Series 1949, No. 4

Issued June 1958

SOIL SURVEY

Prince Edward County Virginia

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

How to Use THE SOIL SURVEY REPORT

THE SOIL SURVEY of Prince Edward County was made to find out the nature and extent of each kind of soil in the county. This report and the accompanying soil map contain information that will be useful to farmers who want to plan the use and management of the soils on their farms, and to persons who are interested in the selection and development of industrial, business, residential, and recreation sites.

In the back of this book is a set of aerial photographs that together make up a map of Prince Edward County. On these photographs are shown in red the boundaries of each kind of soil in the county. Roads, streams, houses, and other landmarks that show on the photographs make it easy to locate the area in which you are interested. An inch on this aerial map represents about 1,667 feet on the ground, and a square inch represents about 64 acres.

Within each soil boundary on the map is a letter symbol that represents the soil name. For example, Co is the symbol for Congaree fine sandy loam. All areas on the map that are marked with this symbol are the same kind of soil. When you have located on the map, by reference to landmarks, the farm or other tract of land in which you are interested, and have noted the soil symbols, look in the map legend to find the name of the soils that the symbols represent. Then you can refer to the section of the report, Soil Types and Phases and Miscellaneous Land Types, for detailed descriptions of each of the soils, and to the section, Use and Management of Soils, for information about use suitability and management needs.

The section, Soil Associations, and the colored map of soil associations at the back of the report give a general picture of the soils of larger areas than those marked on the detailed soil maps. Other parts of the report provide information on types of agriculture in the county, and on other industries, transportation, markets, and other subjects that have a bearing on land use planning.

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SOIL SURVEY OF PRINCE EDWARD COUNTY, VIRGINIA

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United States Department of Agriculture in cooperation with Virginia Agricultural Experiment Station

AGRICULTURE is the principal occupation in Prince Edward County. About two-thirds of the county is covered by forests; the rest is used for diversified farming. Corn, small grains, hay, and tobacco are the principal crops. Livestock and livestock products are becoming increasingly important. Tree fruits and garden vegetables are grown on most farms for home use. Market vegetables are grown to some extent. Income from the sale of forest products is important on some farms. The soils and climate are favorable for both bright and dark tobacco, and tobacco has been the chief factor in the development of the county since the first white settlers began farming along the Appomattox River.

To provide a basis for the best uses of the land, a cooperative soil survey of the county was made by the Virginia Agricultural Experiment Station and the United States Department of Agriculture. The results of the survey are presented in this report. Fieldwork on the survey was completed in 1949. Except where otherwise specifically stated, this report refers to conditions at the time the survey was in progress.

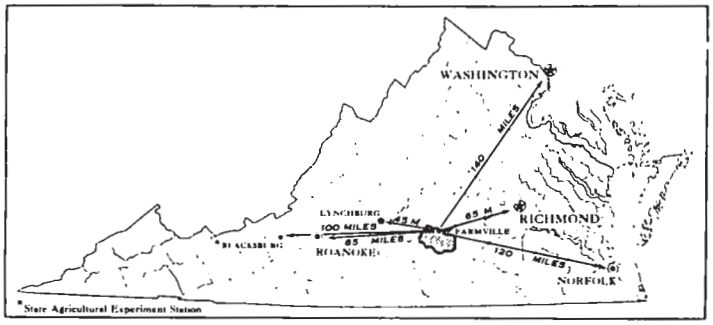

Figure 1.—Location of Prince Edward County in Virginia.

General Character of the Area

Location and Extent

Prince Edward County is in the south-central part of Virginia. Farmville, the county seat, is about 65 miles southwest of Richmond, the State capital, and about 45 miles east of Lynchburg (fig. 1). The county is bounded on the north by the Appomattox River, on the south by Lunenburg and Charlotte Counties, on the west by Appomattox County, and on the east by Nottoway and Amelia Counties. It has an area of about 356 square miles.

Physiography, Relief, and Drainage

Prince Edward County is an irregularly shaped, well-dissected upland plain entirely within the Piedmont province of the eastern United States (*1*).[2] In Virginia this province extends from the western border of the Coastal Plain to the eastern edge of the Blue Ridge province. The wide interstream areas and flat hill summits are broken occasionally by low hills such as Baker Mountain and Leigh Mountain. The average elevation above sea level is between 400 and 500 feet. The county is underlain by metamorphosed pre-Cambrian rocks of sedimentary and igneous origin, Lower Cambrian quartzites, and Triassic sediments (*2*). The Triassic areas are confined to two small plains that occupy depressions in an old eroded land surface where the rocks are of pre-Cambrian age (*5*).

The granite, gneiss, and schist of the county support ridges that gradually slope toward the streams and break into steeper relief adjacent to the stream channels. Of the many different soils derived from these rocks, the most important to the agriculture are members of the Cecil, Appling, Madison, Lloyd, Durham, Vance, Helena, and Fluvanna series.

One of the Triassic plains lies just south of Farmville and the other south and east of Worsham. Both areas are well peneplained by stream action, and as a result few rock outcrops are visible. These two areas together comprise less than 10 square miles. The relief is nearly level to rolling except along streams or adjacent to diabase dikes, where the surface is sharply broken. In some places the small ridges formed on these plains over the hard, slow-weathering diabase rock stand out in marked contrast to the more nearly level surrounding country.

[1] Division of Soil Survey was transferred to Soil Conservation Service on November 15, 1952.
[2] Italic numbers in parentheses refer to Literature Cited, page 56.

The soils derived from Triassic rock materials are of the Wadesboro, Mayodan, Creedmoor, and Steinsburg series.

The highest point in the county is Baker Mountain (altitude 750 feet). The lowest point is only 250 feet above sea level.

Areas immediately adjacent to the Appomattox River and the creeks are strongly dissected. These areas are hilly to very steep, and some short precipitous slopes are characterized by small ledge-rock outcrops. The interstream ridges have nearly level to rolling relief. The bottom lands along streams have level to slightly hummocky surfaces.

Prince Edward County is near the headwaters of the Appomattox River. Tributaries of this stream drain most of the county. The western part is drained chiefly by Buffalo Creek (locally called the Buffalo River), Vaughan Creek, and Harris Creek and their tributaries. The eastern part is well drained by the Bush and Sandy Rivers and by Briery Creek (locally called the Briery River), and Saylers Creek, and their tributaries. A small area in the southeastern part is drained by the Nottoway River and its tributaries. Springs are numerous, and the streams they feed have running water or seepage water in their channels throughout the year.

The dendritic system of rivers and small tributary streams affords good drainage in nearly all parts of the county. Nearly every farm has one or more runoff outlets. The only places inadequately drained are first bottoms along streams, seepy places near the bases of slopes, and nearly level places on interstream divides.

Climate

Prince Edward County has a warm continental climate. It has short mild winters, with occasional cold spells and snowstorms, and long hot summers. Rainfall is ample and well distributed throughout the year.

The average annual temperature is 57.6° F., but summer and winter temperatures vary considerably. The highest temperature that has been recorded is 106°F., and the lowest −16°. The average annual rainfall is 40.88 inches.

Severe windstorms are infrequent, but damaging hailstorms sometimes occur along the Appomattox River valley.[3]

The rainfall is fairly well distributed throughout the year, but it varies considerably from year to year. It has ranged from 27.40 inches in the driest year on record to 61.95 inches in the wettest. On the average, November is the driest month and June the wettest.

Table 1 gives the normal monthly, seasonal, and annual temperatures and precipitation, as recorded by the United States Weather Bureau station at Farmville.

The heaviest rains fall during summer. Rains that occur in June are long steady downpours. Late summer rains are short hard thunderstorms. At that time much of the cultivated land is bare, and runoff usually causes serious soil losses. Long periods of dry weather that sometimes occur late in summer cause early ripening of tobacco and consequent losses in quality and weight. They also result in damage to the corn crop and in the loss of late cuttings of lespedeza and alfalfa. Dry weather may sometimes prevent fall seedings of small grains and the late cultivation of some crops.

[3] Information furnished by the county agricultural agent.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Farmville, Prince Edward County, Va.*

[Elevation, 450 feet]

Month	Temperature [1]			Precipitation [2]			
	Average	Absolute maximum	Absolute minimum	Average	Driest year (1941)	Wettest year (1937)	Average snowfall
	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*	*Inches*
December	39.0	78	−6	3.16	2.22	0.27	2.0
January	38.3	80	−16	2.84	2.91	10.39	2.5
February	38.7	82	−8	2.75	.99	3.27	3.9
Winter	38.7	82	−16	8.75	6.12	13.93	8.4
March	47.7	90	5	4.06	2.32	1.38	1.4
April	55.5	95	17	3.05	3.10	7.75	(3)
May	66.2	98	27	3.87	1.60	4.72	0
Spring	56.5	98	5	10.98	7.02	13.85	1.4
June	74.2	105	35	4.58	5.44	7.62	0
July	78.2	105	45	4.19	5.41	6.05	0
August	76.4	106	41	4.03	.92	8.73	0
Summer	76.3	106	35	12.80	11.77	22.40	0
September	70.2	106	30	2.73	1.09	2.51	0
October	58.2	100	15	3.28	.70	7.17	0
November	48.0	88	11	2.34	.70	2.09	.1
Fall	58.8	106	11	8.35	2.49	11.77	.1
Year	57.6	106	−16	40.88	27.40	61.95	9.9

[1] Average temperature based on a 33-year record, through 1954; highest and lowest temperatures on a 30-year record, through 1952.

[2] Average precipitation based on a 35-year record, through 1954; wettest and driest years based on a 33-year record, through 1954; snowfall, based on a 30-year record, through 1952.

[3] Trace.

In some years, heavy continuous summer rains prevent timely plowing and disking, particularly of the heavier soils, and thus delay the seeding of corn and small grains and the planting of tobacco. In addition they restrict early grazing in many places.

The average frost-free season is 191 days, which is ample time for the crops commonly grown to reach maturity. The growing season normally extends from April 16 to October 24, but killing frosts have occurred as late as May 12 and have caused considerable damage to peach and apple crops. Alfalfa, red clover, lespedeza, and small grains are not winterkilled if grown on well-drained soil. Melons and most vegetable crops are grown successfully. The growing season is too short to allow cotton to reach maturity, and little of that crop is grown. Late spring and early fall frosts affect vegetation growing in the bottom lands and in small depressions. The areas best suited to tree fruits are the long hilly slopes in the southern and eastern parts of the county, where the air drainage is good and the frost hazard is less severe.

Climatic conditions are not particularly favorable for permanent pasture. Grasses adapted to southern Piedmont conditions have been introduced, and some good pastures are being established and maintained. Shallow

droughty soils, such as the Wilkes, Louisa, Louisburg, and Steinsburg, are not well suited for pastures because they do not retain enough moisture during long dry seasons. Fine-textured red soils, such as the clay loams of the Cecil, Madison, and Lloyd series, are well suited to pasture plants.

Water Supply

Prince Edward County gets its water supply mainly from the Appomattox and Sandy Rivers, Buffalo Creek (locally called the Buffalo River), and many other creeks and smaller tributary streams. Water for homes and for livestock is also supplied by springs, intermittent streams, and wells. On many of the larger farms, water is obtained from drilled wells equipped with electric pumps. On most small farms, the water supply comes from hand-pumped wells or from springs.[4] Buffalo Creek is the principal source of water for Farmville.

Underground water that flows from fissures and crevices in the granite rocks is clear and contains little calcium. It is considered to be "freestone" or soft water.

Some farmers have built ponds by impounding water behind dams in small drainageways. These ponds provide fishing, swimming, and other recreation, and in dry seasons are a reserve water supply for livestock.

Perennial streams run clear only in dry weather. After rains, they are usually muddy from silt and other debris. Most streams have little gradient and are seldom used for power. Only a few water-powered grain mills are in the county; one of the largest is Allen's Mill on Falling Creek near Prospect.

Vegetation

On the ridges and slopes of Prince Edward County, the virgin forests consisted of large towering oaks and other hardwood trees mixed with tall yellow pines. On the bottom lands were dense forests of willow, water oak, sycamore, ash, elm, sweetgum, and yellow-poplar. The forests were free of underbrush. A thick layer of leaves and organic matter had accumulated on top of the soil.

Along the streams the early settlers discovered a luxuriant growth of wild grasses. An early history of Virginia states that a reedy grass, on which cattle and horses readily fattened, grew in this section. The only cleared areas were those where Indians had camped and planted maize and wild yams.

The present forests contain more pines than the original forests. Because of its hardiness, Virginia pine has replaced a large proportion of the original hardwood trees that were cut for timber or pulpwood. Most of the bottom lands have been cleared of hardwoods and have grown up in alders, willows, vines, coarse weeds, and briers. Large areas of forest in the southeastern part of the county are used now for wildlife refuges.

In recent years heavy cutting has depleted the marketable timber. Harvesting of pulpwood has reduced potential future timber stocks and has greatly increased the fire hazard.

[4] Information furnished by the county agricultural agent.

Settlement, Organization, and Population

The area that is now Prince Edward County was first settled by white men about 1730.[5] Pioneers from early settlements along the Virginia coast migrated inland and established new homes along the Appomattox River. The land along the river and creeks was fertile, and large quantities of grains and tobacco were produced. Harvests were sent by flatboats down the river to Petersburg and then shipped to foreign ports. Among the early settlers were the Randolph, Venable, Watkins, Morton, Martin, and Taylor families. These are still familiar names in the county.

Prince Edward County was organized in 1753 from a part of Amelia County. Farmville, the county seat, was located at the upper end of the navigable part of the Appomattox River. It was chartered in 1798. The county was named for Prince Edward, a grandnephew of King George III.

According to the 1950 census, the county has a population of 15,398, of which 45 percent is classed as rural. The rural population is well distributed except for a few small areas in the extreme southern and southeastern parts of the county. These parts are thinly populated because they are still forested or because the soils are unproductive and imperfectly drained. The population of Farmville is 4,375. Other small towns or villages are Prospect, Rice, Green Bay, Darlington Heights, Worsham, Meherrin, and Pamplin.

Railroads and Roads

Two railroads serve Prince Edward County. The Norfolk and Western Railway crosses the northern and northeastern parts; the Southern Railway System crosses the southern and southeastern parts, and in places runs near the southern boundary of the county.

Public roads extend into all parts of the county. According to the 1950 census, 598 farms were on hard-surfaced roads, 360 on gravel, shell, or shale roads, and 321 on dirt roads.

Distance to the trading center visited most frequently by farmers, according to the 1950 census, was less than 1 mile for 40 farms; 1 to 4 miles for 607 farms; 5 to 9 miles for 337 farms; and 10 miles or more for 305 farms. The average distance to a trading center for all farms was 6 miles. In the same year, the distance to a trading center over dirt or unimproved roads was 0 to 0.2 mile for 532 farms; 0.3 to 0.9 mile for 176 farms; 1.0 to 4.9 miles for 351 farms; and 5.0 miles and over for 25 farms. The average distance travelled over dirt roads to a trading center by all farmers was 0.9 mile.

Community Facilities

The county has three high schools and numerous primary schools. Longwood College at Farmville, originally chartered in 1839, is one of the important colleges in Virginia for the training of teachers. Hampden-Sydney College, one of the oldest schools in the United States, has been training young men since 1776.

[5] Information from an unpublished history of Farmville, written for the Farmville Herald by H. Clarence Bradshaw.

The Southside Community Hospital in Farmville serves a large section of southern Virginia.

Rural electrification, mail delivery, and telephone service extend to all parts of the county. According to the 1950 Federal census, 989 farms used electricity, and 141 farms had telephones.

Community canneries are located at Farmville, Prospect, Darlington Heights, Worsham, Green Bay, and Rice. These units are equipped for canning all kinds of locally grown vegetables and fruits.

Parks and numerous public and privately owned artificial lakes provide swimming, fishing, boating, and other recreation. Godwins Lake, in a forest reserve at Green Bay, is under State control. Privately owned facilities available to the people of Prince Edward and other counties are the recently enlarged Prince Edward Lake, Millers Lake, and Farmville Lake.

The Soils of Prince Edward County

General Nature of the Soils

Most of the soils of Prince Edward County are underlain by granite or gneiss. In many places, the underlying granite is mixed with varying quantities of dark-colored basic rocks, fine-grained schists, and micaceous gneiss and schist. Soils that developed from this mixed rock are extremely complex and occur in intricate patterns (fig. 2).

Figure 2.—**A road cut through Cecil and Wilkes soils, showing undulations of the layer of decomposed original rock. The parts where the soil layer is deeper over the weathered rock are Cecil soil; the shallower parts are Wilkes soil.**

In the northeastern part of the county, the soils are underlain almost entirely by granite rock, from which have developed coarse-textured, well-drained soils that have permeable sandy subsoils. Most of the bright tobacco grown in the county is produced in this section.

In the southern and western parts of the county, dark-colored strips of intruded hornblende or diorite crosscut other rocks in many places. In these areas, the soils are generally finer textured and have better capacity to retain moisture and plant nutrients. Dark tobacco, corn, small grains, hay, and tree fruits are the chief crops in these sections of the county.

COLOR AND THICKNESS.—In most of the soils of the county, the surface soil, the subsoil, and the substratum or parent material are distinctly defined.

