam, 25 to 35 percent slopes.
Madison and Cecil sandy loams, 10 to 15 percent slopes.
Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded.
Madison and Cecil sandy loams, 15 to 25 percent slopes.
Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded.
Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded.
Nason very fine sandy loam, 10 to 15 percent slopes, eroded.
Nason very fine sandy loam, 15 to 25 percent slopes.
Tatum very fine sandy loam, 10 to 15 percent slopes.
Tatum very fine sandy loam, 10 to 15 percent slopes, eroded.
Tatum very fine sandy loam, 15 to 25 percent slopes.
Tatum very fine sandy loam, 15 to 25 percent slopes, eroded.
Tatum very fine sandy loam, 25 to 35 percent slopes.

Loblolly, shortleaf, and Virginia pines are preferred trees, but hardwoods on uplands are also suited. Though yields are limited, these soils are suited to sawtimber and pulpwood. The site index for loblolly pine is 70 to 80, for shortleaf pine it is 60 to 70, and for Virginia pine it is 60 to 70. Site indexes have not been estimated for hardwoods.

Plant competition is severe on these soils. Application of herbicides, brush cutting, complete land clearing, and other practices are necessary to control competing vegetation, or to prepare sites for seed or seedlings.

On the steep, eroded, or excessively drained soils, expected survival of seedlings ranges from 50 to 75 percent of the planted stock, but on better soils it exceeds 75 percent. Superior planting techniques, including site preparation and replanting, may be necessary to establish good stands.

The use of equipment is moderately restricted on slopes of 10 to 15 percent and severely restricted on stronger slopes and in eroded areas. The erosion hazard is moderate to severe. Operations that disturb the protective cover should be avoided if possible. If they are needed, access roads and plowed firebreaks should follow the contour of the land to minimize the danger of erosion. On steep slopes the hazard of windthrow is moderate. Trees exposed by thinning may be thrown over by high winds.

WOODLAND SUITABILITY GROUP 7

The soils in this group are deep, friable, well-drained, severely eroded clay loams and silty clay loams that are gently sloping to steep. Infiltration of water is slow, and

Figure 13.—**Cull hardwoods and ground cover vegetation compete severely with pines and desirable hardwoods.**

permeability is moderate to moderately slow. The available water-holding capacity is moderate to low. Organic matter and fertility are moderate to low. The soils in this group are:

Cecil clay loam, 2 to 6 percent slopes, severely eroded.
Cecil clay loam, 6 to 10 percent slopes, severely eroded.
Cecil clay loam, 10 to 15 percent slopes, severely eroded.
Cecil clay loam, 15 to 25 percent slopes, severely eroded.
Lloyd clay loam, 2 to 6 percent slopes, severely eroded.
Lloyd clay loam, 6 to 10 percent slopes, severely eroded.
Lloyd clay loam, 10 to 15 percent slopes, severely eroded.
Lloyd clay loam, 15 to 25 percent slopes, severely eroded.
Lockhart clay loam, 2 to 6 percent slopes, severely eroded.
Lockhart clay loam, 6 to 10 percent slopes, severely eroded.
Lockhart clay loam, 10 to 15 percent slopes, severely eroded.
Lockhart clay loam, 15 to 25 percent slopes, severely eroded.
Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded.
Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded.
Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded.
Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded.
Nason silty clay loam, 2 to 10 percent slopes, severely eroded.
Nason silty clay loam, 10 to 25 percent slopes, severely eroded.
Tatum silty clay loam, 2 to 6 percent slopes, severely eroded.
Tatum silty clay loam, 6 to 10 percent slopes, severely eroded.
Tatum silty clay loam, 10 to 15 percent slopes, severely eroded.
Tatum silty clay loam, 15 to 35 percent slopes, severely eroded.

The moisture-supplying capacity is limited in the Lockhart soils and limited to very poor in the Nason soils. In Cecil soils and Madison and Cecil soils, the moisture-supplying capacity is favorable on slopes of less than 10 percent and is somewhat limited on slopes greater than 10 percent.

Loblolly pine, shortleaf pine, and Virginia pine are the preferred trees. The site index for loblolly pine is 70 to 80, for Virginia pine it is 60 to 70, and for shortleaf pine it is 60. The Cecil clay loams have a higher site index than the rest of these soils, but sawtimber and pulpwood can be grown on all the soils.

Competition from undesirable trees and other plants for the limited moisture supply of these soils is severe (fig. 13). Brush cutting, application of herbicides, and other practices are necessary to eliminate or control competing vegetation, or to prepare sites for seedlings. Because of the erosion hazard and steep slopes, these soils are not suited to disking, furrowing, and complete land clearing (fig. 14).

Seedling mortality varies from slight on the more gentle slopes to very severe on slopes exceeding 15 percent. As the hazards become more severe, site preparation, replanting, mulching, and other practices may be necessary to establish good stands.

The limitations to the use of equipment range from moderate on the gentle slopes to severe on the steep slopes. Operations that disturb the protective ground cover, such as the construction of access roads and firebreaks, should be avoided if possible. If these operations are necessary, they should follow the contour of the land to minimize the erosion hazard.

The hazard of erosion is very severe. Windthrow hazard is moderate to severe. Trees exposed on all sides may be blown down by high winds.

Figure 14.—**Gully in Lockhart soils. Trees and shrubs slow down but seldom stop gullying in unstable soils like Lockhart.**

WOODLAND SUITABILITY GROUP 8

The soils in this group are deep, friable, well-drained loams and silt loams that are underlain by dominantly basic rocks. Infiltration of water is slow, permeability is moderate, and available water-holding capacity is moderate to moderately low. The content of organic matter is moderate. The soils in this group are:

Davidson loam, 2 to 10 percent slopes, eroded.
Davidson loam, 10 to 25 percent slopes, eroded.
Lloyd loam, 2 to 6 percent slopes, eroded.
Lloyd loam, 6 to 10 percent slopes, eroded.
Lloyd loam, 10 to 15 percent slopes, eroded.
Lloyd loam, 15 to 25 percent slopes.
Lloyd loam, 25 to 35 percent slopes.
Tirzah silt loam, 2 to 6 percent slopes, eroded.
Tirzah silt loam, 6 to 10 percent slopes, eroded.
Tirzah silt loam, 10 to 15 percent slopes, eroded.
Tirzah silt loam, 15 to 25 percent slopes, eroded.

Fertility is generally moderate, but it is high in the Lloyd soils. The moisture supply is mostly favorable, but it is limited in Davidson soils, in Lloyd soils on the steep slopes, and in Tirzah soils on steep, eroded slopes.

Loblolly pine, shortleaf pine, and Virginia pine are preferred trees. Upland hardwoods are also suited to some of these soils. The site index for loblolly pine is 70 to 80, for shortleaf pine it is 60 to 70, and for Virginia pine it is 60 to 70. These soils are suited to sawtimber and pulpwood.

Unwanted hardwoods and other vegetation compete severely with pines and selected hardwoods. Land clearing, brush cutting, disking, furrowing, or application of herbicides are necessary to eliminate or control competing vegetation, or to prepare sites for seedlings.

Seedling mortality is no problem on these soils, except on the steeper slopes, where it is moderate. Expected survival of planted seedlings ranges from 50 to 75 percent. Some replanting is required.

Equipment limitation is slight on slopes of less than 10 percent, moderate on slopes of 10 to 15 percent, and severe on slopes of 15 to 35 percent. Where the hazard exists, operations that destroy protective ground cover should be avoided if possible. Access roads or other construction should follow the contour of the land.

Except on the gentle slopes, where it is moderate, the hazard of continued erosion is severe on these soils. Loss of trees by windthrow is generally slight but is moderate on the steeper, eroded slopes.

WOODLAND SUITABILITY GROUP 9

The soils in this unit are shallow, very friable, and moderately well drained to excessively drained. The clay subsoil is thin and discontinuous. Infiltration of water is moderate, and permeability is rapid to excessive. The available water-holding capacity is moderate to low. The moisture-supplying capacity varies and is very poor on eroded slopes. The content of organic matter and the fertility are moderate to low. The soils in this group are:

Louisburg sandy loam, 10 to 35 percent slopes, eroded.
Manteo channery silt loam, 2 to 10 percent slopes.
Manteo channery silt loam, 6 to 15 percent slopes, eroded.
Manteo channery silt loam, 10 to 15 percent slopes.
Manteo channery silt loam, 15 to 35 percent slopes.
Manteo channery silt loam, 15 to 35 percent slopes, eroded.
Wilkes sandy loam, 2 to 6 percent slopes.
Wilkes sandy loam, 6 to 15 percent slopes.
Wilkes sandy loam, 6 to 15 percent slopes, eroded.
Wilkes sandy loam, 15 to 25 percent slopes, eroded.
Wilkes sandy loam, 15 to 35 percent slopes.

The rate of growth on these soils varies according to the moisture supply, but sawtimber and pulpwood generally can be grown. Loblolly pine, shortleaf pine, and Virginia pine are preferred trees. The site index for loblolly pine is 60 to 80, for shortleaf pine it is 60 to 80, and for Virginia pine it is 60 to 80.

Hardwoods and other vegetation compete severely with desired pines because these soils are droughty. The application of chemicals, girdling, tree planting, and other site preparations are needed to control competing vegetation. Seedling mortality is moderate on slopes greater than 15 percent. Expected survival of planted seedlings ranges from 50 to 75 percent, and some replanting may be necessary to establish good stands. The use of equipment is severely limited on slopes greater than 15 percent and moderately limited on slopes less than 15 percent.

The hazard of erosion is severe on the stronger slopes, and operations that destroy the protective ground cover should be avoided if possible. If access roads and firebreaks are necessary, they should follow the contour of the land. The hazard of windthrow is slight on slopes of less than 15 percent and moderate on slopes of more than 15 percent. Trees exposed by thinning may be damaged by high winds.

WOODLAND SUITABILITY GROUP 10

The soils in this group are deep to moderately deep loams, sandy loams, and clay loams that have a firm clay subsoil. They are moderately well drained to well drained. Infiltration of water is moderate to slow, and permeability is moderately slow to slow. The water-holding capacity is moderately low to low. The moisture-supplying capacity ranges from good in the sandy loam to very poor in the clay loams. The soils in this group are:

Helena sandy loam, 2 to 10 percent slopes, eroded.
Mecklenburg loam, 2 to 6 percent slopes, eroded.
Mecklenburg loam, 6 to 15 percent slopes, eroded.
Mecklenburg loam, 15 to 25 percent slopes.
Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded.
Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded.
Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded.
Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded.

The sandy loam and the loams are suited to large sawtimber and pulpwood, and the clay loams are suited to small sawlogs and pulpwood. Loblolly pine, shortleaf pine, Virginia pine, and redcedar are preferred trees. The site indexes on sandy loams and loams are 70 to 80 for loblolly pine, 60 to 70 for shortleaf pine, and 60 to 70 for Virginia pine. Site indexes on the clay loams are 60 or less for loblolly pine, 50 or less for shortleaf pine, and 50 or less for Virginia pine. Sawtimber may not be profitable in areas where the site index is low.

Plant competition is very severe on these soils. Application of chemicals, girdling, site preparation, or other practices are necessary to control competing vegetation. This management may not pay in areas where the site index is low.

Seedling mortality is slight on the sandy loams and loams but is severe on the clay loams. Expected survival of planted trees is less than 50 percent. Superior planting

methods and site preparation may be required to establish adequate stands. The clay loams need a protective ground cover.

Equipment limitations are slight on the loams and sandy loams and are moderate to severe on the clay loams. Operations that disturb the protective ground cover should be avoided if possible. Where access roads and firebreaks are necessary, they should follow the contour of the land.

The hazard of continued erosion is slight on sandy loams and loams but is very severe on clay loams. Damage from windthrow is slight on sandy loams and loams and moderate to severe on clay loams. On the clay loams, individual trees exposed by thinning may be damaged by winds.

WOODLAND SUITABILITY GROUP 11

The soils in this group are fine sandy loams, silt loam, and clay loam that are moderately deep to shallow and moderately well drained. The subsoil is firm to very firm plastic clay. Infiltration of water varies from moderate to very slow, and permeability is slow. The soils in this group are:

Iredell fine sandy loam, 2 to 6 percent slopes.
Iredell fine sandy loam, 6 to 10 percent slopes, eroded.
Iredell clay loam, 6 to 10 percent slopes, severely eroded.
Orange silt loam, 2 to 6 percent slopes, eroded.

The Iredell soils have a moderate to high available water-holding capacity, but the Orange soil is low in water-holding capacity. Iredell soils contain a moderate amount of organic matter and are moderate to high in fertility. The Orange soil contains little organic matter and is infertile. The moisture-supplying capacity is good in Iredell sandy loams and very poor in the severely eroded Iredell clay loam. The Orange silt loam has low moisture-supplying capacity.

Loblolly pine, shortleaf pine, Virginia pine, and redcedar are preferred trees. The site indexes on the sandy loams are 40 to 70 for loblolly pine, 40 to 60 for shortleaf pine, and 40 to 60 for Virginia pine. Site indexes on the clay loam and silt loam are 40 or less for loblolly pine, 40 or less for shortleaf pine, and 40 or less for Virginia pine.

Plant competition is very severe on these soils. Application of chemicals, clearing, disking, girdling, or other methods are necessary to control or eradicate competing vegetation and to prepare seedbeds. The seedling mortality varies from slight on the sandy loams to moderate on the clay loam, where the moisture content is low and aeration is poor because of the plastic subsoil. Natural regeneration must be supplemented by intensive planting to establish good stands.

Equipment limitations and the hazard of erosion are slight on the Iredell fine sandy loams, severe on the Iredell clay loam, and moderate on the Orange silt loam. Root development, particularly on the shallow soils, is severely restricted because of the plastic subsoil, the lack of moisture, and poor aeration (fig. 15). In high winds, trees that are released on all sides or are exposed may be blown over by the wind.

Erosion is a very severe problem on the severely eroded clay loam and on the sloping soils. The loss of surface soil seriously increases the hazards of equipment use, seedling mortality, and windthrow. Erosion can reduce the growth of trees so that production of sawtimber is impractical. Avoid operations that destroy protective ground cover. If access roads and firebreaks are needed, lay them out along the contour of the land.

598952—62——6

Figure 15.—**Because soils with shallow root zones lack moisture, the growth of tree roots and of trees is restricted.**

WOODLAND SUITABILITY GROUP 12

In this group are deep to moderately deep soils on uplands and bottom lands. These soils are poorly drained to somewhat poorly drained. Infiltration of water is moderate to moderately slow, and permeability is slow. The available water-holding capacity is moderate to low. On the eroded slopes, the moisture-supplying capacity of the soil is low, but it is very high to excessive in other soils. The supply of organic matter is moderate to low, and natural fertility is low. The soils in this group are:

Worsham sandy loam, 0 to 6 percent slopes.
Worsham sandy loam, 2 to 10 percent slopes, eroded.
Mixed wet alluvial land.

Many species of trees tolerate these soils, and on old wooded sites the competition is severe between unwanted plants and the pines and selected hardwoods. Poor internal drainage stimulates the competition from moisture-tolerant trees. Prescribed burning, application of chemicals, clearing, disking, and other intensive practices are necessary to eliminate competing vegetation, to prepare seedbeds, and to provide for adequate restocking of desired species. The natural succession of plants must be periodically disrupted so that well-stocked stands of pines can be maintained.

Seedling mortality ranges from slight in areas having a favorable moisture supply to severe in areas where the moisture is excessive. If the moisture supply is excessive, controlled drainage may be necessary to establish pine species.

The use of equipment is moderately restricted. If equipment is used on these soils when they are wet, soil structure may be damaged. Roads may require drainage to improve access and maintenance. The hazard of continued erosion is slight to moderate. Root development

may be restricted because of the firm subsoil and erosion. Under these conditions, trees that are exposed on all sides may be blown over by high winds.

WOODLAND SUITABILITY GROUP 13

In this group are mapping units of miscellaneous land. These units vary in combined thickness of the surface layer and subsoil (solum), and in permeability and infiltration of water. They are low in available water-holding capacity, organic matter, and natural fertility. This group consists of:

Gullied land, firm materials.
Gullied land, friable materials, 2 to 10 percent slopes.
Gullied land, friable materials, 10 to 35 percent slopes.
Riverwash.
Stony land.

Merchantable trees may grow in areas between gullies where surface soil remains, but the site index of these mapping units is generally low. Sawtimber cannot be produced profitably. Plant competition may be slight where erosion is active. In areas where soil is stabilized and plant succession occurs, competition for the limited moisture supply is very severe. The use of equipment is severely restricted by gullies and by the firm subsoil. Seedling mortality is in excess of 50 percent because the moisture content is poor. Mulching and other practices to prepare sites are necessary to establish adequate stands. The hazard of continued erosion is severe, and a ground cover should be established as quickly as possible. Protective cover should be maintained without disturbance.

Rock outcrops are not suited to commercial trees, and Stony land varies in its suitability. Sites should be examined carefully before attempts are made to establish trees on these mapping units.

Growth of Trees and Yields of Wood

Forest stands have not been managed long enough in Cherokee County to determine fully the total amount of wood that can be grown and harvested per acre in stands at different levels of management. Nevertheless, studies have been made of the growth and yields of certain species, and fairly accurate estimates can be made if the site index for a tree is known.

The growth in height of trees depends primarily on the site and on the age of the trees. Spacing, site, and age primarily determine the growth in diameter. If age and spacing are fixed, the difference in growth depends on the site. Cutting cycles can be determined with considerable accuracy for each site index. The major species of pine grown in the southern part of the county have cutting cycles of about the same length for a given site index.

Tables 6, 7, and 8 list stand and yield information for different species of trees. Table 6 is for loblolly, longleaf, shortleaf, and slash pines; table 7 is for Virginia pine; and table 8 is for second-growth oak on uplands.

TABLE 6.—*Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines*

[Statistics in this table are compiled from United States Department of Agriculture Miscellaneous Publication No. 50 (*9*)]

LOBLOLLY PINE

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	*Cu. ft.*	*Cords*	*Bd. ft. (Scribner)*	*Feet*	*Inches*	*Sq. ft.*	*Number*
60	20	1, 500	12	----------	32	3. 6	121	1, 600
	30	2, 750	25	1, 250	45	5. 4	138	850
	40	3, 700	35	4, 500	54	6. 8	147	585
	50	4, 300	41	8, 550	60	7. 9	152	440
	60	4, 700	46	12, 250	64	8. 9	156	360
	70	5, 000	49	15, 250	67	9. 7	158	310
	80	5, 200	51	17, 550	69	10. 4	160	275
70	20	1, 900	17	100	38	4. 3	125	1, 185
	30	3, 350	31	3, 500	52	6. 5	143	640
	40	4, 500	42	9, 400	63	8. 1	151	435
	50	5, 200	50	15, 200	70	9. 4	157	325
	60	5, 700	55	19, 600	75	10. 6	160	270
	70	6, 000	59	22, 550	78	11. 5	163	230
	80	6, 200	62	24, 600	80	12. 3	165	205
80	20	2, 350	22	700	43	5. 0	129	950
	30	4, 000	38	6, 500	59	7. 4	147	510
	40	5, 300	51	14, 800	72	9. 2	156	345
	50	6, 150	60	21, 700	80	10. 7	162	255
	60	6, 650	66	26, 400	85	12. 0	165	210
	70	7, 000	70	29, 500	89	13. 1	168	185
	80	7, 300	73	31, 550	92	14. 0	170	160
90	20	2, 850	27	1, 000	48	5. 6	133	790
	30	4, 700	46	10, 700	67	8. 2	152	420
	40	6, 200	61	20, 550	81	10. 2	162	290
	50	7, 200	71	28, 250	90	12. 0	167	220
	60	7, 800	78	33, 100	96	13. 4	171	180
	70	8, 200	82	36, 600	100	14. 6	174	150
	80	8, 550	85	39, 100	103	15. 6	176	135

TABLE 6.—*Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines*—Continued

LOBLOLLY PINE—Continued

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	*Cu. ft.*	*Cords*	*Bd. ft. (Scribner)*	*Feet*	*Inches*	*Sq. ft.*	*Number*
100	20	3,300	32	2,750	54	6.1	138	690
	30	5,400	53	14,800	74	9.0	158	375
	40	7,150	71	26,700	90	11.2	168	255
	50	8,400	84	35,050	100	13.1	174	190
	60	9,150	92	41,000	107	14.6	178	155
	70	9,600	96	44,750	112	15.9	181	135
	80	9,950	100	47,400	115	17.1	182	115
110	20	3,850	37	4,300	59	6.6	145	615
	30	6,200	62	19,200	81	9.7	166	335
	40	8,200	82	32,800	99	12.1	176	225
	50	9,650	06	42,500	110	14.1	182	170
	60	10,500	106	49,200	118	15.9	186	140
	70	11,150	112	53,100	122	17.3	189	120
	80	11,500	116	55,900	126	18.4	191	105
120	20	4,400	42	6,500	64	7.1	152	560
	30	7,150	70	24,350	89	10.4	174	305
	40	9,400	93	39,600	108	13.0	185	205
	50	11,000	110	50,100	120	15.1	192	155
	60	12,050	121	57,250	128	17.0	196	125
	70	12,700	128	62,000	133	18.5	199	105
	80	13,150	134	65,000	137	19.7	201	95
				LONGLEAF PINE				
50	20	500	4	----------	26	2.8	64	1,410
	30	1,150	11	200	37	4.1	78	900
	40	1,700	17	900	45	5.1	88	625
	50	2,150	21	2,100	50	5.9	95	505
	60	2,550	25	3,700	55	6.6	100	430
	70	2,850	28	5,400	58	7.2	104	375
	80	3,150	31	7,250	61	7.8	106	335
60	20	1,000	8	50	31	3.3	79	1,290
	30	1,900	19	900	44	4.9	97	815
	40	2,750	27	2,800	53	6.0	108	575
	50	3,450	34	5,900	60	7.0	118	465
	60	4,000	40	9,300	65	7.8	124	395
	70	4,500	45	12,350	70	8.5	128	345
	80	4,900	49	15,000	73	9.1	131	305
70	20	1,500	14	200	36	3.8	92	1,150
	30	2,700	28	2,000	52	5.5	113	730
	40	3,800	39	6,100	62	6.8	127	515
	50	4,750	48	11,400	70	7.9	138	415
	60	5,600	55	16,400	77	8.8	145	355
	70	6,200	62	20,400	82	9.6	150	305
	80	6,800	67	23,700	86	10.3	153	270
80	20	2,050	20	550	41	4.3	102	1,050
	30	3,500	36	3,800	59	6.1	124	655
	40	4,900	49	10,800	71	7.6	140	465
	50	6,000	61	17,600	80	8.8	152	375
	60	7,000	70	23,500	87	9.8	160	315
	70	7,850	78	28,300	93	10.6	166	270
	80	8,550	85	32,100	98	11.5	169	240
90	20	2,550	26	1,000	46	4.7	109	910
	30	4,250	43	6,500	66	6.7	134	575
	40	5,800	59	15,800	80	8.3	150	405
	50	7,150	72	24,100	90	9.6	162	330
	60	8,350	84	31,000	98	10.7	170	275
	70	9,400	94	36,200	105	11.6	176	240
	80	10,250	103	40,600	110	12.5	180	210

TABLE 6.—*Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines*—Continued

LONGLEAF PINE—Continued

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	*Cu. ft.*	*Cords*	*Bd. ft. (Scribner)*	*Feet*	*Inches*	*Sq. ft.*	*Number*
100	20	2, 950	30	1, 700	52	5. 2	114	790
	30	4, 900	49	10, 150	74	7. 4	140	500
	40	6, 600	66	20, 200	89	9. 0	158	355
	50	8, 200	82	29, 550	100	10. 5	170	285
	60	9, 500	96	37, 400	109	11. 7	179	240
	70	10, 700	108	43, 000	110	12. 7	185	205
	80	11, 600	118	48, 100	123	13. 7	189	185
110	20	3, 250	34	2, 550	57	5. 6	118	690
	30	5, 350	54	13, 000	81	7. 9	144	445
	40	7, 200	73	24, 440	98	9. 8	162	315
	50	8, 950	90	34, 200	110	11. 4	176	250
	60	10, 500	106	42, 100	120	12. 7	185	210
	70	11, 700	119	48, 600	128	13. 8	192	180
	80	12, 700	130	54, 000	135	14. 9	196	160

SHORTLEAF PINE

50	20				25	2. 5	139	3, 425
	30	2, 040	23	50	35	3. 9	158	1, 855
	40	2, 980	33	1, 450	44	5. 1	162	1, 085
	50	3, 970	43	4, 400	50	6. 1	162	760
	60	4, 430	48	8, 150	55	6. 9	162	590
	70	4, 780	51	11, 600	59	7. 6	162	485
	80	5, 050	53	14, 400	62	8. 3	162	420
60	20	1, 060	12		30	2. 9	142	2, 520
	30	2, 880	32	750	42	4. 6	162	1, 370
	40	4, 200	46	4, 400	52	6. 0	166	815
	50	5, 080	54	10, 600	60	7. 2	166	570
	60	5, 690	60	15, 850	66	8. 2	166	445
	70	6, 170	65	19, 700	71	9. 0	166	370
	80	6, 520	68	22, 600	74	9. 8	166	315
70	20	1, 600	18		34	3. 5	145	1, 965
	30	3, 720	41	2, 400	49	5. 4	165	1, 060
	40	5, 210	56	9, 900	61	7. 0	169	625
	50	6, 250	66	17, 850	70	8. 3	169	440
	60	7, 000	73	23, 450	77	9. 4	169	345
	70	7, 580	79	27, 550	82	10. 4	169	285
	80	8, 020	83	30, 700	86	11. 2	169	240
80	20	2, 190	25	200	39	4. 1	147	1, 495
	30	4, 420	48	5, 200	56	6. 2	167	815
	40	6, 100	65	16, 200	70	8. 0	171	485
	50	7, 380	77	24, 900	80	9. 5	171	335
	60	8, 250	85	30, 900	88	10. 8	171	260
	70	8, 920	92	35, 200	94	11. 9	171	215
	80	9, 460	97	38, 550	99	12. 9	171	185
90	20	2, 660	30	1, 100	44	5. 0	148	1, 080
	30	5, 050	54	11, 200	63	7. 3	169	590
	40	7, 000	73	23, 400	78	9. 4	173	345
	50	8, 450	87	32, 400	90	11. 2	173	245
	60	9, 500	98	38, 700	99	12. 8	173	185
	70	10, 280	105	43, 000	106	14. 1	173	160
	80	10, 910	112	46, 500	111	15. 3	173	140
100	20	3, 040	33	3, 200	49	6. 0	149	740
	30	5, 720	60	17, 700	70	8. 8	170	405
	40	7, 940	82	30, 600	87	11. 3	174	235
	50	9, 650	89	40, 000	100	13. 5	174	170
	60	10, 860	111	46, 400	110	15. 3	174	130
	70	11, 780	121	50, 900	117	17. 0	174	110
	80	12, 500	128	54, 400	123	18. 5	174	90

TABLE 6.—*Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines*—Continued

SLASH PINE

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	*Cu. ft.*	*Cords*	*Bd. ft. (Scribner)*	*Feet*	*Inches*	*Sq. ft.*	*Number*
60	20	1, 850	20	----------	36	3. 5	143	2, 035
	30	3, 150	32	1, 050	48	5. 0	152	1, 140
	40	4, 050	40	4, 100	55	6. 3	155	710
	50	4, 750	45	7, 500	60	7. 2	157	550
	60	4, 900	48	10, 500	64	7. 9	158	470
70	20	2, 750	28	----------	42	4. 2	146	1, 445
	30	4, 000	40	3, 500	56	6. 0	156	820
	40	4, 850	49	9, 300	64	7. 5	159	500
	50	5, 850	55	14, 250	70	8. 6	161	390
	60	6, 050	59	17, 400	74	9. 4	162	335
80	20	3, 400	35	900	48	4. 9	148	1, 090
	30	4, 850	48	7, 300	63	7. 0	158	610
	40	5, 850	58	15, 150	73	8. 7	161	380
	50	6, 900	65	20, 350	80	10. 0	163	295
	60	7, 150	69	23, 600	85	10. 8	164	250
90	20	4, 050	41	2, 750	54	5. 6	149	835
	30	5, 550	54	12, 300	71	8. 0	159	470
	40	6, 650	66	20, 600	83	10. 0	163	295
	50	7, 850	73	25, 900	90	11. 4	165	220
	60	8, 100	78	29, 600	95	12. 5	166	195
100	20	4, 600	46	5, 050	61	6. 4	150	625
	30	6, 100	59	16, 850	79	9. 1	160	365
	40	7, 350	72	25, 450	92	11. 4	164	225
	50	8, 700	81	31, 250	100	13. 1	166	175
	60	8, 950	86	35, 400	106	14. 2	167	150

Engineering Applications [4]

Soil engineering is well established in the field of engineering. It is a part of structural engineering and deals with soil as the foundation material on which structures rest, or with soil used as a structural material. Generally, soils are used in the locality and in the condition in which they are found. A large part of soil engineering consists of locating the various soils, of determining their engineering properties and how those properties meet the requirements of the job, and of selecting the best material available for each job.

This soil survey report contains information about the soils of Cherokee County that will be helpful to engineers. Special emphasis has been placed on the engineering properties that affect agricultural structures, especially irrigation systems, farm ponds, and structures to control and conserve soil and water. The information in this report will be of help in selecting and developing industrial, business, residential, and recreational sites; in selecting locations for highways, pipelines, and airports; in locating sand and gravel for use in construction; in correlating pavement performance with types of soil and thus obtaining information that will be useful in designing and maintaining pavements; in determining the suitability of soils for cross-country movements of vehicles and construction equipment; and in supplementing information obtained from other sources for the purpose of making soil maps and reports that can be used readily by engineers.

Engineers of the South Carolina State Highway Department, the United States Bureau of Public Roads, and the Soil Conservation Service collaborated with soil scientists of the Soil Conservation Service in preparing this section. These specialists combined their knowledge, the results of laboratory tests, and their field experiences to interpret the condition of the soils in the county.

The soil maps included in this report and the corresponding interpreations are necessarily generalized. They do not give enough information for the design and construction of specific structures. They should be used only in planning more detailed field surveys and soil tests to determine the condition of the soil in place at the site of the proposed structures.

At many construction sites, major soil variations occur within the depth of proposed excavations and several different soils may be found within short distances. By using the maps, descriptions, and interpretations in this report, detailed soil investigations of the construction site can be planned and a minimum number of soil samples taken for laboratory testing. After testing the soil materials and observing their behavior, in place, under varying conditions, the engineer should be able to anticipate, to some extent, the properties of individual soil units wherever they are mapped.

[4] This section was written by C. C. ALLEN, agricultural engineer, Soil Conservation Service.

TABLE 7.—*Stand and yield information per acre for fully stocked, natural stands of Virginia pine*

[Statistics in this table are interpreted from North Carolina State College Technical Bulletin No. 100 (*2*), and from Southeast Forest Experiment Station Research Note No. 135 (*4*)]

Site index	Age	Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees	Potential yield			Mean annual growth		
	Year	*Feet*	*Inches*	*Sq. ft.*	*Number*	*Cu. ft.*	*Cords* [1]	*Bd. ft.* [2]	*Cu. ft.*	*Cords*	*Bd. ft.* [3]
40	20	19	2, 500	2. 1	60	390	4	--------	19	0. 2	--------
	30	29	1, 660	3. 4	104	1, 250	14	5, 900	42	. 5	197
	40	36	1, 300	4. 2	125	1, 630	18	7, 700	41	. 4	192
	50	40	1, 110	4. 7	133	1, 820	20	8, 600	37	. 4	172
	60	42	1, 010	5. 0	138	1, 980	22	9, 400	33	. 4	156
	70	43	910	5. 3	139	2, 100	23	9, 900	30	. 3	141
50	20	25	2, 000	2. 8	86	960	11	--------	48	. 5	--------
	30	37	1, 320	4. 2	127	2, 000	22	9, 500	67	. 6	317
	40	45	970	5. 2	142	2, 700	30	12, 800	67	. 7	320
	50	50	790	5. 9	151	3, 100	34	14, 700	62	. 7	294
	60	52	750	6. 1	153	3, 400	38	16, 100	57	. 6	268
	70	54	700	6. 4	156	3, 600	40	17, 100	51	. 6	244
60	20	31	1, 710	3. 4	108	1, 600	18	7, 600	80	. 9	380
	30	44	1, 030	5. 0	140	2, 650	29	12, 500	85	1. 0	417
	40	54	720	6. 3	156	3, 630	40	17, 200	88	1. 0	430
	50	60	580	7. 2	164	4, 300	47	21, 000	86	. 9	420
	60	63	520	7. 7	168	4, 720	52	22, 400	79	. 9	373
	70	65	490	8. 0	170	5, 050	56	23, 900	72	. 8	341
70	20	37	1, 460	4. 0	127	1, 700	19	8, 100	85	. 9	405
	30	52	790	6. 0	154	3, 200	35	15, 200	107	1. 2	509
	40	63	540	7. 5	167	4, 360	48	21, 400	109	1. 2	535
	50	70	410	8. 9	176	5, 200	58	24, 600	104	1. 2	492
	60	73	360	9. 6	179	5, 700	63	27, 000	95	1. 0	450
	70	75	340	9. 8	180	6, 150	68	29, 200	88	1. 0	419
80	20	42	1, 230	4. 5	136	1, 950	22	9, 200	98	1. 1	460
	30	59	630	6. 9	163	3, 500	39	16, 600	117	1. 3	553
	40	72	380	9. 3	178	4, 900	54	23, 200	123	1. 4	580
	50	80	230	12. 2	186	5, 800	64	27, 400	116	1. 3	548
	60	83	190	13. 6	189	6, 430	72	30, 400	107	1. 2	506
	70	85	160	14. 6	191	6, 900	77	32, 800	98	1. 1	469

[1] Converting factor, 90 cu. ft. per cord.

[2] International ¼-inch rule; converting factor, 90 cu. ft. per cord.

[3] International ¼-inch rule.

Soil Science Terminology

This report uses agricultural terms to describe soils and their uses in farming and related fields. Many of these terms have a special meaning to soil scientists and other agricultural workers that differs from the meaning understood by engineers. These terms are defined in the Glossary in their agricultural sense. The engineer should study particularly the definitions of soil, sand, silt, clay, topsoil, parent material, and subsoil.

Much information useful to engineers can be found in other parts of this report. The engineer should refer to the subsection "Descriptions of Soils" and to the sections "How a Soil Survey is Made" and "Formation and Classification of Soils" for additional information.

Engineering Classification Systems

AASHO classification system.—Most highway engineers classify soil materials in accordance with the system approved by the American Association of State Highway Officials (*1*) (*8*). In this system soil materials are classified in seven principal groups. The groups range from A-1, consisting of gravelly soils of high bearing capacity, to A-7, consisting of clay soils having low strength when wet. Within each group, the relative engineering value of the soil material is indicated by a group index number. Group indexes range from 0 for the best materials to 20 for the poorest. The group index number is shown in parentheses, following the soil group symbol in the next to last column in table 11.