The surface soils are from 4 to 14 inches thick. They are gray or brown in most places, and yellow or red in a few spots. The subsoils are from 8 to 40 inches thick, and are red, yellow, or brown, or gradations of these colors. The substrata are from a few inches to more than 3 feet thick. In some places the subsoil layer is lacking and the surface soil rests directly on the parent material. In other places, accelerated erosion has removed much of the surface soil and the subsoil is exposed. Some of the soils are mottled with gray or brown, usually as a result of poor drainage.

TEXTURE.—The soils of the county are predominantly of sandy texture. Seven textural classes were mapped. The acreage in each class is as follows:

	Acres
Fine sandy loam	101, 645
Sandy loam	70, 857
Clay loam	17, 517
Loam	10, 031
Very fine sandy loam	7, 062
Silt loam	5, 894
Loamy fine sand	314
Total	213, 320

The 13,104 acres of miscellaneous land types (Gullied land, Mixed alluvium, and Rock land) are not differentiated by texture; they consist mainly of silty clay loam, loamy sand, sandy loam, and silt loam.

CONSISTENCE.—The surface soils are friable and the subsoils friable, firm, or very firm. The structure of the subsoils is mostly fine to coarse blocky.

DRAINAGE.—Surface runoff is generally medium, except in those areas that have slopes of more than 12 percent, where runoff is rapid. Internal drainage ranges from very slow to very rapid, but is predominantly medium.

SLOPES.—Slopes range from nearly level to steep. The acreage in each slope class is as follows:

	Acres
Level to nearly level (0 to 2 percent)	16, 766
Undulating (2 to 7 percent)	94, 625
Rolling (7 to 12 percent)	56, 471
Hilly (12 to 20 percent)	44, 541
Steep (20 percent or more)	13, 135
Unclassified and water	2, 911
Total	228, 449

EROSION.—Practically all of the county has been affected by sheet erosion. The extent of damage ranges from slight to severe but is moderate over most of the county. Gullies are common and in some areas are deep enough to interfere with the use of farm machinery. The extent of erosion damage, classified according to the percentage of surface soil that has been lost, and the acreage affected, are summarized as follows:

Soil loss:	*Acres*
None	10
Less than 25 percent of surface soil	4, 857
From 25 to 75 percent of surface soil:	
No gullies	124, 751
With a few shallow gullies	101
With a few deep gullies	42, 427
With many shallow gullies	168
With many deep gullies	12, 128

Soil loss—Continued	Acres
More than 75 percent of surface soil and less than 25 percent of subsoil:	
No gullies	10,828
With a few shallow gullies	8
With a few deep gullies	3,810
With many shallow gullies	122
With many deep gullies	1,482
Unclassified and water	2,911
Recent colluvial or alluvial accumulations on eroded areas	24,846
Total	228,449

OTHER CHARACTERISTICS.—Organic-matter content is generally low. Bottom-land soils contain a little more organic matter than upland soils. Most of the soils are medium acid to extremely acid; a few, including those that developed over dark-colored basic rocks, are only slightly acid or neutral. Natural fertility ranges from high to very low.

Soil Series and Their Relations

The 88 soil units mapped in Prince Edward County have been classified into 34 series. Four of the series occur only in complexes or in undifferentiated groups of 2 or more series. The series are classified into the following 4 groups, according to topographic position: (1) Soils of the uplands; (2) soils of the colluvial lands; (3) soils of the terraces; and (4) soils of the bottom lands. Table 2 shows the classification of the soils according to topographic position.

Soils of the uplands have developed on material weathered from the underlying rock. This group is the most extensive; it occupies more than 90 percent of the county and includes the best agricultural lands.

Soils of the colluvial lands have formed from material that washed from the uplands and accumulated at the bases of slopes and in troughs made by intermittent streams. They occupy a little more than 3 percent of the county.

Soils of the terraces have been formed in alluvial deposits washed from the uplands and deposited along streams. They lie above the present flood plains. Most of the terraces are low; only a few are old and well developed. Less than 1 percent of the county consists of soils on terraces.

Soils of the bottom lands are the most recent alluvial deposits of material washed from the uplands. The areas are periodically flooded. Soils of this group occupy less than 3 percent of the county.

Soil Types and Phases and Miscellaneous Land Types

In the following pages the soils and miscellaneous land types of the county are described in detail. They are arranged alphabetically by series names and are identified by the same symbols as those used on the soils map. The soil type or phase is the usual mapping unit. In some places in Prince Edward County, two soil series or two phases of the same series are associated in such intricate patterns and in such small bodies that it is not practical to map each one separately. Consequently, one complex and some undifferentiated soil groups are among the mapping units. Four miscellaneous land types are mapped: Gullied land; Rock land; Mixed alluvium, well drained; and Mixed alluvium, poorly drained.

The location and distribution of each type, phase, or land unit is shown on the aerial photo-mosaic map accompanying this report. The acreage and proportionate extent of each soil in the county are given in table 3.

Altavista fine sandy loam, undulating phase (2 to 7 percent slopes) (Aa).—This soil occupies low stream terraces and has formed over young alluvial material. It is closely associated with the Wickham, Roanoke, and Augusta soils. For the most part, the slopes are undulating, but in a few areas nearest the streams they are rolling. The soil is moderately well drained and has slow to medium surface runoff. Internal drainage is medium. Sheet erosion is slight to moderate.

Profile description for cultivated areas:

Surface soil—
0 to 7 inches, pale-yellow to yellowish-brown friable fine sandy loam; weak fine granular structure; light gray when dry.

Subsoil—
7 to 22 inches, brownish-yellow friable clay loam to clay; moderate medium blocky structure.
22 to 27 inches, yellowish-brown friable clay; moderate medium blocky structure.

Underlying material—
27 to 38 inches, strong-brown friable clay to clay loam alluvial deposit; some distinct yellowish-red mottles.

Waterworn pebbles are present on the surface but usually are not numerous enough to interfere with tillage. In a few places the subsoil is firm when moist and plastic when wet. This condition is most common where this soil is associated with the Creedmoor series and other soils having firm subsoils. The subsoil is reddish where this soil occurs on the stream terraces with soils of the Wickham series.

This soil is strongly acid, low in organic matter, and of low fertility. Permeability is moderately rapid in the surface soil and moderate to slow in the subsoil. The water-holding capacity is moderate.

Use and management.—About 43 percent of this soil is in forest, 40 percent is cultivated, 7 percent is in pasture, and 10 percent is idle. The soil has good workability and good to fair conservability. It is low in most plant nutrients, but in many places it is relatively high in potassium. Under average management, yields are poor. In the past, a large proportion of the soil was intensively farmed along with adjacent bottom-land soils. At present, the only cultivated areas are small tracts along the Appomattox River just west of Farmville.

Crops commonly grown are corn, small grains, and hay; some farmers grow bright tobacco. Under prevailing management the average yield of corn is about 30 bushels an acre. Higher yields can be expected if a suitable fertilizer is applied liberally when corn is planted, and a generous side dressing of nitrogen is used when the plants are about 18 inches high. Wheat or other small grains that usually follow corn in the rotation are, as a rule, only lightly fertilized.

Most of the existing timber is Virginia pine. Thinning and selective cutting are needed for maintaining a stand of good trees.

Appling fine sandy loam, undulating phase (2 to 7 percent slopes) (Ad).—This light-colored well-drained soil developed mainly in the eastern part of the county in

TABLE 2.—*Soil series of Prince Edward County, Va., grouped according to topographic position*

Series	Parent material	Dominant relief	Natural drainage
UPLANDS			
Cecil	Residuum weathered from granite, schist, and gneiss, mainly.	Undulating to hilly	Well drained.
Appling	Same	Undulating to hilly	Well drained.
Durham	Same	Undulating	Well drained.
Vance	Same	Undulating and rolling	Moderately well drained.
Colfax	Same	Undulating	Somewhat poorly drained.
Louisburg	Residuum weathered from coarse-grained granite or pegmatite.	Undulating to hilly	Excessively drained.
Madison	Residuum weathered from muscovite schist and gneiss and micaceous quartzite.	Undulating to hilly	Well drained.
Louisa	Same	Undulating to steep	Excessively drained.
Georgeville [1]	Residuum weathered from fine-grained schists, granite, and granite gneiss.	Undulating to hilly	Well drained.
Herndon [2]	Same	Undulating and rolling	Well drained.
Wadesboro	Residuum weathered from Triassic sandstone and shale.	Undulating and rolling	Well drained.
Mayodan	Same	Undulating and rolling	Well drained.
Creedmoor	Same	Undulating and rolling	Moderately well drained.
Steinsburg	Same	Rolling and hilly	Excessively drained.
Lloyd	Residuum weathered from granite and gneiss, and hornblende gneiss and schist.	Undulating to hilly	Well drained.
Fluvanna	Same	Undulating and rolling	Well drained.
Helena	Same	Undulating and rolling	Somewhat poorly drained.
Wilkes	Residuum weathered from granite, gneiss, granite gneiss, and fine-grained schists mixed with hornblende gneiss and schist, or other basic rocks.	Undulating to steep	Excessively drained.
Orange	Residuum weathered from fine-grained schists, granite, granite gneiss, and hornblende gneiss and schist.	Undulating	Somewhat poorly drained.
Iredell [3]	Residuum weathered from diabase diorite, gabbro, and hornblende gneiss and schist.	Undulating and rolling	Somewhat poorly drained.
Zion [3]	Same	Undulating and rolling	Somewhat poorly drained.
Mecklenburg	Same	Undulating and rolling	Moderately well drained.
Bremo	Residuum weathered from hornblende gneiss and schist.	Undulating to steep	Somewhat excessively drained.
COLLUVIAL LANDS			
Seneca	Local alluvial and colluvial materials	Undulating or gently sloping	Well drained.
Starr	Same	Undulating or gently sloping	Well drained.
Worsham	Same	Undulating or gently sloping	Poorly drained.
TERRACES			
Wickham	Young alluvial deposits	Undulating and rolling	Well drained.
Altavista	Young alluvial deposits	Undulating	Moderately well drained.
Augusta	Young alluvial deposits	Undulating	Somewhat poorly drained.
Roanoke	Young alluvial deposits	Level or nearly level	Poorly drained.
BOTTOM LANDS			
Congaree	Recent alluvial deposits	Level or nearly level	Well drained.
Chewacla	Recent alluvial deposits	Level or nearly level	Somewhat poorly drained.
Wehadkee	Recent alluvial deposits	Level or nearly level	Poorly drained.
Buncombe	Recent alluvial deposits	Level or nearly level	Excessively drained.

[1] In this county the Georgeville series occurs only in undifferentiated soil groups with the Cecil series.

[2] In this county the Herndon series occurs only in undifferentiated soil groups with the Appling series.

[3] In this county this series occurs only in the Iredell-Zion complex.

TABLE 3.—*Acreage and proportionate extent of the soils mapped in Prince Edward County, Va.*

Soil	Area	Extent
	Acres	*Percent*
Altavista fine sandy loam, undulating phase	654	0.3
Appling fine sandy loam:		
Undulating phase	5,446	2.4
Rolling phase	2,867	1.3
Hilly phase	594	.3
Appling sandy loam:		
Undulating phase	3,791	1.7
Rolling phase	1,968	.9
Hilly phase	199	(1)
Appling and Herndon very fine sandy loams:		
Undulating phases	785	.3
Rolling phases	798	.3
Augusta loam	118	(1)
Bremo loam:		
Undulating phase	474	.2
Eroded rolling phase	1,016	.4
Eroded hilly phase	1,874	.8
Eroded steep phase	750	.3
Buncombe loamy fine sand	314	.1
Cecil fine sandy loam:		
Undulating phase	30,163	13.4
Rolling phase	13,844	6.1
Hilly phase	4,002	1.8
Cecil clay loam:		
Eroded undulating phase	1,310	.6
Eroded rolling phase	2,265	1.0
Severely eroded rolling phase	667	.3
Severely eroded hilly phase	833	.4
Cecil and Georgeville very fine sandy loams:		
Undulating phases	3,724	1.6
Rolling phases	1,487	.7
Hilly phases	268	.1
Chewacla silt loam	1,458	.6
Colfax fine sandy loam, undulating phase	285	.1
Congaree fine sandy loam	329	.1
Congaree silt loam	167	(1)
Creedmoor fine sandy loam:		
Undulating phase	1,398	.6
Rolling phase	419	.2
Eroded rolling phase	307	.1
Durham sandy loam, undulating phase	1,020	.4
Fluvanna fine sandy loam, undulating and rolling phases	632	.3
Gullied land	893	.4
Helena fine sandy loam:		
Undulating phase	7,156	3.2
Rolling phase	3,081	1.3
Iredell-Zion fine sandy loams:		
Undulating phases	1,610	.7
Rolling phases	554	.2
Lloyd loam:		
Eroded undulating phase	3,192	1.4
Eroded rolling phase	1,269	.6
Eroded hilly phase	269	.1
Lloyd clay loam:		
Eroded undulating phase	1,810	.8
Eroded rolling phase	1,793	.8
Eroded hilly phase	488	.2
Louisa fine sandy loam:		
Eroded undulating phase	991	0.4
Eroded rolling phase	1,422	.6
Eroded hilly phase	2,282	1.0
Eroded steep phase	640	.3
Severely eroded hilly phase	444	.2
Severely eroded steep phase	182	(1)
Louisburg sandy loam:		
Undulating phase	642	.3
Rolling phase	1,106	.5
Hilly phase	312	.1
Eroded hilly phase	206	(1)
Madison fine sandy loam:		
Undulating phase	7,110	3.2
Rolling phase	3,651	1.6
Hilly phase	1,534	.7
Madison clay loam:		
Eroded undulating phase	2,043	.9
Eroded rolling phase	3,056	1.3
Eroded hilly phase	2,330	1.0
Mayodan fine sandy loam:		
Undulating phase	483	.2
Rolling phase	437	.2
Mecklenburg loam, undulating and rolling phases	388	.2
Mixed alluvium:		
Well drained	1,118	.5
Poorly drained	10,116	4.5
Orange silt loam, undulating phase	947	.4
Roanoke silt loam	377	.2
Rock land	977	.4
Seneca fine sandy loam	2,876	1.3
Starr loam	681	.3
Steinsburg fine sandy loam:		
Eroded rolling phase	330	.2
Eroded hilly phase	1,201	.5
Vance fine sandy loam:		
Undulating phase	2,508	1.0
Rolling phase	1,453	.6
Wadesboro clay loam:		
Eroded undulating phase	612	.3
Eroded rolling phase	310	.1
Wehadkee silt loam	2,945	1.3
Wickham fine sandy loam:		
Undulating phase	599	.3
Rolling phase	161	(1)
Wilkes sandy loam:		
Undulating phase	6,778	3.1
Eroded rolling phase	10,532	5.1
Eroded hilly phase	21,894	9.8
Eroded steep phase	7,467	3.4
Severely eroded rolling phase	920	.4
Severely eroded hilly phase	5,595	2.5
Severely eroded steep phase	3,586	1.6
Worsham sandy loam	4,841	2.1
Total [2]	226,424	100.0

[1] Less than 0.1 percent.

[2] The total does not include the following: Water, 238 acres; mines and pits, 28 acres; and miscellaneous, 1,759 acres.

association with soils of the Cecil series. It has formed from material that weathered from granite, schist, gneiss, and pegmatite. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion is slight to moderate. A small part of the total area is deeply gullied.

Profile description in cultivated areas:

Surface soil—
0 to 2 inches, gray friable fine sandy loam; weak fine granular structure.
2 to 7 inches, very pale brown friable fine sandy loam; weak fine granular structure.
7 to 12 inches, light yellowish-brown friable fine sandy loam; weak fine blocky structure; slightly hard when dry.

Subsoil—
12 to 17 inches, brownish-yellow firm clay; moderate medium blocky structure.
17 to 33 inches, strong-brown firm clay to clay loam; moderate medium blocky structure; hard when dry.

Parent material—
33 to 39 inches, reddish-yellow and red friable gritty clay loam mixed with light-gray soft residual material from granite or gneiss.

The texture of the surface soil ranges from sandy loam to loam. The finer textured areas usually are more severely sheet eroded. Small angular quartz pebbles are scattered on the surface of a few areas. The color of the subsoil varies somewhat, tending toward red in some places and yellow in others. Small mica flakes are scattered through the soil, particularly in the lower layers.

This soil is very strongly acid. It is low in organic matter and is of low fertility. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate.

Use and management.—About 55 percent of this soil is in forest, and 38 percent of it is cultivated. The rest is idle land or pasture. The soil has very good to good workability and good to fair conservability. Under ordinary management, yields are moderate.

Corn, bright tobacco, wheat, barley, hay, vegetables, and melons are the chief crops. Corn is grown in rotation with bright tobacco and a small grain. It is usually only lightly fertilized. Yields average about 33 bushels an acre. Small grains, usually wheat or barley, follow bright tobacco or corn in the crop rotation. Wheat commonly yields an average of about 15 bushels an acre, but by generous fertilization yields can be greatly increased. Under average management, lespedeza yields about 0.6 ton of hay per acre, clover about 1.5 tons, and alfalfa about 1.7 tons. Small gardens and melon patches need heavy applications of commercial fertilizer for good yields.

Appling fine sandy loam, rolling phase (7 to 12 percent slopes) (Ac).—This soil differs from the undulating phase chiefly in having stronger relief and more gullies. Surface runoff is medium to rapid and internal drainage is medium. A few areas are gravelly; some small areas are deeply gullied.

Use and management.—An estimated 73 percent of this soil is in forest, mostly hardwoods mixed with scattered pines. About 19 percent is in cultivation; the rest is idle land or pasture.

This rolling phase has good workability but only fair conservability. It is low in all essential plant nutrients except potash, with which it is moderately well supplied. Crops are the same as are grown on the undulating phase, but on the rolling phase hay and small grains are relatively more important and bright tobacco less so. Crop yields are about equal for both phases, and fertilizer requirements are the same.

Appling fine sandy loam, hilly phase (12 to 20 percent slopes) (Ab).—In all characteristics except slope, this soil is very similar to the undulating phase. The slopes are stronger and surface runoff is rapid to very rapid. Internal drainage is medium. About 30 percent of the total area is marked by deep but widely spaced gullies. In many places fine quartz gravel mixed with white quartz pebbles is scattered on the surface.

Use and management.—Most of Appling fine sandy loam, hilly phase, is under forest cover. A small part is idle. The small acreage under cultivation is used chiefly for corn, wheat, barley, and hay crops, mainly lespedeza. The soil is hard to work and to conserve. Under prevailing management, crop yields are low. Fertilizer needs are similar to those of the undulating phase of this soil.

Because of its stong slopes, this soil is highly to very highly erodible. It can be used best for forest.

Appling sandy loam, undulating phase (2 to 7 percent slopes) (Ag).—This light-colored well-drained sandy soil occurs on smooth interstream divides. It has formed from residue that weathered from granite, schist, gneiss, and pegmatite. It is associated in the eastern part of the county with Appling fine sandy loam, undulating phase, and with members of the Wilkes and Louisburg series. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion is generally slight to moderate but in some areas the yellowish or reddish subsoil is exposed. A few areas are deeply gullied.

Profile description:

Surface soil—
0 to 2 inches, dark yellowish-brown to brown friable sandy loam; weak fine granular structure.
2 to 10 inches, very pale brown friable sandy loam; weak fine granular structure.

Subsoil—
10 to 36 inches, brownish-yellow to yellowish-red firm sandy clay; moderate medium blocky structure.

Parent material—
36 to 42 inches, mingled reddish-yellow, light-gray, and white very friable clay loam material.

This soil is light to almost white when the surface is dry. Where it joins the Vance and Helena soils the parent material contains small amounts of basic rock and the subsoil is fine textured and is plastic when wet. The color of the subsoil varies somewhat from place to place.

The soil is very strongly acid. It is low in organic matter and is of low fertility. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate, and the hazard of erosion is slight to moderate.

Use and management.—About 45 percent of this soil is used for cultivated crops, and 42 percent of it is in forest; the rest is idle or in pasture. Corn, bright tobacco, small grains, hay, and vegetables are the common crops. The soil is easily worked and fairly easily conserved. Yields are medium. Frequent applications of commerical fertilizers are needed for profitable cropping.

Bright tobacco and corn are grown interchangeably in the crop rotation. The intertilled crop is usually followed by wheat and lespedeza for hay. Bright tobacco yields about 1,100 pounds per acre. A complete fertilizer is usually used on this crop. Wheat is seldom fertilized at planting time, but is lightly topdressed with nitrogen

fertilizer. Wheat yields average 12 bushels per acre. Lespedeza sown in the wheat for hay generally gives moderately low yields. Corn produces an average of about 32 bushels an acre under present management. Yields can be greatly increased by applying proper kinds and amounts of fertilizers.

Appling sandy loam, rolling phase (7 to 12 percent slopes) (Af).—Stronger relief is the principal difference between this soil and the undulating phase. Also, this phase has been damaged more by gully erosion. Surface runoff is medium to rapid and internal drainage is medium.

Use and management.—About 67 percent of this soil is in forest and 20 percent in cultivated fields. The rest is in pasture or is idle. The erosion hazard is moderate to high. Large amounts of plant nutrients are lost through surface runoff and leaching. The soil is fairly easy to conserve and easy to work and is moderately productive.

Corn, small grains, lespedeza for hay, and bright tobacco are the most common crops. Bright tobacco, however, is not so extensively grown as it is on the undulating phase. Garden vegetables and melons are grown in small tracts.

Fertilization and control of runoff are important in the management of this soil. The rotation should include more small grain and hay crops than corn crops.

Appling sandy loam, hilly phase (12 to 20 percent slopes) (Ae).—Stronger slopes and shallower depth to bedrock are the main differences between this soil and the undulating phase. Surface runoff is rapid to very rapid and internal drainage is medium. Sheet erosion is moderate. Deep gullies have formed, but in most areas they are widely spaced.

Use and management.—Most of this soil is in forest consisting of red, white, scarlet, and black oaks, dogwood, gum, and Virginia pine. Cultivation of these hilly areas is difficult and rarely successful. The soil is hard to conserve. Under the prevailing management its productivity is low.

Lespedeza hay and small grains are the principal crops. Small tracts are planted to corn; a few are in pasture or are idle. Some areas can be made to produce fairly good pasture if properly limed and fertilized.

Appling and Herndon very fine sandy loams, undulating phases (2 to 7 percent slopes) (Ak).—This undifferentiated soil group is composed of very fine sandy loams and silt loams associated in an intricate pattern. It occurs in the southeastern part of the county, where it has formed from products that weathered from fine-grained schists mixed with granite and granite gneiss. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion is slight to moderate. A few shallow gullies have formed. The physical characteristics of the Appling and Herndon soils of this group are practically the same. Profiles for the Appling and Herndon silt loams are not described. They would differ but little from those of the very fine sandy loams except for texture of surface soil.

Profile description of Appling very fine sandy loam, undulating phase, in cultivated areas:

Surface soil—
- 0 to 7 inches, yellow friable very fine sandy loam; weak fine granular structure.
- 7 to 10 inches, brownish-yellow friable very fine sandy loam; weak fine granular structure; slightly hard when dry.

Subsoil—
- 10 to 20 inches, strong-brown to brownish-yellow firm clay to clay loam; moderate medium blocky structure.
- 20 to 30 inches, reddish-yellow to yellowish-red firm clay; moderate medium blocky structure.

Parent material—
- 30 to 36 inches, strong-brown friable clay loam mottled with yellow and red; some small platy fragments of fine-grained schist.

The surface soil varies in thickness from 6 to 12 inches. In forested areas, the upper part of the surface soil is darker than normal. In some places a thin layer of dark-colored leaf mold has accumulated on the surface.

Profile description of Herndon very fine sandy loam, undulating phase:

Surface soil –
- 0 to 7 inches, pale-yellow or strong yellowish-brown friable very fine sandy loam; weak medium granular structure.

Subsoil –
- 7 to 10 inches, brownish-yellow friable silty clay loam; weak medium blocky structure.
- 10 to 24 inches, yellowish-red friable silty clay loam to silty clay; strong medium to coarse blocky structure.
- 24 to 29 inches, friable light silty clay loam, mottled with yellowish red and shades of brown and yellow; weak coarse blocky structure.

Parent material—
- 29 to 40 inches, smooth friable very silty material mottled with pale red and red and streaked with pale yellow. The mottles are distinct, coarse, and numerous; the streaks variable in width.
- 40 inches +, very smooth silty decomposed nonmicaceous schist, showing mixed colors of weak red, white, and shades of brown and yellow.

The texture of the surface soil varies from very fine sandy loam to silt loam.

This soil group occurs in a wide transitional area. Texture of the surface soil and underlying parent material of each of the two soils is not clearly differentiated. As a group the soils are less productive than the Appling soil alone but more productive than the Herndon soil. In a few small areas the subsoil color grades toward that of soils in the Cecil series. In other small areas where the parent material was derived partly from basic rock, the color of the subsoil grades toward that of soils in the Lloyd series.

The soils in the group are very strongly acid. They are low in organic matter and are of low fertility. They are moderately permeable and have a moderate water-holding capacity.

Use and management.—About 78 percent of this mapping unit is forested, and 17 percent of it is cultivated. Small parts are idle or in pasture. These soils are easy to work and conserve. Under ordinary management, yields are moderate. The usual crops are corn, bright tobacco, hay, and small grains. Small quantities of a complete fertilizer or superphosphate are applied to corn, and a suitable complete fertilizer is applied to bright tobacco. Small grains that follow tobacco in a rotation are not usually fertilized, but the yields are much better if large quantities of a complete fertilizer are applied.

Appling and Herndon very fine sandy loams, rolling phases (7 to 12 percent slopes) (Ah).—Except for stronger slopes, this undifferentiated soil group is similar to Appling and Herndon very fine sandy loams, undulating phases. Surface runoff is medium to rapid and internal drainage is medium. Most of the acreage is moderately sheet eroded. A few deep gullies have formed, mostly on the more strongly rolling areas.

Use and management.—About 86 percent of this mapping unit is under a forest of oak, Virginia pine, and shortleaf pine. About 10 percent is being cultivated and the rest is in pasture or is idle. The soils are easy to work and fairly easy to conserve. Yields are medium to low under prevailing management. The cultivated areas are managed in about the same manner as Appling and Herndon very fine sandy loams, undulating phases, but yields are generally somewhat lower on the rolling phases because the soils are more eroded and less easy to cultivate.

Included with this mapping unit are about 62 acres that have slopes of 12 to 20 percent, and a few acres that have slopes of more than 20 percent. These hilly and steep areas are difficult to work and to conserve. Where farming has been abandoned, there are now second-growth stands of pine and hardwoods, and a growth of weeds, broomsedge, honeysuckle, and greenbrier.

Augusta loam (2 to 7 percent slopes) (Al). This somewhat poorly drained soil developed from alluvial material deposited on low stream terraces. It is closely associated with the Roanoke, Wickham, and Altavista soils. Surface runoff is slow to medium and internal drainage is slow.

Profile description:

Surface soil—
0 to 5 inches, light-gray to light brownish-gray friable heavy loam; weak fine granular structure.
5 to 9 inches, light-gray friable loam; weak fine granular structure.
Subsoil—
9 to 20 inches, pale-brown firm clay to clay loam, faintly mottled with light gray and strong brown; moderate fine blocky structure; slightly plastic when wet.
20 to 30 inches, mottled light-gray, brownish-yellow, and strong-brown firm clay to clay loam; moderate fine blocky structure; plastic when wet.
Underlying material—
30 to 36 inches, mottled light-gray, white, and brownish-yellow friable gritty clay loam mixed with many rounded quartz fragments; plastic when wet.

The soil is very strongly acid and is low in fertility. The surface soil is moderately permeable and the subsoil slowly permeable. Water-holding capacity is moderate.

Use and management.—An estimated 38 percent of this soil is idle; 24 percent is in forest, 22 percent is in pasture, and 16 percent is cultivated. The soil is fairly easy to work and easy to conserve. Under ordinary management yields are medium to low. Pasture is its best use. Good management, including clipping and grubbing undesirable brush and weeds, is necessary to maintain good pasture growth. Cultivation of this soil is feasible except where it is closely associated with the poorly drained Roanoke soil. Corn and hay are the principal crops.

Bremo loam, undulating phase (2 to 7 percent slopes) (Bd).—One of the most productive soils in the county is this dark-colored shallow soil that has developed from residual products weathered from hornblende gneiss and schist, horizontally laminated. It occupies narrow ridgetops, flanked by the eroded hilly and steep phases of Bremo loam. The largest areas are in the northwestern part of the county. This soil is somewhat excessively drained; surface runoff is medium but internal drainage is rapid. Sheet erosion is moderate.

Profile description:

Surface soil—
0 to 11 inches, olive-gray friable loam, containing a few small fragments of hornblende schist.
Subsurface—
11 to 14 inches, mottled dark yellowish-brown, olive, and gray firm clay loam mixed with bluish-green hornblende schist fragments.
Parent rock—
14 inches +, hornblende schist and gneiss, horizontally laminated.

This soil varies considerably from place to place. In some spots, a subsoil of brown to grayish-brown heavy firm clay has started to develop. It occurs at variable depths and is underlain by dark-colored soft decomposed rock. In many places, angular schist fragments are scattered over the surface. In some places the surface soil grades to the lighter colored Wilkes sandy loam, undulating phase, the parent material of which is less influenced by basic rock.

This Bremo soil is slightly acid, contains a moderate amount of organic matter, and is high in fertility. Permeability is moderate in the surface soil and moderate to rapid in the subsurface. Water-holding capacity ranges from moderate to low.

Mapped with this soil are a few areas of Helena fine sandy loam, undulating phase, too small to map as separate units.

Use and management.—About 50 percent of Bremo loam, undulating phase, is in forest, 40 percent of it is cultivated, and a small part is in pasture or is idle. Workability is fair to good; conservability is good. Under average management, yields are medium to high.

Corn, small grains, dark tobacco, and lespedeza and clover hay are the main crops. Corn and small grains yield well if properly fertilized and otherwise well managed. The rotation commonly used includes corn or tobacco, wheat, and lespedeza or clover. Dark tobacco yields about 1,000 pounds per acre if given a complete fertilizer. Wheat that gets a complete fertilizer and a nitrogen topdressing yields 35 bushels an acre. Under ordinary management, lespedeza produces about 1 ton of hay an acre if the land is limed at proper intervals. Clover yields about 1.5 tons of hay per acre under ordinary management and 2.3 tons per acre under good management. Some narrow ridgetops are used for pasture, along with the steeper phases of Bremo loam.

Bremo loam, eroded rolling phase (7 to 12 percent slopes) (Bb).—In most characteristics this soil is similar to Bremo loam, undulating phase. It differs in having stronger slopes and a greater degree of erosion A few deep gullies have formed on about one-fourth of the total area. Surface runoff is medium to rapid and internal drainage is rapid. The soil is moderately to highly erodible and has a moderately low to low water-holding capacity.

Use and management.—An estimated 55 percent of this soil is in forest, 33 percent in crops, 7 percent in pasture, and about 5 percent is idle. The soil is fairly easy to work and conserve. Under ordinary management, yields are moderate.

The chief crops are corn, small grains, dark tobacco, and hay. Fertilizer requirements and other management needs are similar to those for the undulating phase of this soil. Yields of dark tobacco and other cultivated crops, however, are generally much lower on this soil. In many places this soil is used with the undulating phase for field crops and dark tobacco. In other places it is used with the eroded hilly and eroded steep phases of this series for pasture and forest. When used for tilled crops, the soil in most areas requires long rotations that include hay crops.

This kind of rotation is needed to hold erosion losses to a minimum.

Bremo loam, eroded hilly phase (12 to 20 percent slopes) (Ba).—This phase has a thinner surface soil and has been more seriously damaged by sheet erosion than the undulating or eroded rolling phases of Bremo loam. A few deep gullies have formed over about 40 percent of the acreage. Surface drainage and internal drainage are rapid.

Use and management.—An estimated 73 percent of this soil is in forest, 18 percent is cultivated, and the rest is in pasture or is idle. Workability is poor to very poor. The strong slopes make the use of heavy farm machinery difficult. The surface soil is moderately permeable and the subsurface soil moderately to rapidly permeable. In some places the soil can be cultivated without excessive losses from surface runoff. Water-holding capacity of the soil is low.

Corn, small grains, and hay are the chief crops. Under common management, yields are generally low. Pasture plants do well, and some farmers use this soil exclusively for pasture. Forests consist mainly of red, black, and scarlet oak, pine, and dogwood.

Bremo loam, eroded steep phase (20+ percent slopes) (Bc).—Similar in many ways to Bremo loam, undulating phase, this soil has stronger slopes ranging to more than 40 percent, and a somewhat shallower profile. About 40 percent of this phase is deeply gullied. Gullies are numerous. Surface runoff is rapid to very rapid and internal drainage is rapid. Most of the soil borders the Appomattox River and its larger tributary creeks.

Use and management.—About 88 percent of this soil is in forest. Nearly all the rest is cultivated or used for pasture. The soil is highly to very highly erodible and has a low water-holding capacity. Because of the steep slopes it is not suitable for crops, but a few farmers grow lespedeza or clover hay.

Management is directed to maintaining pastures and improving timber stands. Some farmers allow cattle and sheep to graze on partly cleared areas, which afford excellent summer pasture.

Buncombe loamy fine sand (0 to 2 percent slopes) (Be).—This soil occurs almost entirely on the flood plain of the Appomattox River and is frequently flooded. The areas are very small and consist principally of narrow ridges of sand bordering the stream. In most places the soil is associated with the Congaree, Chewacla, and Wehadkee soils of the first bottoms. Surface runoff is slow to very slow and internal drainage is very rapid.

Profile description:

Surface soil—
0 to 9 inches, light brownish-gray loamy fine sand; very friable; structureless.
Subsurface—
9 to 27 inches, light yellowish-brown to pale-yellow loamy fine sand; very loose; structureless.
Underlying material—
27 to 32 inches, light-gray fine sand mottled with yellowish brown and mixed with many smooth rounded pebbles.
32 inches +, sand and gravel beds.

The surface soil varies slightly in color, and in a few areas its texture is a sandy loam. The subsurface varies in color from yellowish brown to grayish brown and in some places contains pockets of sandy clay loam or sandy clay. In spots many smooth rounded quartzite pebbles are scattered over the surface and mixed through the entire profile.

This loamy fine sand is very strongly acid and is of low fertility. It is rapidly permeable and low in water-holding capacity.