Unified classification system.—Some engineers prefer to use the Unified soil classification system (*10*) (*8*). In this system soil materials are identified as coarse grained (eight classes), fine grained (six classes), or highly organic. The classification of the layers of soils tested in the laboratory is given in table 9 according to the Unified system.

Physical Properties of Soils

In table 9 are brief descriptions of some of the soils in the county and their estimated physical properties. Generally, the soils are described to a depth of not more than

TABLE 8.—*Stand and yield information per acre for second-growth oak on uplands*

[Statistics in this table are compiled from United States Department of Agriculture Miscellaneous Publication No. 50 (*9*)]

Site index	Age	Total height of average dominant trees	Average diameter at breast height	Trees	Potential yields			Mean annual growth		
	Year	*Feet*	*Inches*	*Number*	*Cords*[1]	*Bd. ft.*[2]	*Cu. ft.*[1]	*Cords*[1]	*Bd. ft.*[2]	*Cu. ft.*[1]
40	20	17	1.8	3,260	0.24	--------	20	0.01	--------	1
	30	25	2.9	1,610	3.18	100	270	.11	3	9
	40	33	3.8	1,020	8.00	600	680	.20	15	17
	50	40	4.5	802	12.47	1,400	1,060	.25	28	21
	60	45	5.2	651	16.71	2,700	1,420	.28	45	24
	70	48	5.8	541	20.59	4,250	1,750	.29	61	25
	80	50	6.4	483	24.12	5,900	2,050	.30	74	26
	90	52	6.9	447	27.41	7,600	2,330	.30	84	26
	100	53	7.4	411	30.47	9,200	2,590	.30	92	26
50	20	23	2.2	2,520	.82	--------	70	.04	--------	4
	30	33	3.4	1,246	6.35	350	540	.21	12	18
	40	42	4.5	789	12.82	1,400	1,090	.32	35	27
	50	50	5.3	623	18.82	3,250	1,600	.38	65	32
	60	56	6.1	507	24.47	5,600	2,080	.41	93	35
	70	60	6.9	419	29.53	8,150	2,510	.42	116	36
	80	62	7.5	375	34.12	10,450	2,900	.43	131	36
	90	64	8.1	346	38.00	12,600	3,230	.42	140	36
	100	65	8.7	320	41.41	14,700	3,520	.41	147	35
60	20	30	2.5	1,945	2.00	--------	170	.10	--------	8
	30	41	4.0	965	10.35	850	880	.34	28	29
	40	51	5.3	611	18.59	3,200	1,580	.46	80	40
	50	60	6.3	482	26.24	6,300	2,230	.52	126	45
	60	67	7.2	390	32.94	9,700	2,800	.55	162	47
	70	71	8.0	326	38.71	12,800	3,290	.55	183	47
	80	75	8.8	292	43.88	15,650	3,730	.55	196	47
	90	77	9.4	268	48.47	18,300	4,120	.54	203	46
	100	79	10.1	248	52.71	20,900	4,480	.53	209	45
70	20	36	2.9	1,500	4.24	150	360	.21	8	18
	30	48	4.6	743	14.94	1,750	1,270	.50	58	42
	40	60	6.0	472	24.59	5,500	2,090	.61	138	52
	50	70	7.2	374	33.29	9,750	2,830	.67	195	57
	60	78	8.3	304	40.94	13,900	3,480	.68	232	58
	70	83	9.3	252	47.41	17,700	4,030	.68	253	58
	80	87	10.2	224	53.06	21,200	4,510	.66	265	56
	90	90	11.0	207	58.35	24,500	4,960	.65	272	55
	100	92	11.7	192	63.53	27,650	5,400	.64	276	54
80	20	43	3.4	1,160	7.29	350	620	.36	18	31
	30	56	5.3	578	19.88	3,350	1,690	.66	112	56
	40	69	6.9	366	30.71	8,600	2,610	.77	215	65
	50	80	8.3	290	40.59	13,750	3,450	.81	275	69
	60	89	9.5	235	48.94	18,600	4,160	.82	310	69
	70	95	10.7	196	56.12	23,100	4,770	.80	330	68
	80	99	11.7	174	62.82	27,250	5,340	.79	341	67
	90	103	12.7	161	69.06	30,950	5,870	.77	344	65
	100	105	13.6	148	75.06	34,400	6,380	.75	344	64

[1] To a 4-inch top outside bark.

[2] To a 5-inch top inside bark, International ¼-inch rule.

5 feet. The physical properties are estimates based on field observations and experiences and apply only to Cherokee County.

The material in each layer is classified by the system used by the United States Department of Agriculture, and by the Unified and AASHO systems. The percentage of material passing the No. 200, 10, and 4 sieves for some of the soils was determined by mechanical analysis; other values were estimated. Permeability, or the rate that a soil transmits water, was estimated for the soils when they were not compacted.

Available water is approximately the amount of water in a soil when it is wet to field capacity, or when the percolation of water downward has practically stopped. It is the amount of water, in inches, needed to wet 1 foot of air-dried soil. Hence, if a layer of soil 6 inches thick has a capacity for available water of 3 inches, this layer needs 1.5 inches of water to wet it.

Reaction is listed in pH values. Soil materials with a pH value of less than 7.0 is acid; that with a value of more than 7.0 is alkaline.

Dispersion refers to the degree and rapidity that a soil breaks down, or disperses, into individual particles and is thereby a measure of unstability.

The skrink-swell potential indicates the volume change that is caused in soil material by a change in moisture content. Generally a soil decreases in volume as moisture decreases and increases as moisture increases.

TABLE 9.—*Brief description of soils and their*

[Dashes indicate information not

Map symbol	Soil	Depth to seasonal high water table	Depth to bedrock	Soil description	Depth from surface (typical profile)	Classification: Dominant USDA texture
		Feet	*Feet*		*Inches*	
AfB2	Altavista fine sandy loam, 2 to 6 percent slopes, eroded.	8+	20+	6 to 10 inches of fine sandy loam over 30 inches or more of friable clay loam. Well-drained, light-colored soil on stream terraces.	0–9 9–42+	Fine sandy loam Clay loam
ApB	Appling sandy loam, 2 to 6 percent slopes.[1]	25+	30+	6 inches of sandy loam over 3 feet or more of sandy clay loam to clay.	0–6 6–15 15–48	Sandy loam Sandy clay loam Clay to clay loam
Bc	Buncombe loamy sand	[2] 4+		3 to 5 feet of excessively drained loamy fine sand or fine sand.	0–60+	Loamy fine sand
CdB2	Cecil sandy loam, 2 to 6 percent slopes, eroded.	35+	40+	6 inches of sandy loam over 5 feet of clay loam to clay. Well-drained, friable Piedmont soil formed over quartz, mica schist, or gneissic rocks.	0–6 6–45 45–70	Sandy loam Clay loam to clay Clay loam
Ch	Chewacla silt loam	[2] 1+		16 inches of moderately well drained silt loam over 24 inches of poorly drained silty clay loam formed on stream bottom land.	0–16 16–40 40+	Silt loam Silty clay Silty clay
Co	Congaree fine sandy loam [1]	[2] 6+		10 inches of fine sandy loam over 3 to 4 feet of well-drained silt loam on large stream bottom lands.	0–10 10–32+	Fine sandy loam Silt loam to silty clay.
Cr	Congaree silt loam [1]	[2] 6+		10 inches of silt loam over 3 to 4 feet of well-drained silty clay loam on first bottoms of large streams.	0–10 10–32+	Silt loam Silty clay
DaC2	Davidson loam, 2 to 10 percent slopes, eroded.	50+	60+	7 inches of loam to clay loam over 3 feet of well-drained clay loam to clay. Dark reddish-brown and dark-red Piedmont soil over basic rocks.	0–7 7–46 46+	Loam Clay loam to clay Clay loam
Ga	Gullied land, firm materials		5+	Gullied land		
GfC	Gullied land, friable materials, 2 to 10 percent slopes.		20+	Gullied land		
GfF	Gullied land, friable materials, 10 to 35 percent slopes.		20+	Gullied land		
HaC2	Helena sandy loam, 2 to 10 percent slopes, eroded.	15+	15+	6 inches of sandy loam over 30 inches of clay loam to clay. Moderately well drained to somewhat poorly drained Piedmont soils over mixed acidic-basic rocks.	0–6 6–20 20–36 36+	Sandy loam Sandy clay to clay Clay Sandy clay to clay
IrB	Iredell fine sandy loam, 2 to 6 percent slopes.	10+	6+	5 inches of fine sandy loam over 17 inches of plastic clay. Moderately deep, moderately well drained to somewhat poorly drained Piedmont soil on uplands over weathered basic rocks.	0–5 5–22	Fine sandy loam Clay
LdB2	Lloyd loam, 2 to 6 percent slopes, eroded.	50+	60+	4 inches to 7 inches of loam over about 32 inches of firm clay. Reddish-brown and red Piedmont soil over mixed acidic-basic rock.	0–5 5–40 40–55	Loam Clay Clay loam
Ln	Local alluvial land	[3] 4	25+	Variable textured local alluvial deposits on Piedmont uplands.		
LrB2	Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded.	40+	20+	7 inches of coarse sandy loam over 33 inches of clay and clay loam. Soil formed over prophyritic granite in Piedmont uplands.	0–7 7–28 28–40	Coarse sandy loam Clay to clay loam Clay loam

See footnotes at end of table.

estimated physical properties

available or does not apply]

Classification—Con.		Percentage passing sieve—			Permeability	Soil structure	Available water	Reaction (pH)	Dispersion	Shrink-swell potential
Unified	AASHO	Number 200 (0.074 mm.)	Number 10 (2.0 mm.)	Number 4 (4.76 mm.)						
					Inches per hour		*Inches per foot of depth*			
SM-ML	A-4	45–55	100		0. 8–2. 5	Granular	1. 1	5. 5–6. 0	High	Low.
CL-ML	A-7	70–80	100		. 8–2. 0	Subangular blocky	2. 3	5. 0–5. 5	Moderate	Moderate.
SM	A-2	25–35	90–100	95–100	5. 0–10. 0	Granular	1. 1	5. 1–6. 0	High	Low.
CL	A-7	60–70	100		. 8–2. 50	Subangular blocky	2. 3	5. 1–6. 0	Moderate	Moderate.
MH	A-7	60–70	100		. 2–0. 80	Subangular blocky	1. 3	5. 1–6. 0	Low	Low.
SM	A-2	15–30	100		5. 0–10. 0	Crumb	. 7	5. 6–6. 0	High	Low.
SM	A-2	30–40	100		5. 0–10. 0	Granular	1. 2	5. 0–5. 5	High	Low.
MH-CH	A-7	60–70	100		2. 0–4. 0	Subangular blocky	1. 8	5. 5–6. 0	Moderate	Moderate.
MH-CH	A-7	60–70	100		2. 5–5. 0	Subangular blocky	1. 0	5. 5–6. 0	Moderate	Moderate.
ML-CL	A-4	85–95	100		2. 5–5. 0	Granular	2. 5	5. 6–6. 0	High	Low.
ML-CL	A-7	90–95	100		. 8–2. 5	Subangular blocky	2. 5	5. 6–6. 0	Moderate	Moderate.
CL	A-7	90–95	100		. 2–0. 8	Subangular blocky	3. 0	5. 1–5. 5	Low	Moderate.
SM-ML	A-4	45–55	100		4. 0–5. 0	Granular	2. 0	6. 1–6. 5	High	Low.
ML-CL	A-4	55–65	100		3. 0–4. 0	Granular	2. 5	5. 6–6. 0	Moderate	Low.
ML-CL	A-4	80–90	100		3. 0–4. 0	Granular	2. 0	6. 1–6. 5	Moderate	Low.
ML-CL	A-6	85–95			3. 0–4. 0	Granular	2. 5	5. 6–6. 0	Moderate	Low.
ML	A-6	65–75	95–100	95–100	. 8–2. 5	Granular	1. 6	5. 1–5. 5	Moderate	Moderate.
MH	A-7	85–95	95–100	95–100	. 8–2. 5	Subangular blocky	2. 0	5. 1–5. 5	Low	Moderate.
MH	A-7	85–100			. 6–2. 0	Subangular blocky	2. 2	5. 1–5. 5	Moderate	Moderate.
SM	A-4	35–50	85–100	100	2. 5–5. 0	Granular	1. 0	5. 6–6. 5	High	Moderate.
CL	A-7	60–70	95–100	100	. 8–2. 5	Subangular blocky	1. 6	5. 6–6. 0	Low	Moderate.
CH	A-7	65–85	95–100	100	. 2–0. 8	Subangular blocky	1. 6	5. 6–6. 0	Low	Moderate.
CL	A-7	55–70	95–100	100	. 8–2. 5	Structureless	1. 5	5. 1–5. 5	Moderate	Moderate.
SM-ML	A-4	45–60	95–100	100	5. 0–10. 0	Granular	1. 5	6. 1–6. 5	High	Moderate.
CH	A-7	75–85	95–100	100	. 05–0. 2	Subangular blocky	2. 5	5. 6–6. 0	Low	High.
ML	A-7	60–75	95–100		2. 5–5. 0	Granular	1. 5	5. 6–6. 0	High	Moderate.
CH	A-7	85–100	100		. 8–2. 5	Subangular blocky	2. 0	5. 6–6. 0	Low	Moderate.
MH	A-7	95–100	100		2. 5–5. 0	Subangular blocky	1. 5	5. 6–6. 0	Low	Moderate.
SM	A-7	20–30	100		5. 0–10. 0	Crumb	1. 0	5. 6–6. 0	High	Low.
CH	A-7	60–70	100		. 8–2. 5	Subangular blocky	1. 5	5. 6–6. 0	Moderate	Moderate.
CL	A-7	55–65	100		2. 5–5. 0	Subangular blocky	1. 2	5. 6–6. 0	Moderate	Moderate.

TABLE 9.—*Brief description of soils and their*

[Dashes indicate information not

Map symbol	Soil	Depth to seasonal high water table	Depth to bedrock	Soil description	Depth from surface (typical profile)	Classification: Dominant USDA texture
		Feet	*Feet*		*Inches*	
LuE2	Louisburg sandy loam, 10 to 35 percent slopes, eroded.	40+	10+	8 inches of sandy loam over 13 inches of weak sandy clay loam. Shallow Piedmont soil over disintegrated coarse-grained material.	0–8 8–21	Sandy loam Sandy clay loam
MdB2	Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded.	35+	20+	6 inches to 8 inches of sandy loam over 2 to 5 feet of friable red clay loam. Soils formed over weathered quartz mica schist or quartz mica gneiss rocks in Piedmont uplands.	0–7 7–20 20–36	Sandy loam Clay loam Clay loam
MeC	Manteo channery silt loam, 2 to 10 percent slopes.	30+	6+	7 inches of channery silt loam over 3 inches to 5 inches of firm silty clay. Shallow soil on Piedmont uplands that has thin and discontinuous subsoil forming over sericitic schist rocks.	0–7 7–11	Channery silt loam Silty clay
MnB2	Mecklenburg loam, 2 to 6 percent slopes, eroded.	20+	30+	6 inches of dark reddish-brown-loam over 29 inches of firm yellowish-red clay. Moderately deep to deep soil on Piedmont uplands over basic rocks.	0–6 6–35	Loam Clay
Mv	Mixed alluvial land	[2] 3+		Moderately well drained bottom-land soil that has variable texture and is about 36 inches thick. Water table usually below 36 inches.		
Mw	Mixed wet alluvial land	[2] 1+		Poorly drained bottom land about 40 inches thick that has wide variations in texture. Water table often less than 36 inches deep.		
NaB	Nason very fine sandy loam, 2 to 6 percent slopes.[1]	20+	10+	6 inches of very fine sandy loam over 35 inches or more of silty clay. Grayish-brown and yellowish-red soil on Piedmont uplands over sericitic schist rocks.	0–6 6–45	Very fine sandy loam Silty clay
OrB2	Orange silt loam, 2 to 6 percent slopes, eroded.	15+	4+	6 inches of silt loam over 15 inches of firm and plastic silty clay. Shallow to moderately deep soil on Piedmont uplands formed on basic intrusions within the sericitic schist.	0–6 6–21	Silt loam Silty clay
Rw	Riverwash	[2] 1+		1 to 6 feet of variably textured soil material and stream debris.		
Sa	State fine sandy loam	6+		10 inches of fine sandy loam over 27 inches to 36 inches of weak fine sandy loam.	0–10 10–37 37–60	Fine sandy loam Fine sandy loam Loamy fine sand
St	Stony land	40+	1+	Miscellaneous land type		
TmB2	Tatum very fine sandy loam, 2 to 6 percent slopes, eroded.[1]	40+	8+	8 inches of very fine sandy loam over 40 inches of red silty clay loam. Well-drained, friable, yellowish-brown and red soil on Piedmont uplands over sericitic schist rocks.	0–8 8–52	Very fine sandy loam Silty clay loam
TrC2	Tirzah silt loam, 6 to 10 percent slopes, eroded.	40+	25+	7 inches of silt loam over 45 inches of silty clay. Deep, well-drained, friable, dark-red and dusky-red soil on Piedmont uplands formed on basic intrusions within sericitic schist rocks.	0–7 7–50	Silt loam Silty clay

See footnotes at end of table.

estimated physical properties—Continued

available or does not apply]

Classification—Con.		Percentage passing sieve—			Permeability	Soil structure	Available water	Reaction (pH)	Dispersion	Shrink-swell potential
Unified	AASHO	Number 200 (0.074 mm.)	Number 10 (2.0 mm.)	Number 4 (4.76 mm.)						
					Inches per hour		*Inches per foot of depth*			
SM	A-2	25–35	95–100	100	2. 5–5. 0	Crumb	1. 0	5. 6–6. 0	High	Low.
ML–CL	A-4	50–60	95–100	100	2. 5–5. 0	Granular	1. 0	5. 1–5. 5	High	Low.
SM	A-4	35–50	85–100	100	2. 5–5. 0	Granular	1. 5	5. 6–6. 0	High	Low.
MH	A-7	75–85	95–100	100	2. 0–4. 0	Subangular blocky	2. 5	5. 6–6. 0	Moderate	Moderate.
MH	A-7	75–85	95–100	100	2. 5–5. 0	Subangular blocky	2. 0	5. 6–6. 0	Moderate	Moderate.
ML	A-4	50–65	80–90	80–100	5. 0–10. 0	Granular	1. 5	5. 6–6. 0	High	Low.
ML–CL	A-7	75–85	85–100	90–100	5. 0–10. 0	Angular blocky	2. 5	5. 6–6. 0	Low	Moderate.
ML–CL	A-6	65–75	85–100	95–100	5. 0–10. 0	Granular	2. 0	5. 6–6. 0	Moderate	Moderate.
MH	A-7	75–85	90–100	95–100	. 2–0. 8	Angular blocky	2. 5	5. 6–6. 0	Low	Moderate.
SM–SC, ML.	A-4	45–55	85–100	85–100	2. 5–5. 0	Granular	2. 0	5. 6–6. 0	High	Low.
MH	A-7	75–85		100	. 2–0. 8	Subangular blocky	2. 5	5. 6–6. 0	Moderate	Moderate.
ML	A-4	75–85	90–100	100	. 05–0. 20	Granular	1. 5	5. 1–5. 5	High	Low.
CL	A-6	75–85	90–100	95–100	. 05–0. 20	Angular blocky	1. 5	5. 6–6. 0	Low	Moderate.
SM–ML	A-4	45–55	100		4. 0–5. 0	Granular	2. 0	6. 1–6. 5	High	Low.
ML	A-6	50–65	100		4. 0–5. 0	Weak blocky	2. 5	6. 1–6. 5	Moderate	Low.
SM	A-2	20–35	100		4. 0–5. 0	Structureless	1. 0	6. 1–6. 5	High	Low.
SM, ML	A-4	40–55	90–100	95–100	2. 5–5. 0	Granular	2. 0	5. 6–6. 0	High	Low.
CL	A-7	75–85	95–100	95–100	2. 5–5. 0	Subangular blocky	2. 5	5. 6–6. 0	Moderate	Moderate.
ML	A-6	55–75	80–100	80–100	2. 5–5. 0	Granular	2. 0	5. 1–5. 5	High	Low.
MH	A-7	85–95	100		. 2–0. 8	Subangular blocky	2. 5	4. 5–5. 0	Moderate	Moderate.