Use and management.—An estimated 66 percent of this soil supports a light growth of willow and alder bushes. The rest is divided about equally into cultivated fields, pasture, and idle land. The soil is fair to poor in workability and is fairly easy to conserve. Under ordinary management, yields are low. The best use for this soil is pasture.

Most of the small acreage that is in crops is cultivated along with the associated well-drained Congaree fine sandy loam and Congaree silt loam. Watermelons, cantaloups, and vegetables are the chief crops. A few areas are used for lespedeza hay. Heavy applications of fertilizer are necessary for crops because the soil is rapidly permeable and is quickly leached of plant nutrients. The areas in pasture are closely associated with more poorly drained first-bottom soils such as Chewacla silt loam and Wehadkee silt loam.

Cecil fine sandy loam, undulating phase (2 to 7 percent slopes) (Cg).—This is the most extensive soil in the county and occurs in relatively large areas. It has a light-colored moderately coarse textured surface soil and a red clay subsoil. It has developed on undulating interstream divides from products that weathered from granite, schist, and gneiss. It is associated with the Appling, Durham, Colfax, and Worsham soils. Surface runoff is slow to medium and internal drainage is medium. Nearly all the soil has been slightly to moderately affected by sheet erosion; subsoil material is exposed in many places, and a few deep gullies have formed.

Profile description in cultivated areas:

Surface soil—
0 to 11 inches, yellowish-brown friable fine sandy loam; weak fine granular structure; a few angular quartz fragments. The lowest part is reddish yellow and contains some clay. In wooded areas the topmost ½ inch is very dark gray.
Subsoil—
11 to 54 inches, red firm clay, slightly sticky when wet; moderate medium blocky structure; a few mica flakes; faint mottlings similar to those in the parent material mostly in the lower part.
Parent material—
54 to 60 inches, mottled reddish-yellow and yellowish-brown friable clay loam; moderate medium subangular blocky structure.
60 inches +, soft decomposed schist and granitic rock.

When dry, the surface soil is very pale brown. Small white quartz fragments are scattered over the surface in some places. Mica flakes are fairly numerous in the parent material. A few areas have a sandy loam surface soil.

The soil is very strongly to strongly acid. It is low in organic matter, but fairly high in total potassium content. The potassium supply, however, may be depleted by continuous cropping. Fertility is low, but the soil retains added plant nutrients very well. Lime is needed to raise the pH value to the desired level. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate. The erosion hazard is slight to moderate.

Use and management.—About 68 percent of this soil is in forest, most of which has been cut over repeatedly for timber and pulpwood. About 26 percent of the acreage is in cultivation, 2 percent is used for pasture, and 4 percent is idle. The soil is very easy to work and easy to conserve. It is only slightly to moderately sus-

ceptible to further erosion. Under ordinary management yields are medium. The soil is well suited to corn, dark tobacco, small grains, and hay crops such as alfalfa, lespedeza, and red clover. A little bright tobacco is grown, but it is likely to be somewhat inferior to that grown on certain other soils. Three- to five-year crop rotations are usual. A common rotation consists of corn or dark tobacco, a small grain, and hay.

The acidity of the soil limits crop yields. Enough lime should be applied to raise the pH value to 6.0 or 6.5. Nitrogen and phosphorus are needed, and where fertility is low or where the soil has been cultivated continuously, additions of potassium are required. Manure and crop residues are also beneficial to the soil.

Cecil fine sandy loam, rolling phase (7 to 12 percent slopes) (Cf).—This soil resembles Cecil fine sandy loam, undulating phase, but because of its stronger slopes it is more easily eroded. Some areas have lost considerable surface soil, and gullies, deep but widely spaced, have formed over about one-fourth of the total acreage. Surface runoff is medium to rapid, and internal drainage is medium. Small areas having a sandy loam surface soil are mapped with this soil.

Use and management.—About 74 percent of the large acreage of Cecil fine sandy loam, rolling phase, is in forest. About 20 percent is in cultivation, and small percentages are idle or in pasture. The soil is easy to work and fairly easy to conserve.

Management needs are similar to those of the undulating phase. Simple methods of erosion control are needed, particularly where dark tobacco is grown. Cultivation should be on the contour, and the rotation should include sod crops. Under ordinary management, yields are medium to low, but they could be increased by improved management.

Cecil fine sandy loam, hilly phase (12 to 20 percent slopes) (Ce).—Similar to the undulating phase in most characteristics, this soil has stronger slopes and is shallower over weathered rock. Surface runoff is rapid to very rapid, and internal drainage is medium. Some areas are moderately sheet eroded; a few heavily wooded areas are only slightly eroded. Deep but widely spaced gullies have formed over nearly half the total acreage. Open areas, particularly those under cultivation or lying idle, are subject to severe washing and gullying.

Use and management.—An estimated 85 percent of this soil is in forest; 10 percent is cultivated; and the rest is largely in pasture. It is hard to work and conserve. Under ordinary management yields are low.

Small grains and hay are the main crops. Yields usually are considerably lower than on the undulating phase of this series. A few farmers use this hilly phase entirely for pasture, and where enough lime and fertilizer are applied, the pasture is fairly good. Uncleared areas should remain in forest.

Cecil clay loam, eroded undulating phase (2 to 7 percent slopes) (Cb).—In many characteristics this soil is similar to Cecil fine sandy loam, undulating phase. It differs mainly in its surface soil, which is red and moderately fine textured. It is one of the least extensive Cecil soils. It occurs in rather small areas surrounded by coarser textured Cecil soils. Surface runoff and internal drainage are medium. Sheet erosion has been very active in most places, and little of the original surface soil remains. Gullies have formed in a few spots.

Profile description for forested areas:

Surface soil—
0 to 5 inches, red friable clay loam; weak to moderate medium blocky structure; sticky and moderately plastic when wet.
Subsoil—
5 to 35 inches, red firm clay; hard when dry; moderate medium blocky structure.
Parent material—
35 to 42 inches, soft decomposed schist or granitic rock.

Small mica flakes are present in all the profile layers and are most numerous in the lowest layer. The surface soil and subsoil colors are darker in areas where the granitic parent material is mixed with basic rock material.

The soil is very strongly acid. It is low in organic matter and of low fertility. It is moderately permeable and retains moisture well.

Mapped with this soil are a few small areas of Madison clay loam, eroded undulating phase, which has a more micaceous subsoil and parent material. Where the parent material was influenced to a great degree by basic rock, a soil formed that has many of the characteristics of Lloyd clay loam, eroded undulating phase.

Use and management.—This phase is about 47 percent cultivated and 34 percent forested. About 15 percent is idle and has a cover of broomsedge and weeds. Workability is not particularly good because both the moderately fine textured clay loam surface soil and the clay subsoil tend to become sticky when moist. The soil is fairly easy to conserve and has a wide range of suitability. It is only medium to low in productivity, but it responds well to good management. Corn, small grains, and hay are the chief crops; dark tobacco is grown in a few places. Corn yields are lower than on the undulating phase, but small grain yields are higher.

Management needs are similar to those of the undulating phase of Cecil fine sandy loam.

Cecil clay loam, eroded rolling phase (7 to 12 percent slopes) (Ca).—This red soil is similar to Cecil clay loam, eroded undulating phase, except that it has stronger slopes and is a little shallower to the bedrock. It has been seriously damaged by sheet erosion and is also deeply gullied over about one-third of its acreage. Surface runoff is medium to rapid; internal drainage is medium.

Use and management.—About 53 percent of this soil is in forest. Many areas support a dense stand of second-growth pine, or of mixed pine and hardwood sprouts. Other areas are covered with brush, broomsedge, brambles, and other undesirable plants. About 32 percent of this phase is cultivated, 9 percent is idle, and 6 percent is used for pasture. The soil is a moderate to poor producer of crops but is fairly easily conserved. It can be worked fairly easily when dry, but when moist it becomes sticky and adheres to the plow.

The crops are mainly corn, small grains, and hay; dark tobacco is grown to some extent. Yields are about the same as on Cecil clay loam, eroded undulating phase. The hazard of further erosion is moderate to high, and careful management is needed to protect the soil.

Good pastures can be grown by using proper methods of seeding and by applying enough lime and fertilizer.

Cecil clay loam, severely eroded rolling phase (7 to 12 percent slopes) (Cd).—About half of this phase has lost most of its surface soil and some of its subsoil through erosion. Many deep gullies have formed in more than

one-half of the total area. Surface runoff is medium to rapid and internal drainage medium.

Use and management.—About 71 percent of this soil is in forest, and 17 percent of it is cultivated; the rest is mostly idle. The soil is too shallow for trees to grow rapidly. It is poorly suited to tilled crops because it is hard to work and conserve and is not productive. Cleared areas might produce hay or pasture under good management. A thick sod should be maintained to control erosion. Some farmers have greatly improved areas of this soil by growing kudzu. This is a luxuriant perennial that protects the soil and can be cut for hay. Kudzu crowns should be planted in holes or trenches that are about 15 inches deep (*11*). Good growth can be obtained by applying phosphorus and potassium in proper amounts.

Cecil clay loam, severely eroded hilly phase (12 to 20 percent slopes) (Cc).—This phase is like the severely eroded rolling phase, except that it has stronger slopes and has been more seriously damaged by sheet erosion. A large part of the area is deeply gullied. Surface runoff is rapid to very rapid, and internal drainage is medium.

Use and management.—About 68 percent of this soil is in forest consisting principally of Virginia pine; there is a little oak, dogwood, and hickory. About 15 percent of the soil is in cultivation, and 12 percent is pasture. About 5 percent is idle and has a cover of broomsedge, briers, and weeds. Strong slopes and excessive erosion in most places make cultivation of this soil impractical. Satisfactory pastures can be maintained if enough fertilizer and lime are applied and other management is good. Kudzu can be grown for erosion control.

Cecil and Georgeville very fine sandy loams, undulating phases (2 to 7 percent slopes) (Cl).—This undifferentiated soil group consists of medium-textured Cecil soil intricately mixed with soils of the Georgeville series. The Cecil component has a light-colored surface soil and a red firm subsoil. The Georgeville component is similar, except that it has a more silty texture throughout the profile. The surface soil texture of this group varies within short distances from very fine sandy loam to silt loam.

The parent material varies. In some places, it is soft decomposed granite and granite gneiss; in others it is thoroughly weathered fine-grained schist. In general the Cecil parent material weathered from micaceous schist mixed in places with granite and granite gneiss; the parent material of the Georgeville soils weathered from fine-grained schists. Surface runoff is slow to medium and internal drainage medium. Sheet erosion ranges from slight to severe, but is moderate over most of the area. Where erosion has been severe, the red subsoil is exposed and contrasts sharply with the lighter colored surface soil. This soil group occurs principally in the southeastern part of the county.

Profile description of Cecil very fine sandy loam, undulating phase:

Surface soil—
0 to 7 inches, pale-yellow friable very fine sandy loam; weak fine granular structure; forested areas have a small amount of dark-gray litter on the surface.

Subsoil—
7 to 11 inches, yellowish-red firm clay; moderate medium blocky structure; hard when dry.
11 to 52 inches, red firm clay; moderate medium blocky structure; hard and brittle when dry.

Parent material—
52 inches +, mottled friable clay loam material mixed with fragments of soft schist.

Profile description of Georgeville silt loam, undulating phase:

Surface soil—
0 to 8 inches; brownish-yellow friable silt loam; moderate fine to medium granular structure; contains a considerable quantity of very fine sand.

Subsoil—
8 to 12 inches, reddish-yellow to yellowish-red friable silty clay loam; moderate medium blocky structure.
12 to 25 inches, red friable to firm silty clay; strong blocky structure.
25 to 40 inches, red friable silty clay loam; weak fine blocky structure; small partly weathered schist fragments; no mica evident.

Parent material—
40 to 54 inches +, red soft decomposed schist; highly silty but lacking in mica; smooth and slick; grades into pink flaky decomposed fine-grained schist streaked with pinkish white and light shades of red.

The parent rock is a schist. In places there are some sharp-edged pieces of quartz grit no larger than fine gravel. The surface soil texture varies from silt loam to very fine sandy loam.

The soils of this group are strongly acid and relatively low in fertility. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate.

Use and management.—About 70 percent of the relatively large acreage of Cecil and Georgeville very fine sandy loams, undulating phases, is in forest. Many of the areas support a growth of scarlet, red, and black oak, red maple, dogwood, hickory, and yellow-poplar. Hardwoods are interspersed by heavy stands of Virginia pines and shortleaf pines. About 21 percent of the acreage is used for cultivated crops, and the rest is in pasture and brush or is idle. The principal crops are corn, small grains, dark tobacco, hay, and tree fruits.

The usual crop rotation consists of corn or dark tobacco, wheat or barley, and lespedeza or clover. Corn produces about 28 bushels an acre under ordinary management. Greatly increased yields can be obtained by applying generous amounts of a complete fertilizer and adding sufficient lime to make the pH value at least 5.5. Dark tobacco produces about 1,000 pounds an acre. Under ordinary management wheat produces about 10 bushels per acre and barley about 20 bushels. Yields can be increased greatly by improved management. Lespedeza and red clover are the common hay crops. Yields can be increased by applying commercial fertilizers, barnyard manure, and lime.

Farmers near Abilene grow bright tobacco on this soil. After the tobacco is harvested, some farmers allow the land to lie fallow 2 or more years before planting tobacco again. Each new crop usually gets a complete fertilizer.

Apples and peaches are grown in the Green Bay area. Orchardists apply a complete fertilizer to the orchard cover crop and nitrogen fertilizer to each tree every year.

Cecil and Georgeville very fine sandy loams, rolling phases (7 to 12 percent slopes) (Ck).—Stronger relief is the main difference between this mapping unit and the undulating phases. Surface runoff is medium to rapid and internal drainage is medium. Sheet erosion is mostly moderate, but it varies from slight to severe. Deep but widely spaced gullies have formed on about one-tenth of the acreage.

Use and management.—Only about 14 percent of this mapping unit is used for cultivated crops; about 77 percent is in forest. The rest is idle or in pasture. Crops and

management are essentially the same as those for the undulating phases. Less tobacco, however, is grown and more emphasis is placed on the growing of small grains and grasses. Measures to control surface runoff are essential for the cultivated areas. Many areas can be used for pasture if treated with lime, phosphorus, and nitrogen.

Cecil and Georgeville very fine sandy loams, hilly phases (12 to 20 percent slopes) (Ch).—This mapping unit has stronger slopes and is shallower than the undulating phases of Cecil and Georgeville very fine sandy loams. Otherwise, the two soil groups are similar. Surface runoff is rapid to very rapid, and internal drainage is medium. Sheet erosion is moderate. About half of the acreage is dissected by a few deep gullies.

Use and management.—About 87 percent of this soil is in forest; the rest is cultivated or in pasture. A few of these hilly areas are in orchards. Small tracts of this soil are planted to cultivated crops on farms where open land is scarce. The soil is difficult to conserve when cultivated. Small grains and hay are grown to some extent. Areas that already are cleared possibly could be used for pasture but, on the whole, the best use for these hilly soils is forestry.

Chewacla silt loam (0 to 2 percent slopes) (Cm).—This soil is similar in most physical characteristics to Congaree silt loam. It differs chiefly in having slower internal drainage. It is derived from recent alluvial deposits on first bottoms along streams and is subject to periodic overflow. It is closely associated with Congaree and Wehadkee soils. Surface runoff is very slow and internal drainage is slow.

Profile description:

Surface soil—
0 to 12 inches, light yellowish-brown to brown friable silt loam; weak fine crumb structure.
Subsoil—
12 to 36 inches, mottled yellowish-brown and gray friable silty clay; weak fine blocky structure.
Underlying material—
36 to 42 inches, prominently mottled yellowish-brown and light-gray fine-textured alluvial material that contains small rounded waterworn pebbles and other rock fragments.

The soil has a medium organic-matter content. It is slightly acid and medium to high in fertility. The surface soil is moderately permeable and the subsoil slowly permeable. Water-holding capacity is moderate. A few areas are swampy.

Use and management.—An estimated 49 percent of this soil is in forest, 22 percent is cultivated, 15 percent is in pasture, and 14 percent is idle. Workability is good to fair and conservability good. Under ordinary management yields of corn, soybeans, and hay crops are high. Because the areas of this soil are generally small, artificial drainage other than by open ditches is not economically feasible.

Under ordinary management corn produces an average of about 40 bushels an acre. Yields can be substantially increased by better management that includes application of complete fertilizer at seeding and a side dressing of nitrogen. Lespedeza produces an average of about 1 ton of hay per acre. In areas where heavy farm machinery can be used, soybeans would be a suitable crop.

The carrying capacity of pasture under ordinary management is one animal unit to about 3 acres. Pastures can be improved by planting a mixture of suitable grasses and clover and applying lime to make the pH value 5.5 or 6.0.

Colfax fine sandy loam, undulating phase (2 to 7 percent slopes) (Cn).—The largest area of this soil occurs in the eastern part of the county, but small acreages are scattered in other parts. In most areas, this soil is at the heads of intermittent drainageways in semicircular depressed rims. It is associated mainly with the Appling, Durham, and Worsham soils, and to a less extent with the Vance and Helena soils. Surface runoff is slow to medium and the soil is somewhat poorly drained. Internal drainage is medium to slow because the subsoil has a firm claypan. Some areas of this soil have slopes that range up to 12 percent.

Profile description for forested areas:

Surface soil—
0 to 3 inches, dark-gray friable fine sandy loam, containing very dark-gray forest litter; weak fine granular structure.
3 to 15 inches, brownish-yellow friable fine sandy loam; weak fine granular structure.
Subsoil—
15 to 35 inches, claypan; mottled light-gray, brownish-yellow, and strong-brown firm fine sandy clay; plastic when wet; hard and compact when dry.
Parent material—
35 to 42 inches, light-colored soft disintegrated granite or gneiss.

In cultivated fields the plow layer is brownish yellow or yellowish brown. The thickness and color of the subsoil varies considerably from place to place, and in some areas the claypan is more pronounced than in others. In many places fine pieces of gravel in the lower part of the subsoil may cause firm cementation in this layer.

The soil is very strongly acid and low in fertility. Surface soil permeability is moderately rapid, and subsoil permeability is moderately slow. Water-holding capacity is moderate.

Use and management.—About 45 percent of this soil is in forest, 37 percent is cultivated, 5 percent is in pasture, and 13 percent is idle. The soil is easy to conserve. Workability is good in some places, but it is only fair in many places because the claypan restricts internal drainage. Under ordinary management, yields are poor to moderate.

The soil is used for corn, small grains, hay, and pasture; a few farmers grow bright tobacco. Corn produces about 20 bushels an acre. Yields can be increased by applying substantial amounts of a complete fertilizer and adding farm manure before plowing. Some farmers use a rotation consisting of corn, wheat or barley, and lespedeza for 1 or 2 years. Small grains should be given a liberal quantity of a complete fertilizer, and a spring application of nitrogen. Lime should be applied in proper amounts at least once in the rotation cycle. A mixture of clover and grass should improve pastures.

Congaree fine sandy loam (0 to 2 percent slopes) (Co).—This is a brown well-drained soil derived from recently deposited alluvial materials. It occurs chiefly on narrow first bottoms along the Appomattox River. It is frequently flooded, and for this reason alone it is not used generally for cultivated crops. The generally level or nearly level relief is broken by scattered slight hummocks. Surface runoff is very slow and internal drainage is medium to rapid.

Profile description:

Surface soil—
0 to 8 inches, brown very friable fine sandy loam; weak fine crumb structure.
Subsurface—
8 to 30 inches, yellowish-brown friable loam or fine sandy clay; weak fine crumb structure.
Underlying material—
30 to 40 inches, mottled brown, yellowish-brown, and gray alluvium containing small rounded pebbles and other rock fragments.

In many places the profile consists of stratified alluvial material, the layers of which show considerable variation in color, texture, and thickness.

Enriched by flood-deposited sediments, the soil is naturally high in fertility. It is strongly acid and fairly low in organic matter. The rate of infiltration is rapid, but the subsurface is moderately permeable. Water-holding capacity is moderate.

Use and management.—About 43 percent of this soil is in forest, 38 percent is cultivated, 9 percent is in pasture, and 10 percent is idle. Workability is excellent and conservability is good. Corn, hay, dark tobacco, and vegetables give good yields. Watermelons, cantaloups, and other truck crops are commonly grown. The soil does not retain plant nutrients as well as some of the finer textured soils of uplands, but it is very responsive to the use of lime and fertilizer.

Congaree silt loam (0 to 2 percent slopes) (Cp).—This soil has formed on first bottoms from recently deposited alluvial materials. It is very similar to Congaree fine sandy loam, but has somewhat finer texture. It lies just a few feet above stream level and is flooded periodically. Surface runoff is very slow and internal drainage is medium.

Profile description:

Surface soil—
0 to 10 inches, brown friable silt loam; weak fine crumb structure.
Subsurface—
10 to 32 inches, light yellowish-brown friable silty clay loam to silty clay; weak fine crumb structure.
Underlying material—
32 to 40 inches, mottled yellowish-brown and gray silty clay loam alluvium; some coarse gravel, rounded pebbles, and other rock fragments.

The soil is medium acid and is high in fertility. It is moderately permeable, and its capacity for holding water is high.

Use and management.—About 54 percent of this soil is cultivated; 32 percent is forested, 3 percent is in pasture, and 11 percent is idle. The soil has good workability, and heavy machinery can be used in farming. The soil is very easy to conserve. It is highly productive of most crops commonly grown in the county, including dark tobacco; hay is the main crop. A few farmers plant small plots of melons, sweetpotatoes, and other vegetables, mainly for home consumption. The soil is of high fertility. Additions of lime and fertilizer help increase crop yields.

Creedmoor fine sandy loam, undulating phase (2 to 7 percent slopes) (Ct).—Friable and moderately coarse textured, this soil has a slowly permeable subsoil. It has been formed from products that weathered from Triassic sandstone and shale. It occurs mainly in the Farmville and Worsham vicinities, where it is associated with the Steinsburg, Mayodan, and Wadesboro soils, which have developed from similar parent material. Surface runoff is slow to medium and internal drainage is slow.

Profile description:

Surface soil—
0 to 3 inches, dark grayish-brown friable heavy fine sandy loam; weak fine to medium granular structure.
3 to 7 inches, yellowish-brown friable fine sandy loam; weak fine to medium granular structure.
7 to 11 inches, pale-yellow friable fine sandy loam; weak medium granular structure.
Subsoil—
11 to 26 inches, yellowish-red firm clay to silty clay, slightly plastic when wet; weak fine blocky structure.
26 to 38 inches, reddish-yellow firm clay mottled with pale yellow; sticky and plastic when wet; moderate medium to coarse blocky structure.
Parent material—
38 to 43 inches, mottled light-gray, dark grayish-brown, and strong-brown clay mixed with soft decomposed fragments of Triassic shale and sandstone.

The thickness of the surface layer and the color of the subsoil vary considerably. In some places the surface layer is only 7 inches thick; in others it is considerably thicker than the profile description indicates. In many places the depth varies because sheet erosion has removed part of the surface soil. The color of the subsoil varies from yellowish red to strong brown, pale yellow, or finely mottled gray and white.

This soil is strongly acid and low in organic matter, and is of low fertility. The surface soil is moderately permeable and the subsoil slowly permeable. The water-holding capacity is moderate.

Use and management.—About 59 percent of this soil is in forest; 28 percent of it is in crops, 9 percent is idle, and 4 percent is in pasture. Intensive cultivation is not practical in many places because the heavy subsoil impedes internal drainage. This causes moisture conditions that are unfavorable for the use of heavy farm machinery.

Near Farmville this soil is used to a limited extent for bright tobacco. Much of the land, however, is idle or supports only poor pasture or weeds.

Around Worsham farmers raise livestock and use this soil for corn, small grains, hay, and dark tobacco. Corn yields are good if manure and a complete fertilizer are applied to the soil. If manure is not used, heavier applications of complete fertilizers are needed. Fertilizer requirements for small grains are the same. Proper amounts of lime should be applied at least once in the rotation, particularly if lespedeza or some other leguminous hay crop is grown. Dark tobacco can be substituted for corn in the regular rotation. It requires heavy applications of a complete fertilizer. In some places, the soil can be cultivated only within a narrow range of moisture conditions. These areas are best suited to hay crops or pasture.

Creedmoor fine sandy loam, rolling phase (7 to 12 percent slopes) (Cs).—In most characteristics this soil is similar to the undulating phase, but it differs in having stronger slopes. It occurs mainly in narrow strips adjacent to intermittent drainageways. Surface runoff is medium to rapid and internal drainage is slow. Sheet erosion is moderate. Deep gullies occur in only a small part of the total area.

Use and management.—About 57 percent of this soil is in forest, and 33 percent is cultivated; the rest is in

pasture or is idle. Workability is fair and conservability is fair to poor. Crop yields under ordinary management are moderate to low.

Small acreages of this soil are most feasibly used for the same crops that are planted on the closely associated Creedmoor fine sandy loam, undulating phase. Management requirements are the same. Large areas of this soil should be used for crops only if the farms do not have other soils better suited to tillage.

To conserve this soil, many farmers are using it for permanent pasture. Good pastures can be established by applying liberal amounts of commercial fertilizer or farm manure and proper tonnage of lime every 3 years. Ladino clover is a good crop to be included in the pasture mixture.

Creedmoor fine sandy loam, eroded rolling phase (7 to 12 percent slopes) (Cr).—In profile characteristics this soil is similar to Creedmoor fine sandy loam, undulating phase. Sheet erosion is moderate, for the most part. Surface runoff is medium to rapid and internal drainage is slow. The predominant relief is rolling, but mapped with this soil are about 59 acres that have slopes of 2 to 7 percent and 3 acres that have slopes of 12 to 20 percent.

Use and management.—About 70 percent of this soil is in forest. Much of the forest is pine and hardwood seedlings. About 16 percent of the total acreage is idle and supports mainly a growth of weeds; about 11 percent is cultivated and 3 percent is in pasture. Workability and conservability are fair to poor. Under ordinary management, yields are moderate to low.

The small acreage cultivated is managed in the same manner as Creedmoor fine sandy loam, undulating phase. Crops that require intensive cultivation should not be planted because they increase the risk of further erosion. Hay crops can be grown successfully. The small acreage in pasture usually gets very little lime or fertilizer. Pasture grasses are not of the best quality, and yields are rather low. Ladino clover seeded in pasture mixtures will improve the stand and the yield of forage.

Durham sandy loam, undulating phase (2 to 7 percent slopes) (Da).—This moderately coarse textured, open, permeable soil has formed from residual material that weathered from granite, schist, and gneiss, chiefly from granite. It occurs in the extreme eastern part of the county near Burkeville in association with the Appling and Louisburg soils. About 119 acres mapped with this soil has rolling rather than undulating relief. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion has damaged the soil to a moderate degree, and a few deep gullies have formed on the rolling slopes.

Profile description:

Surface soil—
0 to 12 inches, very pale brown very friable sandy loam; weak fine granular structure.
12 to 16 inches, yellow friable sandy loam; weak fine granular structure; slightly hard when dry.
Subsoil—
16 to 30 inches, brownish-yellow friable sandy clay loam; weak fine blocky structure; hard when dry.
Parent material—
30 to 38 inches, mottled reddish-yellow and white friable clay loam to sandy clay loam; slightly hard when dry.

The surface soil usually contains grit and is nearly white when dry. Leaching through the surface soil is rapid. The thickness of the surface soil varies considerably and depends on the location and the depth of accumulated material it has received from surrounding soils. The thickness of the surface soil largely determines the permeability of the soil. In forested areas a ½-inch layer of forest litter covers the surface.

The soil is very strongly to strongly acid. It is low in organic matter and of low fertility. Permeability is moderately rapid to rapid in the surface soil and moderate to moderately slow in the subsoil. Roots normally penetrate to depths below the subsoil. The soil has a moderately low water-holding capacity.

Use and management.—About 46 percent of this soil is used for cultivated crops. About 40 percent is in forest, and 7 percent each is in pasture and idle. Workability is very good, conservability good to fair, and productivity medium.

Many farmers use this soil entirely for bright tobacco, a crop for which it is very well suited. Near Burkeville some operators use the soil for grain and hay and for pasture.

Many tobacco growers follow a rotation consisting of bright tobacco, a small grain, usually wheat, and mixed grasses. Some farmers obtain high yields of good tobacco on areas disked late in fall and treated at that time with phosphorus fertilizer. A complete fertilizer is applied at planting time in the spring. Other farmers obtain good yields of high-quality bright tobacco by fertilizing it properly and growing it every other year in a rotation with small grains.

Corn is grown to a limited extent in a rotation with small grains and hay. Yields average about 50 bushels per acre under good management. Enough lime is applied to raise the pH value to 6.0. Barnyard manure is spread over the fields before plowing, and a complete fertilizer is applied in the rows when the corn is planted. A nitrogen side dressing is applied 4 to 6 weeks after planting.

Fertilizer treatment for wheat and other small grains is essentially the same as for corn. The soil is low in natural fertility, so liberal quantities of organic matter and commercial fertilizers must be added for satisfactory small-grain yields.

Fluvanna fine sandy loam, undulating and rolling phases (2 to 12 percent slopes) (Fa).—This group of well-drained soils was derived from residual products that weathered from mixtures of granite and gneiss and hornblende gneiss and schist. The soils occur in small areas that are well distributed over the county, and are usually closely associated with the Lloyd soils. About 396 acres have undulating slopes of 2 to 7 percent, and about 234 acres have rolling slopes of 7 to 12 percent. Surface runoff is medium to rapid and internal drainage is medium. Sheet erosion varies from slight to moderate. A few deep gullies have formed on some of the slopes.

Profile description:

Surface soil—
0 to 7 inches, dark grayish-brown friable heavy fine sandy loam; weak fine granular structure.
Subsoil—
7 to 11 inches, yellowish-brown friable clay loam; weak fine blocky structure.
11 to 27 inches, yellowish-red friable clay; moderate medium blocky structure; slightly plastic when wet.
27 to 47 inches, reddish-yellow friable clay; moderate to weak medium blocky structure; slightly plastic when wet.
Parent material—
47 to 57 inches, mottled red and strong-brown friable clay loam; slightly hard when dry.

Profile depth to parent material varies somewhat from place to place. Much quartz gravel occurs in the subsoil in some places.

The soil is strongly to very strongly acid. It has fair fertility. Permeability is moderate in the surface soil and moderate to moderately slow in the subsoil. The soil retains moisture well.

Use and management.—About 55 percent of the acreage of this group of soils is in forest, and 38 percent is cultivated; small parts are in pasture or are idle. Workability is fair to very good and conservability fair to good. Under ordinary management yields are low to moderate.

Corn and small grains are the principal crops; dark tobacco is grown to a lesser extent. Complete fertilizers, and as much manure as is available, usually are applied to increase yields of these crops. Small grains seldom are fertilized when grown in a rotation following dark tobacco. When they are grown in a rotation with corn and hay, complete fertilizers are applied at seeding time and better yields are obtained. Lespedeza hay is grown following small grains in a rotation with corn and dark tobacco. Yields of hay can be improved if complete fertilizers or phosphorus and potassium are applied in proper amounts. Hay that is grown following tobacco usually gets no additional fertilizer, but if it is given a nitrogen topdressing during the growing season, yields are improved.

Yields of dark tobacco are improved by applying proper amounts of complete fertilizers. These amendments must be thoroughly mixed into the soil to avoid injury to roots of young tobacco plants.

The quality and yields of grass and clover pastures are improved by applying proper amounts of complete fertilizers.

Gullied land (2 to 7+ percent slopes) (Ga).—This land type, scattered throughout the county, includes many soil types. It is all so deeply eroded that very little remains of the original soil profiles. It consists almost entirely of an intricate pattern of deep gullies, which unless controlled, may encroach on the less severely eroded surrounding soils.

Use and management.—Practically all Gullied land has some form of forest vegetation. It has very little agricultural value. Some areas have been successfully covered with kudzu vines. Where the gullies threaten to spread, kudzu can be grown to stabilize the soil.

Helena fine sandy loam, undulating phase (2 to 7 percent slopes) (Hb).—This phase occurs in all parts of the county, most extensively in the southern part. It has a claypan subsoil and is somewhat poorly drained. It has formed from products that weathered from mixed granite and gneiss rocks and to some extent from hornblende gneiss and schist. Surface runoff is slow to medium and internal drainage is slow. Sheet erosion ranges from slight to moderate. A few deep gullies have formed.

Profile description:

Surface soil—
0 to 12 inches, pale-yellow friable fine sandy loam; weak fine granular structure.
Subsoil—
12 to 17 inches, yellow friable fine sandy clay loam; moderate medium blocky structure; slightly hard when dry.
17 to 25 inches, claypan; mottled pale-brown and pale-yellow firm clay; plastic when wet; moderate coarse blocky structure.
25 to 30 inches, claypan; mottled light-gray and strong-brown firm clay; plastic when wet; moderate coarse blocky structure.
Parent material—
30 to 37 inches, mottled strong-brown, light-gray, and white clay loam.
37 inches +, soft decayed rock.

The surface soil texture is sandy loam in some places. In forested areas the surface is covered by a ½-inch layer of very dark gray forest litter.

This soil is strongly acid and of low fertility. Permeability is moderately rapid in the surface soil and slow in the subsoil. The water-holding capacity is moderate.

Use and management.—Approximately 65 percent of Helena fine sandy loam, undulating phase, is in forest, and 24 percent is cultivated; the rest is idle or in pasture. Workability is poor to fair and conservability is fair. Under ordinary management, yields are low to moderate.

Poor drainage is a major management problem. Artificial drainage by tiling is too expensive to be practical.

The main crops are corn, bright tobacco, and hay. Small grains are grown to some extent. In some areas farmers use this soil for vegetable gardens; in other areas it is used entirely for pasture.

Corn is grown in a rotation with small grains and hay, and its yields usually are low. Yields can be improved by applying complete fertilizers when fields are disked and again at the time corn is planted. In addition, a nitrogen side dressing should be given when the crop is about knee high.

Yields of small grains are increased by applying complete fertilizers at seeding time in the fall and by topdressing with nitrogen early in spring. Lespedeza, the principal hay crop, usually gets a complete fertilizer at seeding time and a topdressing later in the season while the crop is growing. All crops except tobacco need heavy applications of lime.

Some farmers grow bright tobacco in a short rotation with small grains. After the grain is harvested they allow the land to lie idle for 2 or 3 years before again planting tobacco. Tobacco yields have been good where a complete fertilizer has been applied at planting time. Many farmers ridge the soil before planting so as to prevent roots from reaching the accumulation of water above the claypan. Crop losses can be prevented by draining off excess water after heavy rains.