TABLE 9.—*Brief description of soils and their*

[Dashes indicate information not

Map symbol	Soil	Depth to seasonal high water table	Depth to bedrock	Soil description	Depth from surface (typical profile)	Classification: Dominant USDA texture
		Feet	*Feet*		*Inches*	
WcB	Wickham sandy loam, 2 to 6 percent slopes.	15+	----	6 inches of sandy loam over 32 inches of sandy clay and sandy clay loam. Brown and reddish-brown soil on Piedmont stream terraces.	0–6	Sandy loam
					6–26	Sandy clay
					26–48	Sandy clay loam
WkD	Wilkes sandy loam, 6 to 15 percent slopes.[1]	25+	6+	6 inches of sandy loam over 8 inches of plastic clay. Shallow soil on Piedmont uplands that has thin and discontinuous subsoil forming over mixed basic and acidic rocks.	0–6	Sandy loam
					6–13	Clay
					13+	Clay loam
WoB	Worsham sandy loam, 0 to 6 percent slopes.	----	10+	10 inches of sandy loam over 38 inches of sandy clay loam to clay. Poorly drained soil on Piedmont uplands formed on depressions and adjacent drainageways.	0–10	Sandy loam
					10–42	Sandy clay loam to clay.
					42–48	Clay

[1] Mechanical analysis data on these soils are based on the Bureau of Public Roads tests. Data on all other soils are estimated.

estimated physical properties—Continued

available or does not apply]

Classification—Con.		Percentage passing sieve—			Permeability	Soil structure	Available water	Reaction (pH)	Dispersion	Shrink-swell potential
Unified	AASHO	Number 200 (0.074 mm.)	Number 10 (2.0 mm.)	Number 4 (4.76 mm)						
					Inches per hour		*Inches per foot of depth*			
SM	A–2, A–4.	25–40	90–100	95–100	2. 5–5. 0	Granular	1. 2	5. 6–6. 0	High	Low.
ML–CL	A–7	50–70	90–100	95–100	2. 0–4. 0	Subangular blocky	1. 8	6. 1–6. 5	Moderate	Moderate.
ML–CL	A–7	55–70	100		2. 5–5. 0	Subangular blocky; structureless in lower part.	1. 0	6. 1–6. 5	Moderate	Moderate.
SM–ML	A–4	35–55	90–100	95–100	5. 0–10. 0	Crumb	1. 5	5. 6–6. 0	High	Low.
CL	A–7	60–85	100		. 05–0. 2	Angular blocky	2. 0	5. 6–6. 0	Low	Moderate.
CL	A–6	55–70	100		. 20–0. 8	Structureless	1. 0	5. 6–6. 0	Moderate	Moderate.
SM	A–4	40–50	100		5. 0–10. 0	Crumb		5. 1–5. 5	High	Low.
ML–CL	A–7	65–80	100		. 2–0. 8	Subangular blocky		5. 1–5. 5	Low	Moderate.
ML–CL	A–7				. 2–0. 8	Massive				Moderate.

[2] Subject to flood water.

[3] Occasionally covered with runoff water from adjacent higher areas for short periods.

Engineering Interpretations of Soils

In table 10 are listed ratings for suitability of the soils in the county for engineering work and for agricultural structures. Also listed are ratings for the suitability of the soil material as a source of building material and properties of soils that affect agricultural structures. The suitability of the soils and the factors affecting structures are evaluated on the basis of information in the soil descriptions and that obtained in actual field tests and performances.

The ratings listed for adaptability to winter grading

TABLE 10.—*Engineering*

[Dashed lines indicate information

Soil series and map symbols	Adaptability to winter grading	Suitability for—		Suitability as source of—	
		Road subgrade	Road fill	Topsoil	Sand and gravel
Altavista (AfA, AfB2)	Poor	Poor	Fair	Fair	Unsuitable
Appling (ApB, ApB2, ApC, ApC2, ApD2, ApE2)	Fair	Fair	Good	Good	Fair; poorly graded sands.
Buncombe (Bc)	Good	Fair	Good	Good	Fair; poorly graded sands.
Cecil (CcB3, CcC3, CcD3, CcE3, CdB, CdB2, CdC, CdC2, CdD, CdD2, CdE, CdE2, CdF).	Fair	Fair	Good	Good	Unsuitable
Chewacla (Ch)	Poor	Poor	Poor	Poor	Unsuitable
Congaree (Co)	Poor	Poor	Poor	Poor	Unsuitable
Congaree (Cr)	Poor	Poor	Poor	Poor	Unsuitable
Davidson (DaC2, DaE2)	Fair to poor	Fair	Fair	Poor	Unsuitable
Gullied land, firm materials (Ga)					
Gullied land, friable materials, 2 to 10 percent slopes (GfC)					
Gullied land, friable materials, 10 to 35 percent slopes (GfF)					
Helena (HaC2)	Poor	Poor	Fair	Good	Unsuitable
Iredell (IcC3, IrB, IrC2)	Poor	Poor	Poor	Poor	Unsuitable
Lloyd (LcB3, LcC3, LcD3, LcE3, LdB2, LdC2, LdD2, LdE, LdF)	Fair	Fair	Good	Poor	Unsuitable

See footnotes at end of table.

also apply to the adaptability to grading in wet weather.

Drainage conditions that might favor or impair construction of drainage structures are listed for a few soils. Because of poor drainage, soil material may have to be removed or treated so that a stable road base can be provided.

The construction or maintenance of irrigation structures may be impaired by obstacles to excavating or to using canals, by water-holding capacity, by the capacity of the surface to take in water, by leveling shallow soils, or by other hazards.

interpretations of soils

not available or does not apply]

Soil features affecting agricultural structures					
Farm ponds		Drainage systems	Irrigation structures	Terraces and diversions	Waterways
Reservoir area	Embankment				
Slow to rapid seepage.	Low to moderate strength and stability; moderately slow permeability.[1]	----------	Moderately slow infiltration; moderate water-holding capacity.	Erodible----	Erodible; perennials needed.
Moderate seepage-	Moderate to high strength and stability; moderate to moderately slow permeability.	----------	Moderate infiltration; moderate water-holding capacity.	Erodible----	Erodible; perennials needed.
Rapid seepage----	Moderate strength and stability; rapid permeability.[1]	Excessively drained soil.	Rapid infiltration; low water-holding capacity.	----------	
Moderate seepage-	Moderate to high strength and stability; moderate to moderately rapid permeability.	----------	Moderate infiltration; moderate water-holding capacity.	Erodible----	Erodible; perennials needed.
Moderate seepage-	Low strength and stability; moderate permeability.[1]	Seasonally high water table.[2]	Slow infiltration; moderate to high water-holding capacity.	----------	
Moderate to rapid seepage.	Low strength and stability; moderately rapid permeability.[1]	([2])----------	Moderate infiltration; moderate water-holding capacity.	----------	
Moderate to rapid seepage.	Low strength and stability; moderately rapid permeability.[1]	([2])----------	Moderately slow infiltration; moderate to high water-holding capacity.		
Moderate seepage-	Moderate strength and stability; moderate permeability.	----------	Low infiltration; moderately high water-holding capacity.	Erodible----	Erodible; perennials needed.
----------	----------	----------	----------	----------	
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----------	----------	----------	----------	----------	
Moderate seepage--	Moderate strength and stability; moderate to moderately slow permeability.	----------	Moderate infiltration; moderately low water-holding capacity.	Erodible----	Erodible; perennials needed.
Slow to moderate seepage.	Moderate strength and stability; slow permeability.	----------	Moderate infiltration; moderately high water-holding capacity.	Erodible; terracing difficult.	Erodible; shaping difficult; perennials needed.
Moderate seepage-	Moderate strength and stability; moderate permeability.	----------	Low infiltration; moderately high water-holding capacity.	Erodible----	Erodible; perennials needed.

TABLE 10.—*Engineering*

Soil series and map symbols	Adaptability to winter grading	Suitability for—		Suitability as source of—	
		Road subgrade	Road fill	Topsoil	Sand and gravel
Local alluvial land (Ln)	Poor	Poor	Fair	Good	Fair; poorly graded sands.
Lockhart (LoB3, LoC3, LoD3, LoE3, LrB2, LrC2, LrD2, LrE2, LrF).	Fair	Fair	Good	Good	Fair; poorly graded sands.
Louisburg (LuE2)	Poor	Poor	Poor	Fair	Fair; poorly graded sands.
Madison and Cecil (MaB3, MaC3, MaD3, MaE3, MdB, MdB2, MdC, MdC2, MdD, MdD2, MdE, MdE2, MdF2).	Fair	Good	Good	Good	Fair; poorly graded sands.
Manteo (MeC, MeC2, MeD, MeE, MeE2)	Fair to good	Poor	Poor	Poor	Unsuitable
Mecklenburg (MkB3, MkC3, MkD3, MkE3, MnB2, MnD2, MnE).	Poor	Fair	Fair	Poor	Unsuitable
Mixed alluvial land (Mv)	Poor	Poor	Poor	Poor	Unsuitable
Mixed wet alluvial land (Mw)	Poor	Poor	Poor	Poor	Unsuitable
Nason (NaB, NaC2, NaD2, NaE, NsC3, NsE3)	Fair	Fair	Good	Fair	Unsuitable
Orange (OrB2)	Poor	Poor	Poor	Poor	Unsuitable
Riverwash (Rw)					
State (Sa)	Poor	Poor	Poor	Poor	Unsuitable
Stony land (St)	Poor	Poor	Poor	Poor	Unsuitable
Tatum (TaB3, TaC3, TaD3, TaF3, TmB, TmB2, TmC, TmC2, TmD, TmD2, TmE, TmE2, TmF).	Fair	Fair	Good	Fair	Unsuitable
Tirzah (TrB2, TrC2, TrD2, TrE2)	Fair	Fair	Good	Poor	Unsuitable

See footnotes at end of table.

interpretations of soils—Continued

Soil features affecting agricultural structures					
Farm ponds		Drainage systems	Irrigation structures	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate seepage	Low to moderate strength and stability; moderate to rapid permeability.		Moderately high infiltration; moderately high water-holding capacity.		
Moderate seepage	Moderate to high strength and stability; moderate to moderately rapid permeability.		High infiltration; low water-holding capacity.	Erodible; lower B horizon unstable.	Erodible; low B horizon unstable; perennials needed.
Moderate to high seepage.	Low to moderate strength and stability; moderate to moderately rapid permeability.		High infiltration; low water-holding capacity.		
Moderate seepage	Moderate to high strength and stability; moderate to rapid permeability.		Moderate infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.
Moderate to high seepage.	Low to moderate strength and stability; moderately slow to rapid permeability.		Moderately low infiltration; low water-holding capacity.	Erodible; terracing hazardous.	Erodible; shaping hazardous; perennials needed.
Moderate seepage	Moderate strength and stability; moderately slow to slow permeability.		Low infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.
Moderate to rapid seepage.	Low to moderate strength and moderate to rapid permeability.	Interceptor drains may be needed [1 2].	Moderate infiltration; moderately high water-holding capacity.		
Moderate to rapid seepage.	Low to moderate strength and stability; moderate to rapid permeability.	Seasonally high water table[1 2].	Moderate infiltration; moderate water-holding capacity.		
Moderate seepage	Moderate strength and stability; moderate to moderately slow permeability.		Moderately low infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.
Moderate seepage	Low to moderate strength and stability; slow to moderately slow permeability.		Low infiltration; low water-holding capacity.	Erodible; terracing difficult.	Erodible; shaping difficult; perennials needed.
Moderate to rapid seepage.	Low strength and stability; moderate to rapid permeability.		Moderate to rapid infiltration; moderate water-holding capacity.		
Moderate seepage					
Moderate seepage	Moderate strength and stability; moderate permeability.		Moderate infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.
Moderate seepage	Moderate strength and stability; moderate permeability.		Low infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.

TABLE 10.—*Engineering*

Soil series and map symbols	Adaptability to winter grading	Suitability for—		Suitability as source of—	
		Road subgrade	Road fill	Topsoil	Sand and gravel
Wickham (WcB, WcC2, WcE3)	Fair	Fair	Good	Good	Unsuitable
Wilkes (WkB, WkD, WkD2, WkE2, WkF)	Poor	Poor	Poor	Fair	Unsuitable
Worsham (WoB, WoC2)	Poor	Poor	Poor	Poor	Unsuitable

[1] Stratification varies.

[2] Along flood plain of the larger streams soil receives

Soil Test Data

Samples of the principal soil types of six soil series were tested in accordance with standard procedures to help evaluate the soils for engineering purposes. The test data are given in table 11. Although each soil series was sampled in several localities, and the test data show some variations in physical test characteristics, they probably do not show the maximum variations of the B and C horizons. All samples were obtained at depths of less than 5 feet. The test data, therefore, may not be adequate for estimating the characteristics of soil materials of rolling or hilly areas where deep cuts are needed.

The engineering soil classifications in table 11 are based on data obtained by mechanical analyses and by tests made to determine liquid limits and plastic limits. Mechanical analyses were made by combined sieve and hydrometer methods. In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material in the soil sample, including material coarser than 2 millimeters in diameter. The Soil Conservation Service uses the pipette method and excludes material coarser than 2 millimeters in diameter from the calculations. Percentages of clay obtained by the hydrometer method are not used in naming soil textural classes.

The liquid-limit and plastic-limit tests measure the

TABLE 11.—*Engineering test data* [1] *for*

Soil name and location	Parent material	Bureau of Public Roads report number	Depth	Horizon	Moisture-density [2]	
					Maximum dry density	Optimum moisture content
			Inches		*Lb. per cu. ft.*	*Percent*
Appling sandy loam:						
4½ miles NW. of Gaffney (modal)	Gneiss	S33786	0–6	A_p		
		S33787	15–48	B_2	93	28
		S33788	48+	C	99	24
5 miles NW. of Gaffney	Gneiss and granite	S33789	0–5	A_p	118	11
		S33790	5–25	B_1	105	21
		S33791	38+	C	96	25
1½ miles N. of Gaffney	Granite	S33792	0–6	A_p	127	10
		S33793	16–40	B_2	92	26
		S33794	40+	C	111	16
Congaree silt loam:						
5 miles SE. of Blacksburg (modal)	Alluvium	S33795	0–8	A_p	113	15
		S33796	8–32	B	115	15

See footnotes at end of table.

interpretations of soils—Continued

Soil features affecting agricultural structures					
Farm ponds		Drainage systems	Irrigation structures	Terraces and diversions	Waterways
Reservoir area	Embankment				
Moderate seepage	Moderate strength and stability; moderate permeability.	----------	Moderate infiltration; moderate water-holding capacity.	Erodible	Erodible; perennials needed.
Moderate to high seepage.	Low to moderate strength and stability; slow to rapid permeability.	----------	Moderate infiltration; moderately low water-holding capacity.	Erodible; terracing hazardous.	Erodible; shaping hazardous; perennials needed.
Slow seepage	Low strength and stability; moderately slow permeability.	Surface and interceptor drainage needed.	Moderate infiltration; moderate water-holding capacity.	----------	

runoff from adjacent hills as well as floodwater from streams. Soil requires closed or open drains, or both, where outlets exist.

effect of water on the consistency of the soil material. As the moisture content of a clayey soil increases from a very dry state, the material changes from a solid to a semisolid or plastic state. As the moisture content is further increased, the material changes from the plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from a solid to a plastic state. The liquid limit is the moisture content at which the material passes from a plastic to a liquid state. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is in a plastic condition.