Most of the pastures will not support the better grasses because fertilizers have not been applied.

Helena fine sandy loam, rolling phase (7 to 12 percent slopes) (Ha).—Stronger slopes are the principal difference between this soil and the undulating phase. This soil is fairly extensive and occurs in narrow bands along intermittent drainageways, in close association with the undulating phase. Surface runoff is medium to rapid and internal drainage is slow. Sheet erosion damage is generally moderate. Gullies are few in number but are deep on about 40 percent of the soil area.

Use and management.—About 72 percent of this soil is in forest, and 17 percent is cultivated; small percentages are idle or in pasture. Workability and conservability are poor to fair, and productivity is low.

Most farmers cultivate the rolling phase and the undulating phase together. Management practices and fertilizer treatment are essentially the same for both phases. The rolling phase is highly erodible under cultivation and

requires greater care to prevent erosion. Long rotations consisting predominantly of sod crops should be followed. Areas that have not already been cleared should be left in forest.

Iredell-Zion fine sandy loams, undulating phases (2 to 7 percent slopes) (Ib).—The soils of this complex were derived from products that weathered from dark-colored basic rocks. The complex occurs chiefly in the western part of the county south of Pamplin, near the Charlotte County line. It consists predominantly of Iredell fine sandy loam, undulating phase, interspersed with smaller areas of Zion fine sandy loam, undulating phase. In some places the soil characteristics are intermediate between those of the Iredell and those of the Zion soils.

Surface runoff is slow to medium. Internal drainage in the Iredell soil is very slow and in the Zion soil, medium to slow. Sheet erosion damage is moderate in both soils.

Profile description of Iredell fine sandy loam, undulating phase:

Surface soil—
0 to 6 inches, dark-gray friable fine sandy loam; weak fine granular structure.
6 to 10 inches, gray or light-gray friable fine sandy loam; weak fine granular structure; many black and brownish-black pea-size manganese and iron concretions.
Subsoil—
10 to 28 inches, claypan; dark yellowish-brown fine-textured very firm clay; massive structure.
Parent material—
28 inches +, olive and black well-decomposed diorite rock.

The quantity of concretions in the lower part of the surface soil varies somewhat from place to place. The subsoil layer ranges in thickness from about 12 to 24 inches. In nearly level or gladelike areas the subsoil is mottled gray and yellow, particularly in the lower part.

Profile characteristics of Zion fine sandy loam, undulating phase:

Surface soil—
0 to 4 inches, pale-brown friable fine sandy loam; weak fine granular structure; soft when dry.
Subsoil—
4 to 17 inches, yellowish-brown strongly cemented clay; small rounded ironstone concretions.
17 to 34 inches, claypan; strong-brown very firm or firm clay; sticky and plastic when wet; moderate coarse blocky structure.
Parent material—
34 to 46 inches, strong-brown to very dark brown friable clay; many small fragments of weathered hornblende gneiss and schist.

In many places the surface is strewn with numerous small rounded ironstone concretions. Angular and rounded stones are intermixed with the gravel in many places. The gravelly pan layer, 2 to 11 inches thick, underlies some of this phase at depths of 6 to 20 inches, but in many places it is lacking.

These soils are slightly acid to neutral in reaction. Their organic-matter content is medium to low. They are moderately fertile, although low in potassium. The surface soil is moderately permeable. The Iredell subsoil is very slowly permeable; the Zion subsoil is slowly permeable. Water-holding capacity generally is moderate.

Use and management.—About 65 percent of this complex is in forest, and 28 percent is cultivated; the rest is idle or in pasture. Workability is fair to poor, because of the heavy clay subsoil. In some places stones and gravel on the surface and in the subsoil interfere with cultivation by farm machinery. The complex is fairly easy to conserve, and is a medium to low producer of crops.

Corn, small grains, dark tobacco, and hay are the common crops. Corn is grown in a rotation with wheat or barley and lespedeza for hay. Yields are small but can be increased by using liberal quantities of complete fertilizer and a side dressing of nitrogen.

Wheat follows either corn or dark tobacco in the rotation. Wheat following a tobacco crop is not ordinarily fertilized at planting but is topdressed with a nitrogen fertilizer in spring. Small grains following corn should produce moderate yields if treated with a complete fertilizer.

Lespedeza, the principal hay crop, usually is seeded with redtop or orchardgrass. Yields are good if the soil is treated with phosphorus and potassium. A few farmers grow dark tobacco. Yields average about 700 pounds per acre if enough complete fertilizer is applied. Tobacco land is plowed so as to have fairly high ridges.

Some areas of this complex are used entirely for pasture. Ladino clover in pasture mixtures will increase the grazing value materially, especially if lime and liberal quantities of complete fertilizers are applied.

Iredell-Zion fine sandy loams, rolling phases (7 to 12 percent slopes) (Ia).—Stronger slopes are the main difference between these soils and the undulating phases. Surface runoff is medium to rapid. Internal drainage is very slow in the Iredell soil and moderate to slow in the Zion soil. Sheet erosion damage ranges from moderate to severe. Some deep gullies have formed but in most areas they are widely spaced.

Use and management.—An estimated 76 percent of this complex is in forest, and 12 percent is in crops; the rest is idle or in pasture. Workability is fair to poor and productivity is medium to low. Under intensive cultivation, the soil erodes rapidly. Except for minor differences necessitated by the stronger slopes, management practices and fertilizer requirements are similar to those of the undulating phases. Areas that are used for pasture are generally those not suitable for crops because of poor drainage, poor workability, or inaccessibility.

Lloyd loam, eroded undulating phase (2 to 7 percent slopes) (Lf).—Chocolate land is the local name for this deep, reddish-brown soil. It has formed from residual material that weathered from granite and gneiss, and basic rocks. It occurs in widely scattered areas throughout the county and is associated with the Bremo, Fluvanna, and Wilkes soils. Some of the largest areas are in the vicinities of Prospect and Darlington Heights. Surface runoff and internal drainage are medium. Sheet erosion damage is slight to moderate.

Profile description:

Surface soil—
0 to 7 inches, reddish-brown friable loam; weak fine granular structure.
Subsoil—
7 to 42 inches, red to dark-red firm clay; moderate fine to medium blocky structure.
Parent material—
42 to 60 inches, mottled dark-red and dark reddish-brown friable clay loam.
60 inches +, soft partly weathered fragments of dark-colored basic rock mixed with reddish friable clay loam.

In some places the surface soil is grayish brown, and small mica flakes are scattered through the entire profile. The

thickness of the surface soil varies considerably, depending largely on the extent of sheet erosion.

The soil is medium in acidity and fertility. It is moderately permeable and has a moderate water-holding capacity.

Use and management.—About 59 percent of this soil is in forest, and 34 percent is cultivated; small parts are in pasture or are idle. Workability is good to very good, conservability good, and productivity medium.

This soil (fig. 3) is one of the best in the county for corn,

***Figure 3.*—Under good management, Lloyd loam, eroded undulating phase, is easily maintained in a productive state for a wide variety of crops, including corn, small grain, hay, and dark tobacco.**

small grains, and dark tobacco, and for lespedeza, alfalfa, and clover hay. It is also good for pasture. Corn is commonly grown in a rotation that includes wheat or barley and 2 or 3 years of hay, usually lespedeza. Under such management corn produces about 36 bushels an acre. This yield can be almost doubled if a complete fertilizer is disked in before the corn is planted, if the preceding legume crop is turned under, and additional complete fertilizer is applied in the rows at planting time.

Dark tobacco is substituted sometimes for corn in the usual rotation. Yields of tobacco are good if a complete fertilizer is applied. The fertilizer should be thoroughly mixed in the soil to prevent plant injury. Small grains that follow tobacco are seldom fertilized at seeding time, but some farmers topdress the crop with nitrogen later on. When small grains follow corn in the rotation, a complete fertilizer is applied. Good yields of legume hay can be obtained by using adequate lime and by applying a complete fertilizer. The amount of fertilizer needed depends on the rotation and the fertilizer used on the preceding crop.

Lloyd loam, eroded rolling phase (7 to 12 percent slopes) (Le).—In most characteristics, except stronger slopes this soil is similar to the eroded undulating phase. Surface runoff is medium to rapid and internal drainage is medium. Sheet erosion damage is moderate. A few deep gullies have developed in some areas.

Use and management.—About 62 percent of this soil is in forest, 31 percent is cultivated, 6 percent is in pasture, and 1 percent is idle. The soil can be easily worked and is fairly easy to conserve. It is moderately productive and has a wide range of suitability. Except for slight differences in tillage practices, most farmers use and manage this soil in the same way as the eroded undulating phase.

Lloyd loam, eroded hilly phase (12 to 20 percent slopes) (Ld).—Stronger slopes, a shallower profile, and a narrower range of suitability distinguish this soil from the eroded undulating phase. Surface runoff is rapid and internal drainage is medium. Sheet erosion damage is moderate, and a few deep gullies have developed in some areas. Depending on the extent of sheet erosion, the surface soil is loam in some places and clay loam in others.

Use and management.—About 61 percent of Lloyd loam, eroded hilly phase, is in forest, 27 percent is cultivated, 8 percent is in pasture, and 4 percent is idle. Fair to poor workability and poor conservability make this soil hard to cultivate. Trees grow rapidly. Some places have good stands of hardwoods and shortleaf and Virginia pines. Forestry is the best use for much of this soil.

Lloyd clay loam, eroded undulating phase (2 to 7 percent slopes) (Lc).—This soil resembles the associated Lloyd loam, eroded undulating phase, but it has been severely sheet eroded and consequently has a finer textured surface soil. The heavy surface soil is difficult to plow and cultivate under some moisture conditions. Surface runoff and internal drainage are medium. A few deep gullies have developed. In a few places the soil is shallow and is underlain by dark-colored rounded basic rocks.

Use and management.—About 49 percent of this soil is in cultivation and 43 percent is forested; the rest is in pasture or is idle. The soil has good workability. Under ordinary management it is not difficult to conserve. Yields are moderate. Crops, fertilizer needs, and management are similar to those described for Lloyd loam, eroded undulating phase, but the rotation should include more small grains and sod crops. This soil produces good pasture, and is increasingly used for that purpose.

Lloyd clay loam, eroded rolling phase (7 to 12 percent slopes) (Lb).—Most of this soil has been severely sheet eroded, partly as a result of improper cultivation. In many places, the dark-red surface soil has been entirely removed. A few deep but scattered gullies have developed in about one-fourth of the total area; in a few places, gullies are deep and numerous. Surface runoff is medium to rapid and internal drainage is medium.

Use and management.—About 51 percent of this soil is in forest, and 36 percent is cultivated. The rest is in pasture or is lying idle. The soil is fairly easily worked and conserved. Under common management it is moderately productive for corn, dark tobacco, hay, and most other crops grown in the county. Contour tillage and stripcropping should be practiced to control erosion. Long rotations, consisting of a large proportion of sod crops and infrequent row crops, can be followed successfully.

Lloyd clay loam, eroded hilly phase (12 to 20 percent slopes) (La).—This soil occurs in small areas associated with other members of its own series. It has been severely damaged by erosion, and is highly susceptible to additional erosion. The surface soil in some areas is grayish brown instead of dark red depending on the degree of erosion. The profile is shallow and in many places bedrock is exposed. Surface runoff is rapid and internal drainage is medium.

Use and management.—About 55 percent of this soil is in forest, 26 percent is cultivated, 12 percent is in pasture, and 7 percent is idle. Workability is fair to poor, and conservability is poor. Under common management, productivity is low.

Forestry is the best use for this soil. Strong slopes and

advanced erosion make it unsuitable for crops. Cleared areas could be seeded to pasture. General good management, and particularly the application of large quantities of fertilizer, would be needed to establish a stand of good pasture plants.

Louisa fine sandy loam, eroded undulating phase (2 to 7 percent slopes) (Ll).—This inextensive soil has little or no developed subsoil. It occurs mainly on narrow ridgetops, bounded by steep and hilly phases of the Louisa series. Some areas are near Pamplin and Darlington Heights; smaller areas are south of Rice and in the vicinity of Farmville. The soil was derived from residual material that weathered from micaceous rocks. Mica flakes are conspicuous in both the surface soil and the subsurface layers. In places, material from dark-colored basic rock was mixed with the micaceous soil material. Surface runoff is medium and internal drainage is rapid. Most of this phase is moderately sheet eroded. A few deep gullies have formed in some places. The soil is moderately to highly susceptible to further erosion.

Profile description:

Surface soil—
0 to 4 inches, light-gray to light brownish-gray friable micaceous fine sandy loam; weak fine granular structure; smooth and slick.

Subsurface—
4 to 10 inches, grayish-brown to reddish-yellow friable micaceous clay loam, containing soft mica schist particles; very weak fine granular structure.

Parent material—
10 inches +, light-colored soft micaceous schist rock.

In a few places where a slight admixture of basic-rock material and acid mica schist is present in the parent material, the soil resembles Wilkes sandy loam, undulating phase.

The eroded undulating phase of Louisa fine sandy loam is strongly acid. It is low in organic matter and of low fertility. Permeability is moderate in the surface soil and moderately rapid in the subsurface layer. The soil has a moderately low water-holding capacity and does not retain plant nutrients very well.

Use and management.—About 61 percent of this soil is in forest, and 30 percent is cultivated; small areas are idle or in pasture. The soil is moderately hard to work and conserve. It has a medium range of suitability for crops.

Corn, small grains, bright tobacco, and hay are the crops commonly grown. Corn yields are usually low under present management. Higher yields can be produced by applying liberal amounts of a complete fertilizer and following other good management practices. Some farmers grow bright tobacco successfully on this soil, particularly in the eastern part of the county. Tobacco land is generally well managed. After tobacco is harvested, the soil usually lies fallow for 2 or 3 years and then is replanted to tobacco. Lespedeza grown for hay is the principal sod crop. Under ordinary management it yields about three-fourths of a ton an acre. Better yields can be obtained by applying a complete fertilizer at seeding time and a heavy topdressing of the same kind of fertilizer later on. Adequate amounts of lime and barnyard manure applied to the soil will also increase the hay yields.

Louisa fine sandy loam, eroded rolling phase (7 to 12 percent slopes) (Lh).—Stronger slopes differentiate this soil from the eroded undulating phase. Surface runoff is medium to rapid; internal drainage is rapid. Sheet erosion is mostly moderate, but it is severe in some areas where cultivation is intensive. A few deep gullies occur in about two-fifths of the total area, but numerous deep gullies exist in some places. The soil is moderately to highly susceptible to further erosion.

Use and management.—About 70 percent of this soil is in forest, and 21 percent is cultivated; the rest is divided about equally into pasture and idle land. The soil is fairly easy to work, but it is hard to conserve by ordinary tillage practices. It is a poor producer of crops.

The crops, in most places, are about the same as those grown on the eroded undulating phase. To control erosion, rotations should be long and should consist largely of hay crops. Other methods of conserving the soil should also be practiced.

Louisa fine sandy loam, eroded hilly phase (12 to 20 percent slopes) (Lg).—This is the most extensive phase of Louisa fine sandy loam in the county. Surface runoff and internal drainage are rapid. Practically all the soil has been moderately damaged by sheet erosion. Deep gullies occur in about two-thirds of the total area, but they are widely spaced. The soil is highly susceptible to further erosion.

Use and management.—About 87 percent of the relatively large acreage of this soil is in forest; small parts are cultivated or in pasture, or are idle. This soil is extremely erodible, hard to work, excessively drained, and unproductive. It is best suited to forestry. The trees on the forested areas are oak, red maple, dogwood, sourwood, hickory, beech, yellow-poplar, and shortleaf and Virginia pine.

Louisa fine sandy loam, eroded steep phase (20+ percent slopes) (Lk).—In most characteristics this soil is similar to the eroded undulating phase, but it has slopes stronger than 20 percent and is generally shallower to rock material. Surface runoff is rapid to very rapid; internal drainage is rapid. Sheet erosion is mostly moderate. Deep gullies occur in about one-half of the soil area, but they are relatively widely spaced. Susceptibility of the soil to further erosion is high to very high.

Use and management.—About 92 percent of this soil is in forest. The rest is cultivated, or in pasture, or idle. The soil is hard to work and conserve, and its productivity is poor. Its best use is forestry. The forest cover consists of oak, dogwood, hickory, maple, beech, yellow-poplar, and Virginia pine. Many large old trees are still standing because steep slopes and inaccessibility have limited timbering operations.

Louisa fine sandy loam, severely eroded hilly phase (12 to 20 percent slopes) (Lm).—This soil is sheet eroded and marked by many deep gullies. Surface runoff and internal drainage are rapid, and the soil is highly susceptible to further erosion.

Use and management.—This soil is nearly all in forest; only about 8 percent of it is cultivated or in pasture or idle. The soil is hard to work and conserve, and its productivity is poor. Forest trees are almost entirely unthrifty hardwoods and Virginia pine. Unfavorable physical characteristics make this soil practically worthless for agriculture. A forest cover should be maintained because the soil is highly erodible when cleared.

Louisa fine sandy loam, severely eroded steep phase (20+ percent slopes) (Ln).—Only remnants of soil profile characteristics are present in this soil. In most places this

phase consists of a thin veneer of micaceous soil over soft decomposed mica schist. Rock outcrops are common. Surface runoff is rapid to very rapid and internal drainage is rapid. The soil is badly sheet eroded and contains many deep gullies. The hazard of further erosion is high to very high.

Use and management.—About 98 percent of this soil is in forest; the rest is idle. It is hard to work and conserve, excessively drained, and unproductive. Forestry is its best use. The present forest cover consists of sprouts of hardwoods or laurel.

Louisburg sandy loam, undulating phase (2 to 7 percent slopes) (Ls).—This is a shallow, light-colored, permeable soil. It occurs mainly in the eastern part of the county in the vicinity of Moran and Burks Tavern; a few small areas are in the western part. It was derived mainly from residual material that weathered from coarse-grained granite or pegmatite, and is closely associated with the Appling, Durham, and Wilkes soils. Surface runoff is slow to medium and internal drainage is rapid. Sheet erosion is slight to moderate.

Profile description under a cover of second-growth pine:

Surface soil—
0 to 7 inches, gray very friable or loose sandy loam; weak fine granular structure; dark yellowish brown when wet; light gray when dry.

Subsurface—
7 to 20 inches, pale-yellow or light yellowish-brown very friable or loose sandy loam; very weak fine granular structure.

Parent material—
20 inches+, light-colored coarse-grained granitic rock material, mixed with small partly weathered fragments of dark-colored rock.

The profile varies widely in texture and in depth to bedrock.

This soil is strongly acid and low in fertility. Permeability in both the surface and subsurface soils is rapid to moderately rapid. The soil is excessively drained and has a moderately low to low water-holding capacity.

Use and management.—About 44 percent of this soil is in forest, and 41 percent is cultivated; small parts are in pasture or are idle. It is easy to work and conserve. Its productivity is poor to fair. The rate of water infiltration and of leaching is high.

Bright tobacco, corn, small grains, hay, vegetable crops, and melons are grown. This soil is one of the best in the county for bright tobacco. This crop is commonly followed by small grain, after which the land sometimes is not farmed for a year or two but is allowed to grow up in weeds before another crop is planted. Tobacco is generally well fertilized, and yields are good. Wheat or barley is planted in fall after the tobacco is harvested, but fertilizer is not applied. Many farmers, however, use a topdressing of nitrogen fertilizer on small grains in spring.

Corn is rotated with small grain or, in some places, with a growth of weeds and sassafras bushes. Yields of corn are generally low, but can be increased by applying a complete fertilizer at planting time, and a liberal side dressing of nitrogen when the crop is about 18 inches high. This soil is widely used for vegetables and melons. Large quantities of fertilizer are used for these crops, and yields are good.

Louisburg sandy loam, rolling phase (7 to 12 percent slopes) (Lr).—This soil is similar to the undulating phase except that it has stronger slopes. It occurs on slopes below ridgetops and above the hilly areas of Louisburg sandy loam. Surface runoff is medium to rapid and internal drainage is rapid. Sheet erosion damage is moderate; the hazard to further erosion is moderate to high. Deep but scattered gullies have developed on about one-fourth of the total area; in places gullies are numerous.

Use and management.—About 71 percent of this soil is in forest, and 15 percent is cultivated land; the rest is idle or in pasture. The soil is easily worked but is fair to poor in conservability. Under ordinary management, yields are medium to low. Its range of suitability is medium.

On many farms this soil is cultivated with areas of Louisburg sandy loam, undulating phase. It is suitable for the same crops and has similar management needs. The rolling phase, however, needs careful management to control erosion. Contour cultivation, long rotations, and control of runoff help reduce erosion losses.

Louisburg sandy loam, hilly phase (12 to 20 percent slopes) (Lp).—This phase differs from the undulating phase chiefly in having stronger slopes. About 24 acres have slopes of more than 20 percent. This soil is excessively drained; surface runoff is medium to rapid, and internal drainage is rapid. Sheet erosion damage is slight to moderate.

Use and management.—An estimated 94 percent of this soil is in forest; most of the rest is cultivated. The forest consists of oak, yellow-poplar, beech, dogwood, maple, hickory, shortleaf pine, and Virginia pine. The soil is hard to work and conserve, and a poor producer of crops. Its best use is forestry.

Louisburg sandy loam, eroded hilly phase (12 to 20 percent slopes) (Lo).—This soil is similar to the undulating phase except that it has predominantly strong relief and is moderately to severely sheet eroded. In some places the erosion is so advanced that all soil is gone and crumbly granitic rock is exposed. Deep gullies have developed in nearly all areas of this soil, but in most places they are not numerous. Both surface runoff and internal drainage are rapid, and the soil is excessively drained.

Use and management.—About 79 percent of this soil is in forest, and 11 percent is cultivated. The rest is idle and supports thin stands of broomsedge, cowhage (cowitch), and briers. The forest consists of the same kinds of trees as that on Louisburg sandy loam, hilly phase, but the stand is less dense.

Poor workability, very poor conservability, and very low productivity make this a poor soil for farming. Forestry is its best use.

Madison fine sandy loam, undulating phase (2 to 7 percent slopes) (Mf).—This well-drained soil has been developed from products that weathered from muscovite schist and gneiss and micaceous quartzite. It occurs in all parts of the county in association with the Cecil, Wilkes, and Louisa soils. Many mica flakes are mixed through the subsoil layers, and the soil is known locally as isinglass land. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion damage ranges from slight to moderate. A few deep gullies have developed.

Profile description:

Surface soil—
0 to 3 inches, yellowish-brown friable fine sandy loam; weak fine granular structure.
3 to 7 inches, strong-brown friable fine sandy loam; weak fine granular structure.

Subsoil—
7 to 14 inches, yellowish-red friable clay; moderate medium blocky structure; some mica flakes.
14 to 29 inches, red friable clay; moderate medium blocky structure; many mica flakes.
29 to 35 inches, dark-red friable micaceous clay; weak medium blocky structure.
Parent material—
35 to 42 inches, mottled red, yellowish-brown, and light-gray soft micaceous soil material.

The subsoil varies; it is entirely yellowish red in some places, and entirely brownish yellow in others.

The soil is strongly acid and is generally low in organic matter and fertility. It has moderately rapid permeability in the surface soil and moderate permeability in the subsoil. Water-holding capacity is moderate.

Use and management.—About 56 percent of this soil is in forest. About 35 percent is used for corn, dark tobacco, wheat, other small grains, and hay crops. The rest is about equally divided between pasture and idle land. Peaches and apples are successfully grown in the extreme western part of the county. A few farmers in the central part grow bright tobacco, but the heavy soil is not well suited to this crop.

This is one of the best soils in the county for most crops. It has very good workability and good conservability. The most common rotation consists of corn or dark tobacco, a small grain, and 1 or 2 years of hay crops, usually lespedeza or red clover. Productivity is generally medium under prevailing management.

Yields of corn can be improved by applying a complete fertilizer at planting time and a side dressing of nitrogen when the crop is about 18 inches high. Corn will produce about 63 bushels an acre if it is properly fertilized and the soil is well managed.

Dark tobacco is usually fertilized in the rows with liberal amounts of complete fertilizer when the plants are set in the field. Yields average about 900 pounds an acre.

Under ordinary management, small grains that follow corn or dark tobacco in a rotation get no fertilizer except a topdressing in the spring. Yields of wheat are increased by applying complete fertilizer when the crop follows tobacco. Lespedeza, usually grown with herdsgrass (timothy) or some other hay crop, produces about a ton an acre under ordinary management. If the small grain in the rotation was given enough fertilizer and lime, little additional treatment is necessary for improving the yield of lespedeza hay other than a topdressing of nitrogen. Alfalfa will produce good yields if borated fertilizer is used and enough lime to make the pH value at least 6.6. Supplemental applications of superphosphate, however, may be needed. If farm manure is available, its use will reduce the requirement for commercial fertilizer

Madison fine sandy loam, rolling phase (7 to 12 percent slopes) (Me).—This phase differs from the undulating phase chiefly in having stronger slopes. Surface runoff is medium to rapid. Sheet erosion damage is slight to moderate. Deep gullies have formed, but in most areas they are widely spaced. The soil has medium internal drainage.

Use and management.—About 72 percent of this soil is in forest, and 22 percent is cultivated. Small parts are in pasture or are idle. Workability is good; conservability, good to fair. Fertilization and crop rotations suggested for the undulating phase apply also to this phase. Some of the deeply gullied areas can be used to best advantage for pasture or for forest. This soil should be protected by good soil-conserving practices when it is intensively cultivated.

Madison fine sandy loam, hilly phase (12 to 20 percent slopes) (Md).—This soil is similar to the undulating phase except that it has stronger slopes and a shallower profile. Surface runoff is rapid to very rapid, and internal drainage is medium. In some places, this soil has been little damaged by sheet erosion; in others the damage is moderate. A few areas that have been intensively cultivated are seriously gullied.

Use and management.—An estimated 83 percent of this soil is in forest, and about 14 percent is being cultivated. Workability and conservability are only fair, and productivity generally is low. Areas already cleared can be used for pasture, but it is not practical to clear additional land for this purpose. The best use for this soil is forestry.

Madison clay loam, eroded undulating phase (2 to 7 percent slopes) (Mc).—This is a well-drained soil that occurs in nearly all parts of the county. It is closely associated with the undulating phase of Madison fine sandy loam, which it resembles except for texture, color, and variations in profile depth caused by erosion. It usually has a yellowish-red friable clay loam surface soil and a fine-textured fairly micaceous subsoil. It is rather shallow and overlies soft well-decomposed micaceous rock.

Use and management.—Forests and cultivated fields each occupy about 45 percent of this soil; the rest is divided about equally into idle land and pasture. Workability is fair to good and conservability is good. Under ordinary management yields are low to medium. Suitability for crops is restricted by the clay loam surface layer, an inadequate supply of organic matter, and erodibility. The soil is, nevertheless, rather widely used for corn, small grains, dark tobacco, and hay. Fertilizer needs and suitable rotations are essentially the same as for the undulating phase of this soil. In general, the soil responds well to soil-improvement practices. Cleared areas not needed for tilled crops can best be used for pasture.

Madison clay loam, eroded rolling phase (7 to 12 percent slopes) (Mb).—This soil has stronger slopes than the eroded undulating phase, but in other characteristics the two phases are practically the same. Surface runoff is medium to rapid and internal drainage is medium. In most places sheet erosion has removed the surface soil and left the red subsoil exposed. Deep gullies have formed in about one-half of the total area. Patches of light-colored fine sandy loam surface soil remain here and there.

Use and management.—Use and management of this soil are almost the same as for the Madison fine sandy loam, rolling phase, except that more care is needed to control erosion; less is cultivated and more is in forest. Workability is fair to good and conservability is fair. Under ordinary management yields are medium to low. Safe and profitable cropping of this soil requires long rotations in which pasture and sod-forming crops predominate.

Madison clay loam, eroded hilly phase (12 to 20 percent slopes) (Ma).—This phase includes a few areas where slopes range up to 40 percent. Surface runoff is rapid and internal drainage is medium. Sheet erosion damage is moderate to severe. In a few areas it has removed all of the original fine sandy loam surface soil. All of this phase is deeply gullied. The soil is shallow to rock mate-

rial, and in many places, particularly in the deeper gullies, the soft, decomposed, fine-grained micaceous schist is exposed.

Use and management.—About 69 percent of this soil is in forest; 17 percent is cultivated; 7 percent is in pasture; 7 percent is idle. Some areas have good stands of oak, dogwood, maple, hickory, yellow-poplar, and pine trees; others, because of excessive erosion, are practically bare of vegetation, or support only a growth of honeysuckle, running briers, huckleberry, and laurel. This soil is poorly suited to farming because its workability is poor, erodibility is high, and productivity is very low. Forestry is its best use.

Mayodan fine sandy loam, undulating phase (2 to 7 percent slopes) (Mh).—Most of this well-drained light-colored soil is in the vicinities of Farmville and Worsham. It has developed from the residue of weathered Triassic sandstone and shale. Surface runoff is slow to medium, and internal drainage medium. Sheet erosion damage is slight to moderate.

Profile description:

Surface soil—
0 to 7 inches, pale-brown friable fine sandy loam; weak fine granular structure.
7 to 10 inches, light yellowish-brown friable fine sandy loam; weak fine granular structure.
Subsoil—
10 to 18 inches, strong-brown friable sandy clay loam; moderate medium blocky structure; hard when dry.
18 to 30 inches, yellowish-red firm fine sandy clay loam or clay; moderate to strong medium blocky structure.
Parent material—
30 to 38 inches, distinctly mottled red and brownish-yellow friable clay loam; contains a few dark-colored Triassic shale fragments.

The soil is medium to low in organic matter and is strongly acid. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate.

In some small areas, particularly near Farmville, the soil has a light-gray surface and a yellowish friable subsoil. These areas produce excellent bright tobacco.

Use and management.—About 74 percent of this soil is in forest, and 22 percent is cultivated; the rest is mostly idle. The soil is easily worked and easily to fairly easily conserved. It is low in plant nutrients; consequently yields of most crops are medium to low. Corn, small grains, bright tobacco, lespedeza for hay, and vegetables are the common crops.

Corn yields are improved if a complete fertilizer is disked or harrowed into the soil before planting. An additional quantity of the same type of fertilizer should be applied at planting time. Suitable rotations and other good management are also needed. A side dressing of nitrogen applied when corn is about 18 inches high will further improve yields.

Yields of small grains grown in a rotation after corn can be greatly increased by applying a complete fertilizer. Smaller quantities of fertilizer are sufficient if the small grains follow tobacco in the rotation. Yields of bright tobacco are good if a complete fertilizer is applied and management is generally good.

Lespedeza usually is grown in rotation with tobacco or corn and small grain, and it is often mixed with herdsgrass (timothy) or orchardgrass. For satisfactory yields it requires lime and a topdressing of a complete fertilizer. Meadow oatgrass mixed with lespedeza, orchardgrass, or herdsgrass (timothy) is a suitable hay crop.

Mayodan fine sandy loam, rolling phase (7 to 12 percent slopes) (Mg).—This soil is similar to the undulating phase except in slope. It includes some areas having slopes ranging up to 20 percent. Erosion damage, particularly gullying, is more severe in the rolling phase. Surface runoff is medium to rapid and internal drainage is medium.

Use and management.—About 80 percent of this soil is in forest, and 14 percent is cultivated; small parts are in pasture, or are idle. The soil is easily worked and fairly easily conserved. It is a poor to moderate producer of crops. Crops and management practices are practically the same as those for the undulating phase. Little or none of the steeper parts is cultivated.

Mecklenburg loam, undulating and rolling phases (2 to 12 percent slopes) (Mk).—This inextensive group of dark-colored moderately well drained soils occurs chiefly in the western part of the county, in association with Lloyd and Bremo soils. The soils have formed on smooth uplands from residual material that weathered from dark-colored basic rock. Surface runoff is slow to rapid and internal drainage is medium to slow. Some areas have been only slightly to moderately damaged by sheet erosion, but others are so badly eroded that most of the original surface soil is gone. A few deep gullies have developed.

Profile description:

Surface soil—
0 to 8 inches, dark-brown friable loam; weak fine granular structure.
Subsoil—
8 to 28 inches, strong-brown firm clay; plastic when wet; moderate medium blocky structure.
28 to 34 inches, mottled strong-brown and very dark gray firm clay loam; plastic when wet; moderate coarse blocky structure.
Parent material—
34 inches+, soft decomposed basic rock material.

In some places small round ironstone particles are common on the surface, and a few are scattered through the profile.

The soil is medium acid and is of medium fertility. Permeability is moderately rapid in the surface soil and moderate to moderately slow in the subsoil. Water-holding capacity is moderate.

Use and management.—About 50 percent of this soil is used for cultivated crops. About 39 percent is in forest, and small percentages are idle or in pasture. Workability and conservability are good to fair. Under ordinary management yields are medium. The principal crops are corn, dark tobacco, small grains (usually wheat or barley), and hay. Corn yields average about 20 bushels an acre under ordinary management. In a suitable rotation corn will produce higher yields if complete fertilizers are applied before planting and at planting time. In addition, a side dressing of nitrogen should be applied when the corn is about 18 inches high. Yields of dark tobacco average about 800 pounds an acre. Most farmers use liberal quantities of complete fertilizers for dark tobacco.

Small grain ordinarily is not fertilized if it is grown after tobacco in a rotation. If it follows corn or is grown on land that has lain fallow 1 or more years, a small grain

crop needs a complete fertilizer at seeding time and a nitrogen topdressing before the crop matures.

Hay and pasture are well suited to this soil. Lespedeza and clover yield good hay if they follow small grains that were well fertilized, or if they are treated with phosphorus and potassium fertilizers. Alfalfa can be grown if the soil is treated with lime, barnyard manure, and large amounts of borated fertilizer. Pastures are improved by adding Ladino clover to the plant mixtures.

Mixed alluvium, well drained (0 to 2 percent slopes) (Mm).—This soil occurs on first bottoms along nearly all the creeks and smaller drainageways in the county, in close association with less well drained alluvial soils. The level or nearly level relief is interrupted by scattered small hummocks or low ridges of sand and other alluvial debris. Surface runoff is slow to very slow and internal drainage is medium. Overflows are frequent and fresh alluvial material is deposited from time to time.