Table 11 also contains compaction (moisture-density) data for the tested soils. If a soil material is compacted at successively higher moisture contents, assuming that the compactive effort remains constant, the density of the compacted material will increase until the optimum moisture content is reached. After that, the density decreases with increase in moisture content. The highest dry density obtained in the compaction test is termed maximum dry density. Moisture-density data are important in earthwork, for, as a rule, optimum stability is obtained if the soil is compacted to about the maximum dry density, when it is at approximately the optimum moisture content.

soil samples taken from 17 soil profiles

Mechanical analysis [3]														Liquid limit	Plasticity index	Classification	
Percentage passing sieve—										Percentage smaller than—						AASHO [4]	Unified [5]
2-in.	1½-in.	1-in.	¾-in.	⅜-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
			100	98	95	92	82	69	30	24	16	11	9	[6] NP	[6] NP	A-2-4(0)	SM.
						100	94	89	73	71	68	62	57	64	26	A-7-5(18)	MH.
						100	96	92	73	67	55	38	28	49	17	A-7-5(12)	ML.
			100	99	97	94	84	72	29	22	12	8	6	NP	NP	A-2-4(0)	SM.
						100	95	87	65	61	54	47	43	43	19	A-7-6(10)	CL.
						100	92	86	68	63	49	32	25	50	14	A-7-5(10)	ML.
						100	68	52	30	26	19	12	9	18	3	A-2-4(0)	SM.
						100	88	83	75	73	66	60	58	61	26	A-7-5(18)	MH.
						100	78	68	52	48	37	29	25	38	16	A-6(6)	CL.
						100	99	97	89	81	57	25	19	29	8	A-4(8)	ML-CL.
						100	99	98	91	85	56	35	27	31	12	A-6(9)	CL.

TABLE 11.—*Engineering test data* [1] *for soil*

Soil name and location	Parent material	Bureau of Public Roads report number	Depth	Horizon	Moisture-density [2]	
					Maximum dry density	Optimum moisture content
Congaree fine sandy loam:						
2 miles N. of Gaffney	Alluvium	S33797	0–10	A_2	114	14
		S33798	10–25	B	116	14
Madison sandy loam:						
8 miles NW. of Gaffney (modal)	Mica schist	S33799	0–6	A_p		
		S33800	20–45	B_2	91	30
Madison gravelly sandy loam:						
7 miles NW. of Gaffney	Quartz mica schist	S33801	0–5	A_p		
		S33802	5–22	B_1	92	28
		S33803	37+	C	105	20
7½ miles NW. of Gaffney	Schist	S33804	0–4	A_p		
		S33805	4–38	B	100	24
Nason silt loam:						
4½ miles SE. of Blacksburg (modal)	Schist	S33806	1–6	A_2		
		S33807	10–32	B_2	101	22
		S33808	45+	C	106	18
Nason gravelly very fine sandy loam:						
7 miles SE. of Blacksburg	Schist	S33809	0–6	A_p		
		S33810	18–35	B_2	96	25
		S33811	35+	C		
Nason very fine sandy loam:						
2 miles NW. of Blacksburg	Schist	S33812	0–6	A_p		
		S33813	15–40	B_2	96	26
		S33814	40+	C	103	21
Tatum silt loam:						
2 miles NE. of Blacksburg (modal)	Schist	S33815	0–8	A_p		
		S33816	26–52	B_{22}	96	25
		S33817	52+	C	104	19
Tatum gravelly silt loam:						
7 miles SE. of Gaffney	Schist	S33818	0–6	A_p		
		S33819	19–52	B_2	96	25
		S33820	52+	C	98	23
Tatum very fine sandy loam:						
3½ miles W. of Blacksburg	Schist	S33821	0–6	A_p		
		S33822	6–36	B_1	104	20
		S33823	58+	C	95	26
Wilkes sandy loam:						
11 miles SE. of Gaffney (modal)	Acidic and basic rocks	S33824	0–3	A_p		
		S33825	3–14	B	101	23
		S33826	14+	C	111	17
11¼ miles SE. of Gaffney	Acidic and basic rocks	S33827	0–7	A_p		
		S33828	7–13	B	104	20
		S33829	13+	C	109	17
3½ miles E. of Gaffney	Acidic and basic rocks	S33830	0–7	A_p		
		S33831	7+	C	115	14

[1] Tests performed by the Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO).

[2] Based on the moisture-density relations of soil, using 5.5-lb. rammer and 12-in. drop. AASHO Designation: T 99–57, Method C.

[3] Mechanical analyses according to the AASHO Designation: T–88. Results by this procedure frequently differ somewhat from results that would have been obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in

samples taken from 17 soil profiles—Continued

Mechanical analysis [3]														Liquid limit	Plasticity index	Classification	
Percentage passing sieve—										Percentage smaller than—						AASHO [4]	Unified [5]
2-in.	1½-in.	1-in.	¾-in.	⅜-in.	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 60 (0.25 mm.)	No.200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
						100	99	97	52	42	27	20	15	25	5	A-4(3)	ML-CL.
							100	98	58	48	33	24	20	24	5	A-4(5)	ML-CL.
	100	99	98	95	91	86	71	63	37	33	23	26	11	19	4	A-4(0)	SM-SC.
				100	99	98	94	91	81	78	73	66	63	62	24	A-7-5(18)	MH.
100	99	97	94	82	72	64	58	51	24	20	15	11	8	NP	NP	A-2-4(0)	SM.
						100	96	93	78	74	69	59	51	66	25	A-7-5(18)	MH.
						100	84	74	42	37	32	19	14	46	10	A-5(2)	SM.
	100	99	97	90	80	70	62	57	31	24	15	9	6	NP	NP	A-2-4(0)	SM.
			100	99	96	92	88	86	72	70	65	60	55	50	22	A-7-6(14)	ML-CL.
		100	99	97	96	96	95	94	90	78	40	20	14	25	5	A-4(8)	ML-CL.
								100	99	94	67	46	39	54	24	A-7-5(16)	MH-CH.
								100	98	90	54	25	17	38	10	A-4(8)	ML.
	100	99	98	96	94	92	76	65	41	34	19	12	8	NP	NP	A-4(1)	SM.
						100	92	88	82	78	70	54	47	63	30	A-7-5(20)	MH-CH.
						100	86	81	70	66	50	28	21	39	13	A-6(8)	ML-CL.
		100	99	96	93	88	78	71	50	45	35	24	16	26	5	A-4(3)	SM-SC.
						100	92	88	78	75	66	55	47	61	24	A-7-5(18)	MH.
						100	91	84	66	61	48	33	28	44	14	A-7-5(8)	ML.
		100	99	96	94	92	89	86	56	44	21	13	9	NP	NP	A-4(4)	ML.
						100	99	98	85	79	64	53	45	59	24	A-7-5(17)	MH.
						100	99	98	74	66	46	27	17	43	13	A-7-5(10)	ML.
100	99	98	96	91	89	87	81	76	54	47	27	14	18	22	3	A-4(4)	ML.
						100	99	97	88	84	69	50	42	59	25	A-7-5(18)	MH.
								100	97	93	69	43	33	52	18	A-7-5(14)	MH.
			100	99	98	95	84	76	48	41	27	15	11	NP	NP	A-4(0)	SM.
				100	99	98	94	91	80	76	63	49	38	47	23	A-7-6(15)	CL.
						100	98	96	84	79	63	38	26	52	16	A-7-5(13)	MH.
	100	99	97	95	92	84	78	54	45	26	13	9	NP	NP	A-4(4)	ML.	
						100	98	96	83	76	61	51	46	44	20	A-7-6(13)	CL.
						100	97	92	61	53	38	28	25	34	13	A-6(6)	CL.
			100	98	95	91	84	76	39	17	10	7	6	NP	NP	A-4(1)	SM.
						100	97	91	69	63	55	46	40	45	22	A-7-6(12)	CL.
						100	96	90	58	51	41	31	27	40	18	A-6(8)	CL.
			100	99	98	94	89	86	58	49	26	14	10	NP	NP	A-4(5)	ML.
						100	90	80	45	37	25	17	14	NP	NP	A-4(2)	SM.

diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes of soils.

[4] Based on Standard Specifications for Highway Materials and Methods of Sampling and Testing (Pt. 1, ed. 7): The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes, AASHO Designation: M 145–49.

[5] Based on the Unified Soil Classification System, Tech. Memo. No. 3–357, v. 1, Waterways Expt. Sta., Corps of Engineers, March 1953.

[6] Nonplastic.

Figure 16.—Tall fescue and ladino clover 60 days after dam is completed.

Suitability of soils for engineering work

Roads.—Many of the soils have a loam or sandy loam surface layer on a subsoil that has slow permeability and moderate to high plasticity. The surface layer of these soils is easily eroded and the plastic subsoil is poor for road subgrade. Rock may be encountered near the surface in road construction in the Iredell, Louisburg, Manteo, Nason, Orange, and Wilkes soils.

Ponds.—Practically all soils in the county can be used in pond construction, but adequate seepage cutoff trenches and core walls should be provided. At the place where the end of a dam ties in with very steep slopes, care should be taken to eliminate seepage.

The soils in most embankments in Cherokee County are suited to tall fescue, bermudagrass, or bahiagrass. After embankments are built, however, fertilizer should be applied so that a protective cover is obtained quickly (fig. 16).

Figure 17.—Interceptor drainage ditch. The ditch at the base of the slope was dug to protect Mixed alluvial land from runoff from hillsides.

Terracing.—Areas that have suitable slopes and available outlets are suited to terracing or contour cultivation. Terracing, however, may be difficult on Iredell and Orange soils because of the tough, plastic subsoil. On the Manteo and Wilkes soils, the thin, discontinuous subsoil may make terracing hazardous.

Drainage.—Most soils on the flood plains of rivers and creeks have a high water table. These soils can be drained by open or closed drains (fig. 17).

Grading.—If peaches or other crops of high value are to be grown, grading of some of the better, deeper soils may be practical. Land is graded to obtain a better arrangement and better drainage of rows. Soils suitable for grading are in the Cecil, Madison, Tatum, Davidson, Lloyd, and Tirzah series.

Formation and Classification of Soils

This section discusses (1) the factors that have affected the formation of soils in Cherokee County and (2) the classification of soils in the county by higher categories.

Genesis and *morphology* are two terms commonly used by soil scientists when they describe the formation of soils. A description of soil genesis tells how a soil was formed, particularly of the processes that account for the development of the solum (surface soil and subsoil) from unconsolidated parent material. Through the action of these processes, minerals disintegrate, new minerals and new chemical compounds form, organic matter accumulates and decomposes, and materials in suspension and solution move downward in the soil and are partly removed by drainage water.

Morphology is the physical constitution of the soil, including the texture, structure, consistence, color, and chemical properties of the various horizons that make up the soil profile. The morphology of a soil at a certain time is the result of soil genesis up to that time.

Formation of Soils

The kind of soil that forms depends on the interaction of (1) parent materials, (2) climate, (3) plant and animal life, (4) time, and (5) relief, or lay of the land. These combined genetic factors affect soil formation and give the soil distinct horizons.

The nature of the soil at any point on the earth depends upon the combination of the five genetic factors at that point. All five of these factors come into play in the genesis of every soil. The relative importance of each factor differs from place to place; sometimes one is more important and sometimes another. In extreme cases, one factor may dominate in the formation of the soil and fix most of its properties, as is common when the parent material consists of pure quartz sand. Little can happen to quartz sand, and the soils derived from it usually have faint horizons. Even in quartz sand, however, distinct profiles can be formed under certain types of vegetation where the land is low and flat and the water table is high. Thus, the present character of every soil depends on the past combination of the five genetic factors. A discussion of each of these factors follows.

Parent material

Parent material is the unconsolidated material from which a soil forms. It mainly accounts for the chemical and mineralogical composition of soils.

In Cherokee County the parent materials of most of the soils are residual; that is, these materials have formed in place through the weathering of the underlying hard rock. The kinds of rocks from which the parent materials of different soils were derived are listed in this section in table 12. The rocks underlying Cherokee County soils are primarily (1) gneiss and schist; (2) foliated granite; and (3) metamorphosed sedementary rocks; and (4) dike rocks. The gneiss and schist are mostly mica gneiss and mica schist that have been partly granitized, but there is some hornblende gneiss in places. The foliated granite consists of granite gneiss, migmatite, and sheared granite. The metamorphosed rocks are phyllite, quartzite, and marble of the Murphy, Brevard, and Kings Mountain belts.

The soils along the larger streams in the county formed from alluvium, which is materials that have been transported and deposited by streams. Much of this alluvium originated from the rocks of the nearby uplands, but some of it came from the granites and metamorphosed rocks in the mountains to the north. The soils on the first bottoms are weakly developed and are still receiving deposits, but those on the old, high terraces and benches have been in place long enough for horizons to have formed. Along drainageways throughout the uplands, many of the narrow strips of local alluvium have been modified very little by soil-forming processes.

Climate

Climate affects the physical, chemical, and biological relationships in soil primarily through the influence of precipitation and of temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residues through the soil profile. In a broad area, the amount of water that actually percolates through the soil depends mainly on rainfall, relative humidity, and the length of the frost-free period. At a given point, the amount of downward percolation is also affected by physiographic position, slope, soil cover, and soil permeability. Temperature influences the kinds and growth of plants and organisms and the speed of physical and chemical reactions in soils. Local variations in climate cause certain characteristics of the soils to differ from those of soils formed under the prevailing climate.

Under the present climate in Cherokee County, the soils are moist and subject to leaching during much of the time in winter and they are moderately dry to dry during much of the time in summer and fall. The soils seldom freeze to a depth of more than 5 inches, and they seldom remain frozen for more than 4 days at a time. Freezing and thawing, therefore, have little effect on weathering and the soil-forming processes in this county. The average temperature is about 78°F. during summer, and the yearly average is about 61°.

Plant and animal life

Micro-organisms are indispensable in soil formation. Bacteria, fungi, and other micro-organisms aid in weathering rock and in decomposing organic matter. The larger plants alter the microclimate of the soil, furnish organic matter, and transfer elements from the subsoil to the surface soil.

The kinds and numbers of plants and animals that live on and in the soil are largely determined by the climate and, to varying degrees, by parent material, relief, and age of the soil.

Not much is known of the fungi and micro-organisms in the soils of this county, except that most of them are in the uppermost few inches of soil. The activity of earthworms and other small invertebrates is greatest in the A_1 horizon, and in this horizon they carry on slow but continual soil mixing. The mixing of soil materials by rodents does not appear to have been of much consequence in Cherokee County.

Except on the bottom lands, the native vegetation was chiefly oak, hickory, shortleaf pine, and Virginia pine. On the bottom lands the trees were hardwoods, mostly yellow-poplar, sweetgum, cottonwood, ash, oak, and sycamore. In the poorly drained areas of the bottom lands, the trees were mostly willow, birch, blackgum, beech, and water-tolerant oak.

Time

The length of time required for soil to form depends mainly on the factors of soil formation other than time. Less time is generally required for a soil to develop in humid, warm regions with luxuriant vegetation than is required in dry or cold regions with scanty vegetation. Also, if factors other than parent material are the same, less time is required for a soil to form from coarse-textured parent material than from fine-textured parent material.

The age of soils has much to do with development. Generally, the older soils show a greater degree of horizon differentiation. For example, on the smoother parts of the uplands, the soils have developed to maturity and their horizons are commonly distinct. On the stronger slopes, however, geologic erosion has removed soil material so rapidly that the depth to bedrock in some places has been kept shallow, and there has been less development. On the first bottoms and in the areas of local alluvium, the soil materials have been in place for too short a time to allow for mature development.

Relief

The relief, or lay of the land, is determined mainly by the underlying bedrock formations, the geologic history of the general region, and the effects of dissection by rivers and streams. It influences soil formation through its effects on drainage, erosion, temperature, and plant cover. This influence is modified by the other four factors of soil formation.

The slopes in Cherokee County range from 0 to more than 35 percent. In upland areas, the Cecil, Appling, Davidson, and similar soils have thick, well-defined horizons where they are on slopes of less than 15 percent. In areas where slopes are 15 to 35 percent, soil material is removed by geological erosion almost as fast as it forms. As a result, the Wilkes, Manteo, and many other soils on the steeper slopes have thin, weakly defined horizons with some characteristics of Lithosols Except along channels of upland brooks and streams. most of the alluvial soils are level or nearly level.

Classification of Soils

From the broadest category to the narrowest, soils are ordinarily classified by order, great soil group, series, type, and phase (*5*). Series, type, and phase are defined in the section "Soil Survey Methods and Definitions." The category of the soil order consists of three classes—zonal, intrazonal, and azonal soils. Each of these orders consists of a number of great soil groups. In a great soil group are soils that have several fundamental characteristics in common.

The zonal soil order consists of soils with evident genetically related horizons that show the dominant influence of climate and living organisms in their formation. In Cherokee County, the great soil groups in this order are Red-Yellow Podzolic soils, Reddish-Brown Lateritic soils, and Gray-Brown Podzolic soils.

The intrazonal order consists of soils with evident

TABLE 12.—*Characteristics and*

Great soil group and series	Profile description [1]
ZONAL	
Red-Yellow Podzolic soils:	
Representative—	
Altavista	Deep, friable soils on stream terraces. Grayish-brown to olive-brown sandy loam surface soil over subsoil of yellowish-brown clay loam mottled with red to dark brown.
Appling	Deep, friable soils on uplands. Grayish-brown to dark yellowish-brown sandy loam surface soil over mottled yellowish-red and yellowish-brown clay loam subsoil.
Cecil	Deep, friable soil on uplands. Grayish-brown sandy loam surface soil and red clay loam subsoil.
Lockhart	Deep, friable soils on uplands. Grayish-brown coarse sandy loam surface soil and yellowish-red to red clay loam subsoil; feldspar and fragments from parent rock common throughout; lower B horizon fairly unstable.
Madison	Deep, friable soils on uplands. Grayish-brown to yellowish-brown sandy loam surface soil and yellowish-red to red clay loam subsoil.
Nason	Deep, friable soils on uplands. Dark grayish-brown to yellowish-brown very fine sandy loam surface soil over yellowish-red and yellowish-brown silty clay loam subsoil.
Tatum	Deep, friable soil on uplands. Yellowish-brown to strong-brown very fine sandy loam surface soil over yellowish-red to red silty clay loam subsoil.
Wickham	Deep to moderately deep, friable soils on stream terraces. Dark grayish-brown to brown sandy loam surface soil over yellowish-brown to reddish-brown sandy clay to sandy clay loam subsoil.
Grading toward Reddish-Brown Lateritic soils—	
Lloyd	Deep, friable soils on uplands. Reddish-brown loam surface soil and dark-red to red clay and clay loam subsoil.
Tirzah	Deep, friable soils on uplands. Dark reddish-brown silt loam surface soil over dark-red silty clay subsoil.
Reddish-Brown Lateritic soils:	
Representative—	
Davidson	Deep, friable soils on uplands. Dark reddish-brown loam surface soil over dark-red clay and clay loam subsoil.
Grading toward Planosols—	
Mecklenburg	Moderately deep to deep soil on uplands. Dark-brown to dark reddish-brown loam surface soil and firm yellowish-red to reddish-brown subsoil.
Gray-Brown Podzolic soils:	
Grading toward Alluvial soils—	
State	Deep, very friable soils on second bottoms or low stream terraces. Grayish-brown fine sandy loam surface soil and dark-brown to yellowish-brown, weakly developed, fine sandy loam subsoil.
INTRAZONAL	
Low-Humic Gley soils:	
Representative—	
Worsham	Deep to moderately deep soils in depressions in uplands. Black to brownish-gray sandy loam surface soil and gray, firm clay to sandy clay loam subsoil.

See footnotes at end of table.

genetically related horizons that show the dominant influence of a local factor of topography or parent materials over the effects of climate and living organisms. In Cherokee County, the great soil groups in this order are Low-Humic Gley soils and Planosols.

The azonal order consists of soils that lack distinct, genetically related horizons generally because of youth, resistant parent material, or steep slopes. In Cherokee County, the great soil groups in this order are Lithosols and Alluvial soils.

Red-Yellow Podzolic soils make up about 75 percent of the county, and Lithosols about 10 percent. The other great soil groups in the county occupy much smaller parts.

Table 12 lists the soil series by great soil groups and gives some of the distinguishing characteristics of each series. A detailed description of a profile for each soil series is in the section "Soils of Cherokee County." Each great soil group in Cherokee County is discussed on the following pages.

genetic relationships of soil series

ZONAL—Continued

Position	Soil drainage	Slope range	Parent material	Degree of profile development [2]
		Percent		
Moderately low stream terraces	Good to moderately good.	0–6	Old alluvial material on stream terraces	Moderate.
Broad low ridges and slopes adjacent to drainageways.	Good	2–25	Granite, gneiss, or schists	Strong.
High ridges and regularly dissected side slopes.	Good	2–35	Granite, gneiss, or schists	Strong.
High ridges and irregularly dissected side slopes.	Good	2–35	Porphyritic granite	Strong.
High ridges and regularly dissected side slopes.	Good	2–35	Quartz mica gneiss and quartz mica schist.	Strong.
Low ridges and slopes adjacent to drainageways.	Good	2–25	Sericitic schists	Strong.
High and medium ridges and fairly broken slopes.	Good	2–35	Sericitic schists	Strong.
Slopes along drainageways	Good	2–25	Stream terraces	Moderate.
High ridges and broken adjacent slopes	Good	2–35	Mixed acidic and basic rocks (gneiss, diabase, and diorite).	Strong.
High ridges and fairly uniform slopes	Good	2–25	Basic intrusions in sericitic schists	Strong.
High ridges	Good	2–25	Dark-colored basic rock	Strong.
Low ridges and middle to lower side slopes.	Good to moderately good.	2–25	Dominantly basic rocks (diorite, gabbro, hornblende schists).	Strong.
Low terraces	Good to moderately good.	0–2	Stream deposits from soils on Piedmont and in mountains.	Moderate to weak.

INTRAZONAL—Continued

Depressions at drainage heads or along drainageways.	Poor	0–10	Granite, gneiss, and schist	Moderate.

TABLE 12.—*Characteristics and genetic*

INTRAZONAL—Continued

Great soil group and series	Profile description [1]
Planosols:	
Representative—	
Iredell	Moderately deep soils on uplands. Heavy, plastic clay subsoil. Dark grayish-brown fine sandy loam surface soil and yellowish-brown to olive-brown clay subsoil.
Orange	Shallow to moderately deep, firm soils on uplands. Light yellowish-brown silt loam surface soil and yellowish-brown and olive silty clay subsoil.
Grading toward Red-Yellow Podzolic soils—	
Helena	Deep to moderately deep soils on uplands. Dark grayish-brown sandy loam surface soil over mottled, yellowish-brown, brownish-yellow, and gray, firm clay to clay loam subsoil.
AZONAL	
Lithosols:	
Representative—	
Louisburg	Shallow to moderately deep soils on uplands. Grayish-brown sandy loam surface soil and thin, discontinuous, yellowish-red sandy clay subsoil.
Manteo	Shallow channery soils on uplands. Light olive-gray channery silt loam surface soil over thin, discontinuous, firm, yellowish-brown silty clay subsoil.
Grading toward Red-Yellow Podzolic soils—	
Wilkes	Shallow soils on uplands. Grayish-brown to light olive-brown sandy loam surface soil over thin, discontinuous, yellowish-brown, plastic clay subsoil.
Alluvial soils:	
Representative—	
Buncombe	Deep sandy soils on bottom lands. Pale yellowish-brown loamy fine sand over light yellowish-brown and grayish-brown loamy fine sand.
Congaree	Deep, very friable, fine-textured soils on bottom lands. Surface layer is dark-brown to dark reddish-brown fine sandy loam and silt loam over dark-brown or yellowish-brown silty clay loam or silt loam.
Grading toward Low-Humic Gley soils—	
Chewacla	Deep, friable soils on bottom lands. Surface soil is dark grayish-brown to dark-brown silt loam that is over dark grayish-brown and gray silty clay loam.

[1] Descriptions are of soil profiles that have not been materially affected by accelerated erosion.

Zonal soils

The zonal soils in this county are in the Red-Yellow Podzolic, the Reddish-Brown Lateritic, and the Gray-Brown Podzolic great soil groups. Some of the soils are representative of their great soil group, but others grade toward the soils in other great soil groups.

RED-YELLOW PODZOLIC SOILS

This great soil group consists of well-developed, acid soils that formed under forest vegetation in a climate that was warm-temperate humid to tropical humid. These soils have thin organic (A_0) and organic-mineral (A_1) horizons; a light-colored, bleached (A_2) horizon; and a red, yellowish-red, or yellow (B_2) horizon that is more clayey than the horizons above it. The parent materials are more or less siliceous. Coarse, reticulate streaks or mottles of red, yellow, brown, and light gray are in the deep horizons (*6*).

The soils of this group generally have a low cation-exchange capacity and low base saturation (commonly 20 to 35 percent). Kaolinite is the dominant clay mineral, and the subsoil has moderate to strong, subangular blocky structure and colors of medium to high chroma.

All of the Red-Yellow Podzolic soils in Cherokee County have a dark-colored, thin A_1 horizon, in which the content of organic matter ranges from about 2.5 to 7 percent. These soils have a well-defined A_2 horizon containing no more than 2 percent organic matter. The A_2 horizon has a weak, granular or crumb structure. These soils show that the cation-exchange capacity of the B_2 They have a moderate to strong, medium, subangular blocky structure in the B_2 horizon, which contains more clay than the A_2 horizon.

The B_2 horizon is medium acid to strongly acid. The C horizon is mottled or reticulated red, yellow, and gray. The structure is less strong in the C horizon than in the B_2 horizon, and the proportion of clay is generally less. Red-Yellow Podzolic soils are also found in the upper Piedmont section of Virginia and other nearby States. Unpublished data obtained by analysis of the Virginia soils show that the cation exchange capacity of the B_2 horizon ranges from about 2.2 to 14.6 milliequivalents per 100 grams of soil.

The Red-Yellow Podzolic soils are in the Altavista, Appling, Cecil, Lockhart, Madison, Nason, Tatum, Wickham, Lloyd, and Tirzah series. The soils in all these series

relationships of soil series—Continued

INTRAZONAL—Continued

Position	Soil drainage	Slope range	Parent material	Degree of profile development [2]
		Percent		
Low ridges and moderate slopes	Moderately good to somewhat poor.	2–10	Basic igneous rock	Strong.
Low ridges	Somewhat poor	2–6	Basic intrusions within sericitic schist	Strong.
Low ridges	Moderately good to somewhat poor.	2–10	Mixed acidic and basic rocks (granite, gneiss, diabase, and diorite).	Strong.

AZONAL—Continued

High ridgetops and strong slopes	Somewhat excessive	10–35	Coarse-grained granite or gneiss	Weak to none.
Broken ridges and irregularly dissected side slopes.	Good to excessive	2–35	Sericitic schist with basic intrusions	Weak to none.
Broken ridges and irregular side slopes	Moderately good to excessive.	2–35	Mixed basic and acidic rocks	Weak.
High first bottoms	Excessive	0–3	Recent alluvium	None.
First bottoms	Good	0–2	Young alluvium	None.
First bottoms	Somewhat poor to moderately good.	0–2	Recent alluvium	None.

[2] As estimated from the number of important genetic horizons and the degree of contrast between them.

except the Lloyd and Tirzah are representative Red-Yellow Podzolic soils. The Lloyd and Tirzah soils grade toward Reddish-Brown Lateritic soils.

Soils of the Cecil and Tatum series are good examples of Red-Yellow Podzolic soils. They have a thick, red or dark-red (2.5YR, chroma of 6 or higher) subsoil that has moderate to strong, medium, subangular blocky structure. The Tatum soils are finer textured than are the Cecil soils, especially in the A and C horizons.

The Appling and Nason soils differ from the Cecil and Tatum soils chiefly in having a less reddish B_2 horizon and in being shallower to mottled or reticulated material. The color of the B_2 horizon is within the range of the 7.5YR and 5YR hues, whereas that of the Cecil and Tatum series is a 2.5YR hue. The Appling soils differ from the Nason soils in texture, especially in the A and C horizons.

The Madison soils are similar to the Cecil soils, but their profile is generally slightly thinner and their surface soil more commonly contains some gravel. Fine mica flakes are more common in the Madison soils than in the Cecil soils, especially in the C layers where the underlying residuum is dominantly quartz mica schist. Percolation is slightly more rapid than in the Cecil soils.

The Lockhart soils differ from the Cecil soils in having an abundance of feldspar crystals throughout the entire profile. Generally their B_2 horizon is more friable than that of the Cecil soils, and the depth to bedrock is less.

The well-drained Wickham soils have about the same drainage and degree of profile development as the Cecil soils. The A_2 horizon of Wickham soils is browner than that of the Cecil soils, and the B_2 horizon is less reddish and less clayey. The depth to mottled or reticulated material is less in Wickham soils than in Cecil soils. Wickham soils formed in old alluvium that originated mostly from granite, gneiss, schist, and other igneous and metamorphic rocks.

The Altavista soils are well drained to moderately well drained. They have formed in old alluvium and generally are adjacent to the nearly level Wickham soils, but they are on lower sites and lack the red and reddish-brown colors of those soils.

The Altavista soils have a gleyed layer but no claypan. This is characteristic of Low-Humic Gley soils rather than of representative Red-Yellow Podzolic soils. In

some places the C horizon is brittle and has characteristics of a fragipan.

The Lloyd and Tirzah soils are Red-Yellow Podzolic soils that have some characteristics of Reddish-Brown Lateritic soils. The A_2 horizon of the Lloyd soils is sandier and lighter colored than that of the Davidson soils. The B_2 horizon is generally not so dark red as that of the Davidson soils. The A_2 horizon of the Lloyd soils is darker colored than that of the Mecklenburg soils, and the B_2 horizon is generally darker colored than that of the Cecil soils. The Lloyd soils are well drained. They are deeper to mottled or reticulated material than are the Mecklenburg soils.

Locally, the Tirzah soils are associated with the soils that have developed from sericitic schist. The Tirzah series is intermediate between the Tatum series of the Red-Yellow Podzolic great soil group and the Davidson series of the Reddish-Brown Lateritic great soil group.

REDDISH-BROWN LATERITIC SOILS

This great soil group consists of well-drained, acid soils that formed under forest vegetation in climates ranging from warm-temperate humid to tropical humid. The soils have a dark reddish-brown, granular surface soil; a red, friable, clayey B_2 horizon; and red or reticulately mottled, lateritic parent materials. They lack the distinct A_2 horizon characteristic of the Red-Yellow Podzolic soils, and generally have a B_2 horizon that is darker red than the B_2 horizon of those soils. The B_2 horizon commonly has moderate to strong, subangular blocky structure and clay skins on ped faces and in root channels.

The Davidson and Mecklenburg soils are the only Reddish-Brown Lateritic soils in Cherokee County. The Davidson soils generally have a subsoil that is a little less friable than is typical of representative Reddish-Brown Lateritic soils. The clays in the subsoil are composed mostly of kaolinite and vermiculite.

The Davidson soils have a dark-colored A horizon, a thick, dark-red, rather friable B horizon, and a reticulated C horizon. These soils developed in residuum derived from gabbro, diorite, and hornblende schist. They are about the same in reaction as the Red-Yellow Podzolic soils in the county.

The Mecklenburg soils grade toward the Planosol group because of the rather sharp contrast between the A horizon and the firm and plastic B horizon. In consistence of the B_2 horizon, these soils are intermediate between the Davidson and Iredell soils. The A_2 horizon of Mecklenburg soils is darker colored than that of the Cecil soils. The B_2 horizon is as red as the B_2 horizon of the Cecil soils, but is thinner, more firm, and more plastic. The C horizon is more mottled and more plastic.

GRAY-BROWN PODZOLIC SOILS

Gray-Brown Podzolic soils have rather thin A_0 and A_1 horizons over a grayish-brown A_2 horizon, which is underlain by a darker colored, more clayey B_2 horizon. These soils formed under deciduous forest in a temperate, moist climate.

A State soil is the only member of the Gray-Brown Podzolic soils in Cherokee County. The State soil grades toward Alluvial soils. It occurs on low elevations above bottom lands, has a very weakly developed B horizon, and is subject to infrequent flooding.

The surface soil is dark grayish brown to grayish brown, and the B horizon is dominantly dark-brown, fairly clayey fine sandy loam.

Intrazonal soils

The intrazonal soils mapped in Cherokee County are in the Low-Humic Gley and Planosol great soil groups.

LOW-HUMIC GLEY SOILS

These soils are imperfectly drained and poorly drained. They have a very thin surface horizon that is moderately high in organic matter. The surface horizon is over mottled gray and brown, gleylike, mineral horizons that do not differ much in texture.

The Worsham soils are the only Low-Humic Gley soils in the county. Except for their darker colored A horizon, Worsham soils resemble the typical Low-Humic Gley soils. These soils make up less than 1 percent of the county.

PLANOSOLS

Planosols are intrazonal soils. They have one or more horizons that are abruptly separated and sharply contrasting with adjacent horizons. In Cherokee County the separation and contrast is the result of a high content of clay. Elsewhere, it may be a result of cementation or compaction. The Planosols in Cherokee County are in the Helena, Iredell, and Orange series. The Iredell and Orange soils are representative Planosols, whereas the Helena grade toward the Red-Yellow Podzolic group.

The A_2 horizon of the Iredell soils is brown. The B_2 horizon is more plastic than that of the Helena soils, which are intergrades between Red-Yellow Podzolic soils and Planosols. Unpublished data indicate that the cation exchange capacity and the base saturation of Iredell soils are probably higher than those in Red-Yellow Podzolic soils that have about the same texture as the Iredell. These data indicate that the cation exchange capacity for the Iredell is about 25 milliequivalents per 100 grams of soil and that base saturation is more than 40 to 57 percent. The data also indicate that the dominant clay mineral is kaolinite, but there is some montmorillonite. Iredell soils have developed from basic rocks. They are moderately well drained to somewhat poorly drained and lack the red hue of the better drained Red-Yellow Podzolic soils.

The Orange soils have a light-colored, fairly coarse textured A_2 horizon and a mottled, firm or plastic clay B_2 horizon. The contrast between the B_2 and the A_2 horizons is sharp.

Locally, the Orange soils are underlain by basic intrusions in the sericitic schist and are somewhat poorly drained. The mottling is at a depth of 13 to 18 inches. The Helena soils are moderately well drained to somewhat poorly drained and are mottled at a slightly greater depth than are the Orange soils. All of these soils lack the reddish hues that are common in the better drained, more friable soils of the Red-Yellow Podzolic great soil group.

Helena soils, like Orange soils, have a light-colored, fairly coarse textured A_2 horizon and a mottled, firm or plastic B_2 horizon. The B_1 horizon which separates the A_2 and B_2 horizons of Helena soils relates them to the Red-Yellow Podzolic group.

Azonal soils

The Azonal soils mapped in Cherokee County are Lithosols and Alluvial soils.

LITHOSOLS

Lithosols are soils that have an incomplete solum or no clearly expressed soil morphology. The soil material of these soils consists of a freshly and imperfectly weathered mass of hard rock and of fragments of hard rock. Lithosols are mostly on steep slopes. Geologic erosion has nearly kept pace with the soil-forming processes, and consequently the soil profiles are less well developed than those of Red-Yellow Podzolic soils. The B horizon is thinner and more discontinuous, and the profile is shallower. There is less contrast in color between the A_1 and A_2 horizons than in Red-Yellow Podzolic soils.

The Louisburg, Manteo, and Wilkes soils are Lithosols mapped in Cherokee County. The Louisburg and Manteo soils are representative Lithosols, but the Wilkes soils grade toward Red-Yellow Podzolic soils.

The Manteo soils have a channery silt loam A horizon and a silty clay loam or clay B horizon. The Wilkes soils have a sandy loam A horizon and a sandy clay loam or clay B horizon.

The Louisburg soils have coarser texture than have Manteo or Wilkes soils. The surface soil is sandy loam, and the B horizon is weak sandy clay loam.

ALLUVIAL SOILS

This group consists of soils that formed in transported and fairly recently deposited material (alluvium). This material has been modified only a little by soil-forming processes. These soils are sometimes flooded. In areas where deposits are recent, there is slight or no horizon differentiation, but in areas where deposits are older, the horizons are differentiated.

The Alluvial soils mapped in Cherokee County are in the Buncombe, Congaree, and Chewacla series. The Buncombe and Congaree soils are representative Alluvial soils, but the Chewacla soils grade toward Low-Humic Gley soils.

The Buncombe soils are on high bottom-land sites. These coarse-textured loamy sands are droughty and light colored.

In some areas of the Congaree fine sandy loam and silt loam, there is some horizon differentiation in texture and structure. They are well drained, friable, and dominantly dark reddish brown and dark brown.

The Chewacla soils, which are the Alluvial soils that grade toward Low-Humic Gley soils, have a darker colored surface soil than do the Congaree or Buncombe soils. Generally the soil material in Chewacla soils below a depth of about 15 inches is finer textured and less friable than that in Congaree soils, and the Chewacla soils are poorly drained below this depth.

Agriculture

This section discusses the history of agriculture in Cherokee County and tells about programs of conservation and land use. It also discusses the crops and livestock of the county.

History

Early settlers arrived in what is now Cherokee County in the 1760's and cultivated a few large areas in the southeastern part. These settlers produced corn, wheat, oats, pork, and some beef to feed themselves. A few other crops were grown in small acreages. A little cotton was planted in 1805, and by 1850 cotton was fairly important. Some stimulus was given to cotton growing by the railroad completed between Spartanburg and Columbia in 1858, but cotton continued to be used mostly at home.

After a main line of the Southern Railway was completed through Cherokee County, cotton production increased in the central and northern parts of the county. Farms and farmers in these areas increased rapidly between 1880 and 1890. The first cotton mill was built at Cherokee Falls soon after 1880. Later, larger mills were built in Gaffney and Blacksburg.

As the demand for cotton increased, the farmers increased their cultivated acreage and improved their methods of farming. They began to use crop rotations, to build terraces, to return crop residue to the soil, and to apply commercial fertilizer. In 1900 about one-half of the cultivated land was used for cotton, one-third for corn, and the rest for wheat, oats, cowpeas, sorghum, sweetpotatoes, and other crops.

Most farms became typical cotton farms as the demand for cotton increased. Crops in rotation decreased in acreage because only enough corn, oats, and other feed crops were grown to feed the animals that plowed the soils. Ready-made flour was often bought, and a scant unimproved pasture of native grasses barely produced enough forage for the farmers' cows and sheep. The whole farm operation was planned to produce cotton, the only cash crop.

Soon there was overproduction of cotton, and prices dropped. In the early 1930's programs of relief were started by the Federal government and planted cotton was plowed up. Since then some form of government control has affected production and markets. There has also been general refinancing of mortgaged farms to save them from foreclosure.

According to the agricultural census, the acreage in cotton decreased from 51,434 in 1929 to about 14,000 acres in 1954. In the 5-year period from 1949 to 1954, the number of cattle and calves sold increased from 2,342 to 4,398. As more farm machinery came into use, the number of horses and mules on farms decreased sharply.

The land in farms has increased from 192,235 acres in 1929 to 203,885 acres in 1954. Between 1929 and 1954, however, the number of farms decreased from 3,258 to 2,349. The average-size farm was 59.0 acres in 1929 and 86.5 acres in 1954.

Conservation and Land Use Programs

After the control of crop acreage began, Federal assistance was provided farmers through the Soil Erosion Service and the Civilian Conservation Corps. Erosion

control was practiced together with the reduction of crop acreage. Locally organized and managed soil conservation districts were authorized in the State by the South Carolina Legislature in 1937. The Soil Erosion Service became the Soil Conservation Service, a permanent agency in the United States Department of Agriculture.

The Soil Conservation Service was to work through organized soil conservation districts instead of directly with farmers as the Soil Erosion Service had formerly. Cherokee, Union, and Spartanburg Counties were organized into the Broad River Soil Conservation District in 1938. This district was subdivided 10 years later when Cherokee County was put into the newly created Cherokee Soil Conservation District.

As the acreage in cotton and other row crops decreased, the farmers in the county needed income from other sources. They improved rotations and began to conserve soil and water. To check erosion, small grains followed by annual lespedeza were put in the cropping systems with cotton and corn. More food was produced for livestock, and the fertility of the soils was increased. More cropland was planted to pasture and managed for continuous grazing. The number of livestock in the county and the sale of livestock increased.

In a preliminary appraisal, it has been estimated that 90,000 acres of cropland in the county should be included in conservation plans. About one-third of this cropland has already been included (1960). Of the 30,400 acres expected to be in pasture in 1975, about 27,000 acres have been seeded. The Cherokee Soil Conservation District has an agreement with the owners of 794 farms for complete land use plans to be carried out.

On most farms that cooperate with the Cherokee Soil Conservation District, the better lands are used for row crops that are grown in cropping systems to improve the soil and protect it from erosion. The more sloping lands are generally used for perennials that are grazed or are harvested for hay. Damaged lands are planted to trees.

The amount of farmland in the county has decreased since 1929 and continues to decrease. Residential and industrial areas are expanding, and more land is used for highways. The number of farms is decreasing because smaller farms are combined into larger units that can make more efficient use of labor and expensive machinery. However, a small number of farms have increased production by intensive farming rather than by increasing acreage.

The data from the agricultural census listed in table 13 show some of the trends in agriculture from 1929 to 1959.

Crops

Table 13 lists the acreage and yields of principal crops grown in Cherokee County in stated years. Although the acreage in cotton and the amount of lint produced has decreased greatly since the early 1930's, cotton still occupies a larger acreage in the county than any other crop. The acreage in corn has also decreased, but corn is the second most extensive row crop in the county.

Peaches.—Although small amounts of peaches were produced earlier, this crop did not become important until after 1920. Today about 3,500 acres are in peaches, and Cherokee County ranks third in the State in the production of this crop. The largest grower has about 1,500 acres of trees, and there are about 36 other growers in the county. The normal yield per tree in a good year is 5 or 6 bushels, and generally there are about 80 trees on an acre. Practically all of the peach orchards are in the northwestern part of the county on Cecil, Madison, and Appling soils.

Orchards used to be laid out in straight rows, and although there was some terracing, erosion was heavy. About 1944, farmers began to lay out rows of peach trees on the contour. About 2,500 acres of peach trees are now in rows on the contour and are irrigated (fig. 18). Grassed waterways are used to a large extent.

Small grain for cover in the peach orchards is generally sown late in fall and turned under or cut in spring when it would compete with the peach trees for moisture. Phosphate and potash are generally applied to the cover crop in fall and winter, and nitrogen is applied just before or during the time the trees are growing. The orchard cover crop may be chopped or cut with a disk harrow so that the plants are killed and the residue is left at or near the surface to control erosion and increase infiltration. Supplemental water may be supplied at the time the trees are growing most vigorously.

The cultivation of peaches requires a considerable investment and careful management, but the income from this crop is important to many farmers. Slightly more than one-half of the crop is packed and shipped to fresh

TABLE 13.—*Acreage harvested and acre yields of principal crops in stated years*

Year	Cotton		Corn		Oats		Wheat		Total cropland	Total pasture
	Acres harvested	Acre yield	Acres harvested	Acre yield	Acres harvested	Acre yield	Acres harvested	Acre yield		
		Lb.		*Bu.*		*Bu.*		*Bu.*	*Acres*	*Acres*
1929	51, 434	264	21, 312	15. 7	[1] 887	26. 2	[1] 1, 782	9. 1	99, 986	46, 813
1939	27, 712	281	26, 063	12. 6	3, 348	19. 7	7, 959	11. 6	91, 171	------
1949	28, 857	225	15, 980	17. 4	4, 082	25. 4	3, 335	14. 3	102, 285	53, 327
1954	13, 654	212	6, 662	7. 3	6, 840	29. 6	5, 099	17. 3	81, 928	70, 930
1959	8, 450	347	8, 100	23. 6	7, 000	36. 3	7, 200	20. 0	------	------

[1] Acres threshed.

Figure 18.—**Peach trees on contour ridges. Irrigation pond in upper left.**

fruit markets. About one-fifth is shipped as orchard run, and the rest of the crop is sold at roadside stands, to processors, or to other local buyers. The number of peach trees planted in recent years has increased greatly.

Livestock

In the period when most of the cropland in the county was in cotton, livestock was used mainly to pull plows and to supply the farm family with meat and dairy products. But livestock increased in importance as cotton declined. The acreage in pasture in the county increased from about 46,500 unmanaged acres in 1930 to about 71,000 managed acres in 1955. Grazing areas became an important part of the land use programs that were planned to conserve soil and water.

Table 14 lists the number of livestock on farms in Cherokee County in stated years as reported in the agricultural census. The amount of whole milk sold increased from 116,791 gallons in 1930 to 570,390 gallons in 1954, an increase of 488.4 percent. Between 1930 and 1954, the number of chicken eggs sold increased from 120,176 dozens to 273,841 dozens, an increase of 127.9 percent.

The pasture in Cherokee County is mostly perennial grasses mixed with perennial and annual legumes. A combination of tall fescue and white clover or ladino clover is used extensively for grazing in cool weather

TABLE 14.—*Number of livestock on farms in stated years*

Livestock	1930	1940	1950	1954	Change, 1930–1954
					Percent
Horses and mules	4, 705	[1] 4, 032	3, 205	1, 638	−65. 2
Cattle and calves	6, 380	[1] 5, 453	7, 994	12, 510	+99. 2
Milk cows	3, 580	3, 367	3, 137	3, 164	−11. 6
Hogs and pigs	3, 202	[2] 4, 249	4, 366	4, 388	+37. 0
Chickens	[1] 62, 839	[2] 68, 607	[2] 68, 649	[2] 85, 459	+36. 0
Turkeys raised	765	3, 615	42, 836	79, 388	+10, 377. 5

[1] Over 3 months old.

[2] Over 4 months old.

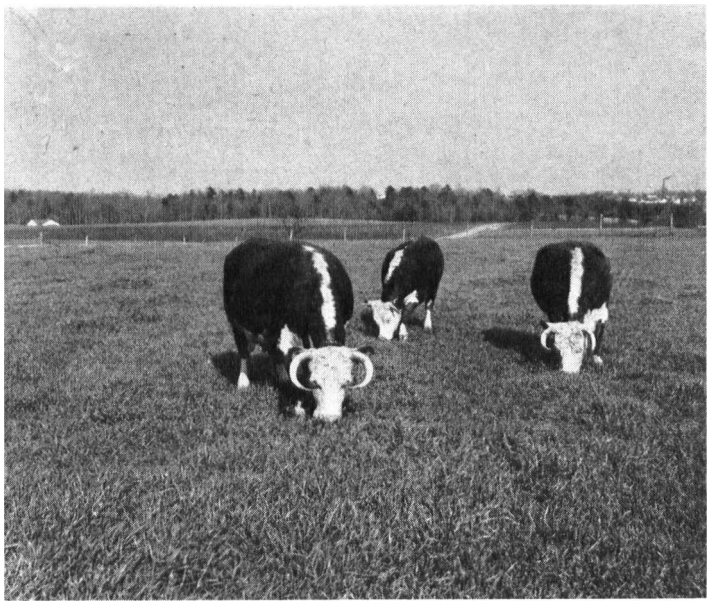

Figure 19.—**Beef cattle grazing on tall fescue and ladino clover on Madison and Cecil sandy loams.**

(fig. 19). Grazing in warm weather is provided by a combination of bermudagrass, dallisgrass, annual lespedeza, and whiteclover (fig. 20).

Some cattlemen, particularly dairy farmers, use more succulent grazing crops than are commonly used. For supplemental winter grazing, they may overseed summer grasses to small grains, ryegrass, and crimson clover (fig. 21); or for a summer supplement, they may seed sudangrass or millet in a rotation with a crop. Sericea lespedeza is often used alone and in a cropping system with a summer grass.

Most farmers now see the need for fertilizing, clipping, and spraying pasture, and for rotational grazing. Few pastures are habitually overgrazed, but at times overgrazing may be evident. This overgrazing is generally brought about by one or more of the following: (1) Lack of sufficient pasture to supply cattle in the peak grazing period, (2) an increase in the number of cattle

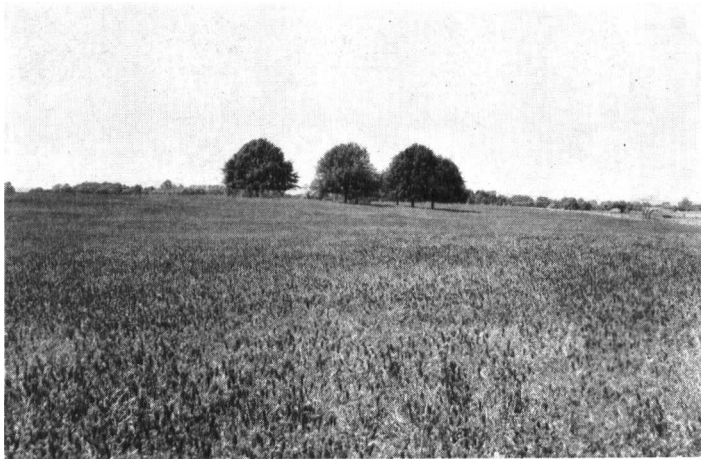

Figure 20.—**Reseeding dallisgrass, whiteclover, and annual lespedeza growing in bermudagrass sod.**

Figure 21.—Small grains, ryegrass, and crimson clover on Cecil sandy loams are used for grazing in winter and spring.

for a fixed acreage, (3) an extended drought, (4) a shortage of reserve feed, (5) an unusually long, severe winter, and (6) fencing inadequate for rotational grazing.

Formerly most pasture was on soils in classes IV, V, VI, and occasionally on soils in class III. As the need for cropland decreased, however, more and better land was diverted from row crops to grazing.

Glossary

Acidity.—Degree of acidity or alkalinity of the soil mass expressed in pH values or in words as follows (7) :

	pH		*pH*
Extremely acid	below 4.5	Mildly alkaline	7.4–7.8
Very strongly acid	4.5–5.0	Moderately alkaline	7.9–8.4
Strongly acid	5.1–5.5	Strongly alkaline	8.5–9.0
Medium acid	5.6–6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1–6.5		
Neutral	6.6–7.3		

Alluvial soils.—Soils developing from transported and fairly recently deposited material (alluvium) that has been modified little or none by soil-forming processes.

Alluvium.—Sand, mud, or other sediments deposited on land by streams.

Bedrock.—Solid rock underlying soils.

Bottom land.—In general, the land areas formed by alluvium and subject to overflow.

Channery soil.—Soil that contains an appreciable amount of thin, flat rock fragments as much as 6 inches in length. In Cherokee County the fragments in a channery soil are sericitic schist.

Clay.—The small mineral soil grains less than 0.002 millimeter (0.00079 inch) in diameter. The term "clay" also applies to soil that contains 40 percent or more of clay, less than 45 percent of sand, and less than 40 percent of silt.

Colluvium.—Deposits of rock fragments and soil material that have accumulated at the base of slopes as a result of soil creep, slides, and local wash.

Consistence.—The degree of cohesion and adhesion of soil particles and their resistance to separation or deformation of the soil aggregate. Terms that describe the consistence of soil are *sticky* or *plastic* when wet; *loose*, *friable*, or *firm* when moist; and *loose*, *soft*, or *hard* when dry.

Contour cultivation.—Cultivation on the contour of the land or at nearly right angles to the slope.

Cover crop.—A fine-rooted, close-growing crop that resists erosion and adds organic matter to the soil.

Deep-rooted plant.—A plant, usually a perennial, with roots that readily penetrate below a depth of 15 to 20 inches.

Erosion.—The wearing away or removal of soil by water or wind.

Fertility.—The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

Field rotation.—A system of cropping in which an entire field is planted to one crop and is changed to other crops periodically.

First bottom.—The normal flood plain of a stream; land along a stream subject to overflow.

Gravelly soil.—Soil that contains an appreciable amount of rounded and angular rock fragments, most of which are less than 3 inches in diameter.

Horizon, soil.—A layer of soil approximately parallel to the soil surface and having characteristics produced by the soil-forming processes.

Horizon A.—The upper horizon of the soil mass from which material has been removed by percolating water; the eluviated part of the solum; the surface soil. This horizon is generally divided into two or more subhorizons, of which A_0 is not a part of the mineral soil but the accumulation of organic debris on the surface. Other subhorizons are designated as A_1, A_2, and so on.

Horizon B.—The horizon to which materials have been added by percolating water; the illuviated part of the solum; the subsoil. This horizon also may be divided into several subhorizons according to the color, structure, consistence, and character of the material deposited. These subhorizons are designated as B_1, B_2, B_3, and so on.

Horizon C.—The horizon of partly weathered material underlying the B horizon; the substratum; usually the parent material.

Horizon D.—Any substratum underneath the soil, such as hard rock or layers of clay and sand, that is not parent material but which may have significance to the overlying soil.

Local alluvium.—Soil material recently transported from adjacent slopes by water and deposited. Physical rather than chemical weathering has been dominant.

Meadow outlet.—Low-lying areas in fields where water running off of terraces can be concentrated. These areas are prepared, if they are not naturally suitable, and are seeded to perennial plants.

Mottled (mottling).—Irregularly marked with spots of different colors.

Parent material.—The weathered rock or partly weathered soil material from which the soil was formed. Horizon C of a soil profile.

Permeable.—Easily penetrated by water and air.

Phase, soil.—A subdivision of a soil type. A soil phase is the same kind of soil as the soil type, but varies from other phases of the soil type in slope, erosion, and other surface features that are important to management of the soil. It is therefore mapped as a unit.

Profile, soil.—Vertical section of the soil from the surface into the parent material.

Reaction.—See Acidity.

Row crop.—Crops planted and cultivated in rows.

Sand.—Small rock or mineral fragments having diameters ranging from 0.05 millimeter (0.002 inch) to 2.0 millimeters (0.079 inch). The term sand also applies to soils containing 85 percent or more of sand.

Series, soil.—A group of soils having the same profile characteristics (color, structure, consistence, and sequence of horizons), the same general conditions of relief and drainage, and usually a common or similar origin and mode of formation. A group of soil types closely similar in all respects except the texture of the surface soil.

Silt.—Individual mineral particles of soil that range from 0.05 millimeter (0.002 inch) to 0.002 millimeter (0.000079 inch) in diameter. As a textural class, a silt contains 80 percent or more of silt and less than 12 percent of clay.

Soil.—The natural medium for the growth of land plants; a dynamic body on the surface of the earth, in which plants grow, that is composed of mineral and organic materials and living forms.

Solum.—The part of a soil profile, above the parent material, in which the soil has been or is being formed. The solum in mature soils includes the A and B horizons. In most places the characteristics of the material in these horizons are unlike those of the underlying parent material.

Strip rotation.—A rotation in which crops that resist erosion are grown in alternate strips with cultivated crops. Locally, terrace intervals form the strip pattern.

Stony land.—Soil that contains many rocks over 10 inches in diameter and some outcrops of bedrock.

Structure, soil.—The way in which individual particles of soil are arranged in aggregates or clumps. Soil structure is classified according to grade, class, and type.

Grade.—Distinctness of aggregation. Terms: *Structureless* (single grain or massive), *weak, moderate,* and *strong.*

Class.—Size of soil aggregates. Terms: *Very fine* or *very thin, fine* or *thin, medium, coarse* or *thick,* and *very coarse* or *very thick.*

Type.—Shape of aggregates. Terms: *Platy, prismatic, columnar, blocky, subangular blocky, granular,* and *crumb.*

Subsoil.—Technically, the B horizon; commonly, that part of the profile below plow depth.

Substratum.—Material underlying the subsoil or the solum.

Surface soil.—Technically, the A horizon; commonly, that part of the upper profile usually stirred by plowing, about 5 to 8 inches thick.

Terrace (geological).—An old alluvial plain, usually level or undulating, bordering a stream; seldom subject to overflow; frequently a low-lying, nearly level or gently sloping terrace is called a second bottom. Locally, old terrace soils, or remnants, occupy gentle to steep slopes next to major drainageways.

Terrace (structural).—An embankment or ridge of earth constructed across a slope to control water runoff and prevent erosion.

Texture.—Relative proportions of the various size groups of soil grains in a mass of soil; the proportion of clay, silt, and sand. A coarse-textured soil is high in sand; a fine-textured soil has a large proportion of clay.

Topsoil.—A presumed fertile soil or soil material, generally rich in organic mater, used to topdress roadbanks, parks, gardens, and lawns.

Type, soil.—A subdivision of a soil series based on the texture of the surface soil.

Upland (geologic).—Land consisting of material unworked by water in recent geologic time and ordinarily lying at higher elevations than the alluvial plain or stream terrace.

Weathered bedrock.—Bedrock that has disintegrated and decomposed.

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GUIDE TO MAPPING UNITS

[See table 2, p. 11, for approximate acreage and proportionate extent of soils, and table 3, p. 54, for estimated acre yields for cultivated soils. See p. 75 for information on engineering properties of soils]

Symbol	Soil	Page	Capability unit	Page	Woodland group	Page
AfA	Altavista fine sandy loam, 0 to 2 percent slopes	13	I–2	44	4	67
AfB2	Altavista fine sandy loam, 2 to 6 percent slopes, eroded	12	IIe–2	45	4	67
ApB	Appling sandy loam, 2 to 6 percent slopes	13	IIe–2	45	5	68
ApB2	Appling sandy loam, 2 to 6 percent slopes, eroded	13	IIe–2	45	5	68
ApC	Appling sandy loam, 6 to 10 percent slopes	14	IIIe–2	47	5	68
ApC2	Appling sandy loam, 6 to 10 percent slopes, eroded	14	IIIe–2	47	5	68
ApD2	Appling sandy loam, 10 to 15 percent slopes, eroded	14	IVe–1	49	6	68
ApE2	Appling sandy loam, 15 to 25 percent slopes, eroded	14	VIe–2	50	6	68
Bc	Buncombe loamy sand	14	IIIs–2	48	1	66
CcB3	Cecil clay loam, 2 to 6 percent slopes, severely eroded	17	IIIe–1	46	7	68
CcC3	Cecil clay loam, 6 to 10 percent slopes, severely eroded	17	IVe–1	49	7	68
CcD3	Cecil clay loam, 10 to 15 percent slopes, severely eroded	17	VIe–2	50	7	68
CcE3	Cecil clay loam, 15 to 25 percent slopes, severely eroded	17	VIIe–1	52	7	68
CdB	Cecil sandy loam, 2 to 6 percent slopes	15	IIe–1	44	5	68
CdB2	Cecil sandy loam, 2 to 6 percent slopes, eroded	15	IIe–1	44	5	68
CdC	Cecil sandy loam, 6 to 10 percent slopes	16	IIIe–1	46	5	68
CdC2	Cecil sandy loam, 6 to 10 percent slopes, eroded	16	IIIe–1	46	5	68
CdD	Cecil sandy loam, 10 to 15 percent slopes	16	IVe–1	49	6	68
CdD2	Cecil sandy loam, 10 to 15 percent slopes, eroded	16	IVe–1	49	6	68
CdE	Cecil sandy loam, 15 to 25 percent slopes	16	VIe–2	50	6	68
CdE2	Cecil sandy loam, 15 to 25 percent slopes, eroded	16	VIe–2	50	6	68
CdF	Cecil sandy loam, 25 to 35 percent slopes	16	VIIe–1	52	6	68
Ch	Chewacla silt loam	17	IIIw–2	48	2	66
Co	Congaree fine sandy loam	18	IIw–2	46	3	67
Cr	Congaree silt loam	18	IIw–2	46	3	67
DaC2	Davidson loam, 2 to 10 percent slopes, eroded	19	IIIe–1	46	8	70
DaE2	Davidson loam, 10 to 25 percent slopes, eroded	19	IVe–1	49	8	70
Ga	Gullied land, firm materials	19	VIIe–3	52	13	72
GfC	Gullied land, friable materials, 2 to 10 percent slopes	20	VIIe–4	53	13	72
GfF	Gullied land, friable materials, 10 to 35 percent slopes	20	VIIe–1	52	13	72
HaC2	Helena sandy loam, 2 to 10 percent slopes, eroded	20	IIIe–3	47	10	70
IcC3	Iredell clay loam, 6 to 10 percent slopes, severely eroded	22	VIe–4	51	11	71
IrB	Iredell fine sandy loam, 2 to 6 percent slopes	21	IIe–4	45	11	71
IrC2	Iredell fine sandy loam, 6 to 10 percent slopes, eroded	21	IVe–2	49	11	71
LcB3	Lloyd clay loam, 2 to 6 percent slopes, severely eroded	23	IIIe–1	46	7	68
LcC3	Lloyd clay loam, 6 to 10 percent slopes, severely eroded	23	IVe–1	49	7	68
LcD3	Lloyd clay loam, 10 to 15 percent slopes, severely eroded	23	IVe–1	49	7	68
LcE3	Lloyd clay loam, 15 to 25 percent slopes, severely eroded	24	VIe–2	50	7	68
LdB2	Lloyd loam, 2 to 6 percent slopes, eroded	22	IIe–1	44	8	70
LdC2	Lloyd loam, 6 to 10 percent slopes, eroded	22	IIIe–1	46	8	70
LdD2	Lloyd loam, 10 to 15 percent slopes, eroded	23	IVe–1	49	8	70
LdE	Lloyd loam, 15 to 25 percent slopes	23	VIe–2	50	8	70
LdF	Lloyd loam, 25 to 35 percent slopes	23	VIIe–1	52	8	70
Ln	Local alluvial land	24	I–1	43	4	67
LoB3	Lockhart clay loam, 2 to 6 percent slopes, severely eroded	25	IIIe–2	47	7	68
LoC3	Lockhart clay loam, 6 to 10 percent slopes, severely eroded	25	IVe–1	49	7	68
LoD3	Lockhart clay loam, 10 to 15 percent slopes, severely eroded	26	VIe–2	50	7	68
LoE3	Lockhart clay loam, 15 to 25 percent slopes, severely eroded	26	VIIe–1	52	7	68
LrB2	Lockhart coarse sandy loam, 2 to 6 percent slopes, eroded	24	IIe–2	45	5	68
LrC2	Lockhart coarse sandy loam, 6 to 10 percent slopes, eroded	25	IIIe–2	47	5	68
LrD2	Lockhart coarse sandy loam, 10 to 15 percent slopes, eroded	25	IVe–1	49	6	68
LrE2	Lockhart coarse sandy loam, 15 to 25 percent slopes, eroded	25	VIe–2	50	6	68
LrF	Lockhart coarse sandy loam, 25 to 35 percent slopes	25	VIIe–1	52	6	68
LuE2	Louisburg sandy loam, 10 to 35 percent slopes, eroded	26	VIIe–2	52	9	70
MaB3	Madison and Cecil clay loams, 2 to 6 percent slopes, severely eroded	28	IIIe–1	46	7	68
MaC3	Madison and Cecil clay loams, 6 to 10 percent slopes, severely eroded	29	IVe–1	49	7	68
MaD3	Madison and Cecil clay loams, 10 to 15 percent slopes, severely eroded	29	VIe–2	50	7	68
MaE3	Madison and Cecil clay loams, 15 to 25 percent slopes, severely eroded	29	VIIe–1	52	7	68
MdB	Madison and Cecil sandy loams, 2 to 6 percent slopes	27	IIe–1	44	5	68
MdB2	Madison and Cecil sandy loams, 2 to 6 percent slopes, eroded	27	IIe–1	44	5	68
MdC	Madison and Cecil sandy loams, 6 to 10 percent slopes	27	IIIe–1	46	5	68
MdC2	Madison and Cecil sandy loams, 6 to 10 percent slopes, eroded	27	IIIe–1	46	5	68
MdD	Madison and Cecil sandy loams, 10 to 15 percent slopes	28	IVe–1	49	6	68
MdD2	Madison and Cecil sandy loams, 10 to 15 percent slopes, eroded	28	IVe–1	49	6	68
MdE	Madison and Cecil sandy loams, 15 to 25 percent slopes	28	VIe–2	50	6	68

GUIDE TO MAPPING UNITS—Continued

Symbol	Soil	Page	Capability unit	Page	Woodland group	Page
MdE2	Madison and Cecil sandy loams, 15 to 25 percent slopes, eroded	28	VIe–2	50	6	68
MdF2	Madison and Cecil sandy loams, 25 to 35 percent slopes, eroded	28	VIIe–1	52	6	68
MeC	Manteo channery silt loam, 2 to 10 percent slopes	30	IVe–4	49	9	70
MeC2	Manteo channery silt loam, 6 to 15 percent slopes, eroded	30	VIe–3	51	9	70
MeD	Manteo channery silt loam, 10 to 15 percent slopes	30	VIe–3	51	9	70
MeE	Manteo channery silt loam, 15 to 35 percent slopes	30	VIIe–2	52	9	70
MeE2	Manteo channery silt loam, 15 to 35 percent slopes, eroded	30	VIIe–2	52	9	70
MkB3	Mecklenburg clay loam, 2 to 6 percent slopes, severely eroded	31	IIIe–3	47	10	70
MkC3	Mecklenburg clay loam, 6 to 10 percent slopes, severely eroded	31	IVe–2	49	10	70
MkD3	Mecklenburg clay loam, 10 to 15 percent slopes, severely eroded	32	VIe–4	51	10	70
MkE3	Mecklenburg clay loam, 15 to 25 percent slopes, severely eroded	32	VIIe–3	52	10	70
MnB2	Mecklenburg loam, 2 to 6 percent slopes, eroded	31	IIe–3	45	10	70
MnD2	Mecklenburg loam, 6 to 15 percent slopes, eroded	31	IVe–2	49	10	70
MnE	Mecklenburg loam, 15 to 25 percent slopes	31	VIe–4	51	10	70
Mv	Mixed alluvial land	32	IIw–2	46	3	67
Mw	Mixed wet alluvial land	32	IVw–3	50	12	71
NaB	Nason very fine sandy loam, 2 to 6 percent slopes	33	IIe–2	45	5	68
NaC2	Nason very fine sandy loam, 6 to 10 percent slopes, eroded	33	IIIe–2	47	5	68
NaD2	Nason very fine sandy loam, 10 to 15 percent slopes, eroded	34	IVe–1	49	6	68
NaE	Nason very fine sandy loam, 15 to 25 percent slopes	34	VIe–2	50	6	68
NsC3	Nason silty clay loam, 2 to 10 percent slopes, severely eroded	34	IVe–1	49	7	68
NsE3	Nason silty clay loam, 10 to 25 percent slopes, severely eroded	34	VIIe–1	52	7	68
OrB2	Orange silt loam, 2 to 6 percent slopes, eroded	35	IVe–2	49	11	71
Rw	Riverwash	35	VIIIs–1	53	13	72
Sa	State fine sandy loam	35	I–2	44	3	67
St	Stony land	35	VIIIs–1	53	13	72
TaB3	Tatum silty clay loam, 2 to 6 percent slopes, severely eroded	37	IIIe–1	46	7	68
TaC3	Tatum silty clay loam, 6 to 10 percent slopes, severely eroded	38	IVe–1	49	7	68
TaD3	Tatum silty clay loam, 10 to 15 percent slopes, severely eroded	38	VIe–2	50	7	68
TaF3	Tatum silty clay loam, 15 to 35 percent slopes, severely eroded	38	VIIe–1	52	7	68
TmB	Tatum very fine sandy loam, 2 to 6 percent slopes	36	IIe–1	44	5	68
TmB2	Tatum very fine sandy loam, 2 to 6 percent slopes, eroded	36	IIe–1	44	5	68
TmC	Tatum very fine sandy loam, 6 to 10 percent slopes	36	IIIe–1	46	5	68
TmC2	Tatum very fine sandy loam, 6 to 10 percent slopes, eroded	36	IIIe–1	46	5	68
TmD	Tatum very fine sandy loam, 10 to 15 percent slopes	37	IVe–1	49	6	68
TmD2	Tatum very fine sandy loam, 10 to 15 percent slopes, eroded	37	IVe–1	49	6	68
TmE	Tatum very fine sandy loam, 15 to 25 percent slopes	37	VIe–2	50	6	68
TmE2	Tatum very fine sandy loam, 15 to 25 percent slopes, eroded	37	VIe–2	50	6	68
TmF	Tatum very fine sandy loam, 25 to 35 percent slopes	37	VIIe–1	52	6	68
TrB2	Tirzah silt loam, 2 to 6 percent slopes, eroded	39	IIe–1	44	8	70
TrC2	Tirzah silt loam, 6 to 10 percent slopes, eroded	38	IIIe–1	46	8	70
TrD2	Tirzah silt loam, 10 to 15 percent slopes, eroded	39	IVe–1	49	8	70
TrE2	Tirzah silt loam, 15 to 25 percent slopes, eroded	39	VIe–2	50	8	70
WcB	Wickham sandy loam, 2 to 6 percent slopes	39	IIe–1	44	4	67
WcC2	Wickham sandy loam, 2 to 10 percent slopes, eroded	40	IIIe–1	46	4	67
WcE3	Wickham sandy loam, 10 to 25 percent slopes, severely eroded	40	VIIe–1	52	4	67
WkB	Wilkes sandy loam, 2 to 6 percent slopes	40	IIIe–5	48	9	70
WkD	Wilkes sandy loam, 6 to 15 percent slopes	40	IVe–4	49	9	70
WkD2	Wilkes sandy loam, 6 to 15 percent slopes, eroded	41	VIe–3	51	9	70
WkE2	Wilkes sandy loam, 15 to 25 percent slopes, eroded	41	VIIe–2	52	9	70
WkF	Wilkes sandy loam, 15 to 35 percent slopes	41	VIIe–2	52	9	70
WoB	Worsham sandy loam, 0 to 6 percent slopes	41	Vw–1	50	12	71
WoC2	Worsham sandy loam, 2 to 10 percent slopes, eroded	42	VIe–2	50	12	71

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