Color and other profile characteristics are extremely variable. The surface soil is grayish brown to yellowish brown and ranges in texture from sandy loam or loamy sand to silt loam. The subsurface or underlying material is a brown to yellowish-brown variable mixture of sand, silt, clay, and well-rounded quartz pebbles and cobblestones.

Mixed alluvium, well drained, is medium to strongly acid and contains small quantities of organic matter. It ranges from high to low in fertility. It is moderately permeable and has moderate water-holding capacity.

Use and management.—Approximately 63 percent of this land type is in forest, 17 percent is cultivated, 8 percent is in pasture, and 12 percent is idle. Workability is poor, but conservability is very good to fair. Corn, hay, vegetables, and melons are the principal crops. Corn produces about 15 bushels an acre without the use of commercial fertilizer. Lespedeza, pea, and bean hays are commonly grown. Under ordinary management, lespedeza produces about three-fourths of a ton of hay an acre; the other hay crops produce comparable yields. The carrying capacity of pastures ordinarily is about 5 acres per animal unit, or 36 cow-acre-days in a grazing season of 180 days.

Mixed alluvium, well drained, occurs in small narrow strips and is closely associated with poorly drained alluvial soils. Consequently, it is unsuitable for most crops except vegetables and melons, which are grown for home use. Some farmers use this soil for pasture only. Yields of corn, hay, and melons can be increased by using phosphorus and potassium fertilizer and by general good management.

Mixed alluvium, poorly drained (0 to 2 percent slopes) (Ml).—This soil occurs along nearly all the creeks and smaller streams in the county; it is not very extensive along the Appomattox River. It is closely associated with Mixed alluvium, well drained. Surface runoff is very slow; internal drainage is slow to very slow.

Frequent flooding adds new alluvial materials and causes considerable variation in profile characteristics. The surface soil is mottled gray, brown, and olive. It ranges from silty clay to heavy loamy sand. The subsurface is faintly stratified and prominently mottled gray, brown, and olive. In many places it overlies coarse sand and gravel at shallow depths.

Mixed alluvium, poorly drained, is fairly low in organic matter and is strongly acid in most places. It has high to low fertility and moderate water-holding capacity.

Use and management.—An estimated 87 percent of Mixed alluvium, poorly drained, is in forest, and 7 percent is idle. The rest is divided about equally into cultivated land and pasture. Workability is poor, and conservability is fair to good. Poor drainage makes most of this soil unsuitable for cultivation. The areas that are in pasture provide good grazing late in summer and early in fall. Most of the areas support dense stands of weeds, shrubs, and water-loving trees, mostly willow, sycamore, alder, sweetgum, beech, and ironwood. Marshy areas in semiponded basins support waterlilies, cattails, and coarse reeds. Timber growth is slow. Harvesting of forest products is difficult because the forested areas are not easily accessible.

Orange silt loam, undulating phase (2 to 7 percent slopes) (Oa).—This soil is known locally as a type of pipe clay land because the subsoil is unusually heavy. It has developed from products that weathered from fine-grained schists, granite, granite gneiss, and hornblende gneiss and schist. It occurs mostly in the extreme southeastern part of the county near Briery. About one-third of the total area is rolling, the slopes ranging up to 12 percent. Surface runoff in the undulating areas is slow to medium; in rolling areas it is medium to rapid. Internal drainage is very slow everywhere. Sheet erosion damage is moderate and deep gullies have formed here and there.

Profile description:

Surface soil—
- 0 to 10 inches, pale-yellow friable silt loam; weak fine granular structure.
- 10 to 12 inches, yellow friable silt loam; weak fine granular structure.

Subsoil—
- 12 to 18 inches, brownish-yellow firm silty clay; plastic when wet; moderate medium blocky structure.
- 18 to 40 inches, claypan, yellowish-brown very firm silty clay loam; massive; plastic when wet; very hard when dry.

Parent material—
- 40 to 45 inches, mottled light reddish-brown and gray silty clay to silty clay loam.

In some areas a few small brown mineral particles occur scattered over the surface of the land.

The soil is low in organic matter and very strongly acid. The surface soil is moderately permeable and the subsoil is very slowly permeable. Water-holding capacity is moderately low to low. Fertility is low.

Use and management.—About 78 percent of this soil is in forest; the rest is divided about equally into cultivated land, idle land, and pasture. A few farmers grow corn, small grains, hay, and bright tobacco. Some areas recently cleared are now grown up in broomsedge, weeds, and wild grasses. Forest trees are blackjack, post oak, willow oak, dogwood, maple, and Virginia pine. Unfavorable moisture relations and other conditions in the soil cause most trees to be unthrifty, small, and limby.

Conservability is fair, workability is poor, and productivity is low. The soil is poorly suited to cultivation because the subsoil is heavy and very slowly permeable. It is good for pasture if lime and fertilizer are liberally applied. The quality and quantity of forage can be improved if Ladino clover is included in grass mixtures. Runoff water can be diverted from fields and pastures by

simple methods. Elaborate systems for draining the soil artificially have not been practical.

Roanoke silt loam (0 to 2 percent slopes) (Ra).—This poorly drained soil has developed from young alluvial deposits on narrow terraces along the major streams of the county. The largest single area lies just northwest of Farmville, at the mouth of Buffalo Creek (locally called the Buffalo River). Surface runoff is slow to very slow and internal drainage very slow.

Profile description:

Surface soil—
0 to 7 inches, gray friable silt loam; weak fine granular structure; soft when dry.
7 to 9 inches, mottled gray or light-gray, brownish-yellow, and strong-brown friable silt loam; weak to moderate fine granular structure; hard when dry.
Subsoil—
9 to 20 inches, mottled light olive-gray and yellowish-brown firm clay; moderate medium to coarse blocky structure; slightly plastic when wet; hard when dry.
20 to 40 inches, prominently mottled light olive-gray and strong-brown very firm clay; strong coarse blocky structure; plastic when wet; hard when dry.
Underlying material—
40 to 45 inches, light-gray gritty clay; many quartz pebbles.

This soil is strongly acid and is low in fertility. It has moderate water-holding capacity. Permeability is moderately slow in the surface soil and very slow in the subsoil. In many places, permeability is so slow that water remains on the surface for a long time.

About 7 acres mapped with this soil has undulating relief, and about 4 acres is rolling.

Use and management.—About 58 percent of this soil is in forest, 18 percent is cultivated, and 16 percent is in pasture. The rest is idle. The forest consists of willow oak, sycamore, alder, and scrub pine. This soil is easy to conserve, but is difficult to work and low in productivity. Its usefulness for either cropland or woodland is limited. Cleared areas furnish fairly good grazing, particularly during dry periods late in summer and in fall. Destroying undesirable plants and weeds improves the pasture. Open drainage ditches, where practical, would help remove excess water.

Rock land (2 to 20+ percent slopes) (Rb).—This land type is made up largely of rock outcrops and loose stones or boulders; soil in various stages of development surrounds the rocks. Rock land occurs in small areas in all parts of the county. In some places it consists of rock outcrops on ridge crests; in others it consists of many rounded boulders on gently undulating slopes. The rocks are granite, schist, quartzite, and Triassic diabase and gabbro. Sheet erosion damage is only slight in most places.

Use and management.—About 92 percent of Rock land is in forest; small parts are in pasture or are idle. The forest is composed of trees that are native to the county. This land has little value except for forestry.

Seneca fine sandy loam (2 to 7 percent slopes) (Sa).—This well-drained soil was derived mainly from local alluvial and colluvial materials washed from light-colored coarse-textured soils that are underlain by granitic and schist rocks. It occurs in all parts of the county, either as fill in narrow troughs of intermittent drainageways, or, to a lesser extent, as colluvial accumulation at the foot of slopes. Surface runoff is slow to medium, and internal drainage is medium.

Profile description:

Surface soil—
0 to 8 inches, gray friable fine sandy loam; weak fine granular structure.
Subsurface—
8 to 23 inches, yellowish-brown friable loam to silty clay loam; very weak fine blocky structure.
Underlying material—
23 to 30 inches, yellowish-brown friable silty clay loam, mottled with light gray.

The surface soil in places is a sandy loam; in other places it is a loam. Its color ranges from gray through pale yellow to brown. The profile depth of this soil varies from place to place depending on the depth of the colluvial accumulation. The soil is shallowest where it adjoins upland slopes. Small stones, gravel, and mica flakes are common on the surface, and in many places are scattered all through the profile.

The soil is well supplied with organic matter but is low in most plant nutrients. It is medium to strongly acid. Permeability is moderately rapid in the surface soil, and moderate in the subsurface. Water-holding capacity is moderate.

Use and management.—An estimated 58 percent of this soil is in forest, and 32 percent is cultivated. The rest is idle or in pasture. This soil is one of the best in the county for crops. Workability and conservability are good and productivity is high. Small grains are not commonly grown because they are likely to lodge. Corn, dark tobacco (fig. 4), legumes, vegetables, and melons are

***Figure 4.*—Seneca fine sandy loam is especially well suited to dark tobacco.**

widely grown. Corn yields can be improved if high-potassium and high-phosphorus fertilizers are applied to the rows at planting time. Dark tobacco usually yields from 1,000 to 1,500 pounds per acre if complete fertilizers are liberally applied. Good yields of legume hay are obtained by applying proper quantities of lime. This is probably the most important soil in the county for home gardens and melons. The soil is treated with barnyard manure and complete fertilizers to obtain high yields of garden crops.

Starr loam (2 to 7 percent slopes) (Sb).—This soil has formed from local alluvial and colluvial material that was

darker colored than the parent material of Seneca fine sandy loam. It occurs in small, elongated areas along intermittent drainageways in all parts of the county, but mostly in the western part in association with the Lloyd, Cecil, and Fluvanna soils. Relief is undulating to gently sloping. The soil is well drained; surface runoff is slow to medium and internal drainage is medium.

Profile description:

Surface soil—
0 to 6 inches, brown to reddish-brown friable loam; weak to moderate fine granular structure.
Subsurface—
6 to 30 inches, red to dark-red friable silty clay loam; weak fine blocky structure.
Underlying material—
30 to 40 inches, red friable soil material, finely mottled with yellowish brown and reddish yellow.

The surface soil varies in texture from silty clay loam or clay loam to clay. Profile depth ranges from 20 to 60 inches.

This soil is strongly acid, high in organic matter, and of high fertility. It is moderately permeable and has moderate water-holding capacity.

Use and management.—About 60 percent of Starr loam is in forest, 28 percent is cultivated, and the rest is divided about equally into pasture and idle land. Workability of the soil is good except in areas where the surface soil is fine textured. In these places, plowing and cultivating are difficult because the plow layer contains sticky clay. The soil is easily conserved. It is highly productive and is widely used for corn, dark tobacco, legume hay, and garden vegetables. High fertility can be maintained without using large quantities of commercial fertilizers.

Steinsburg fine sandy loam, eroded rolling phase (7 to 12 percent slopes) (Sd).—This light-colored soil of the uplands occurs in only two inextensive areas—one southwest of Farmville and the other south of Worsham. It has very little subsoil development and is underlain by soft dusky-red and yellow Triassic sandstone and shale. It is associated with soils of the Mayodan, Creedmoor, and Wadesboro series, which have developed from the same kind of parent material. Slopes in some places are rather mild and range up to only 7 percent. Surface runoff is medium to rapid; internal drainage is rapid. Sheet erosion damage is moderate to severe. Deep gullies, which are numerous in places, occur over about half the total area. Some gullies have cut so deeply that the sandstone and shale bedrock is exposed.

Profile description:

Surface soil—
0 to 9 inches, dark reddish-brown friable heavy fine sandy loam.
Subsurface—
9 to 20 inches, dusky-red firm to friable clay loam material.
Parent material—
20 inches+, red, yellow, black, and greenish partly decomposed sandstone and shale.

The surface soil ranges from fine sandy loam to clay loam. Its color ranges from dusky red to shades of yellow, green, and brown depending on the kind of underlying soil material. In many places, sheet erosion has exposed red, yellow, black, and green weathered parent rocks.

The soil is strongly acid and is low to very low in fertility. It has a high rate of infiltration and is rapidly permeable. Plant nutrients are readily leached. Water-holding capacity is moderately low.

Use and management.—An estimated 62 percent of this soil is in forest, 27 percent is cultivated, and small parts are idle or in pasture. Workability and conservability are fair. Suitability for crops is limited by low productivity, rapid permeability, and the lack of a well-developed subsoil. This soil is used for cultivated crops when it occurs in conjunction with other soils, but it is too droughty for pasture. The milder slopes are used for corn and bright tobacco. Yields of tobacco are fair if adequate fertilizer is used, surface runoff is controlled, and management generally is good. The forests consist of oak, maple, dogwood, ironwood, yellow-poplar, and Virginia pine.

Steinsburg fine sandy loam, eroded hilly phase (12 to 20 percent slopes) (Sc).—This soil has some slopes that are more than 20 percent. It has been badly damaged by erosion. Surface runoff and internal drainage are rapid. Very little soil development has taken place; in many places this soil consists of soft highly weathered fragments of sandstone and shale.

Use and management.—Nearly all of this soil is in forest. About 9 percent of the acreage is cleared and is divided about equally into cultivated land, idle land, and pasture. The idle land supports a scant growth of weeds, briers, broomsedge, sumac, and honeysuckle. Many deeply gullied places are bare of all vegetation.

Workability is poor, conservability is poor to very poor, and productivity is low. The soil is highly erodible and it is best used for forestry.

Vance fine sandy loam, undulating phase (2 to 7 percent slopes) (Vb).—This light-colored, moderately well drained soil has developed from residual products that weathered from granite, schist, and gneiss. It occurs principally in the eastern part of the county and is associated with the Appling, Wilkes, and Helena soils. Surface runoff is slow to medium and internal drainage is medium to slow. Sheet erosion damage is moderate over most of this phase. A few deep gullies have formed.

Profile description:

Surface soil—
0 to 9 inches, pale-yellow friable fine sandy loam; weak fine granular structure.
Subsoil—
9 to 14 inches, brownish-yellow firm clay loam; moderate medium blocky structure.
14 to 30 inches, mottled brownish-yellow and pale-yellow firm clay; moderate medium blocky structure; plastic when wet.
Parent material—
30 to 41 inches, mottled brownish-yellow, light-gray, and white clay loam; contains light-colored decomposed granitic rock, a small quantity of dark-colored decomposed basic rock, and a few finely divided mica flakes.

The soil is very strongly acid. It is low in organic matter and is of low fertility. Permeability is moderate in the surface soil and moderately slow to slow in the subsoil. Water-holding capacity is moderate.

Use and management.—About 54 percent of this soil is in cultivation, 36 percent is in forest, and the rest is in pasture or is idle. Workability and conservability are good, and productivity is medium to low. The land is used for corn, bright tobacco, small grains, and hay crops.

This soil is managed ordinarily in much the same way as Appling fine sandy loam, undulating phase, but as a rule it yields somewhat less.

Under ordinary management corn yields about 23 bushels an acre. Yields can be increased by using good management, and by timely applications of complete

fertilizers and nitrogen. Fertilizer requirements for small grains, legume hay, and pasture are the same as for Appling fine sandy loam, undulating phase. Compared to Appling fine sandy loam, undulating phase, this soil is slightly better suited to pasture because its subsoil is less permeable. It is, however, not as easy to work, particularly where the subsoil has been mixed in the plow layer by tillage.

Vance fine sandy loam, rolling phase (7 to 12 percent slopes) (Va).—Except in having stronger slopes, this soil is practically the same as Vance fine sandy loam, undulating phase. Some areas mapped with the rolling phase have slopes up to 20 percent. Surface runoff is medium to rapid and internal drainage is slow. Sheet erosion damage is generally moderate. A few places are deeply gullied. The hazard of further erosion is moderate to high.

Use and management.—About 49 percent of this soil is in forest, 38 percent is cultivated, 10 percent is in pasture, and the rest is idle. Workability and conservability are fair, and productivity under ordinary management is medium to low. The smoother areas can be tilled if erosion is prevented by controlling runoff, using long rotations, and stripcropping. Some of the stronger slopes are in pasture. Some areas can best be used for forestry.

Wadesboro clay loam, eroded undulating phase (2 to 7 percent slopes) (Wb).—This fine-textured soil occurs in the vicinities of Farmville and Worsham. It is associated with the Creedmoor, Mayodan, and Steinsburg soils and is underlain by Triassic sandstone and shale. Surface runoff and internal drainage are medium. Sheet erosion damage has been moderate to severe in most areas and slight in the small remaining acreage. Deep gullies have formed in some places.

Profile description:

Surface soil—
0 to 7 inches, yellowish-brown friable clay loam; weak to moderate medium blocky structure.
Subsoil—
7 to 14 inches, red firm clay; moderate medium blocky structure.
14 to 28 inches, red firm clay loam; moderate medium blocky structure.
Parent material—
28 to 50 inches, red friable clay loam; slightly plastic when wet.

In a few areas the surface soil is friable loam. Scattered fragments of Triassic shale are numerous in the more eroded areas.

The soil is very strongly acid. It is low in organic matter and of low fertility. It is moderately permeable and retains moisture fairly well.

Use and management.—About 51 percent of this soil is in forest; 38 percent is cultivated, a small part is in pasture, and the rest is idle. The soil is fairly easy to work and conserve. It is a low to medium producer of crops. Corn, small grains, and hay are the common crops. Tree fruits are grown to some extent. Management for field crops is generally similar to that for the same crops on Cecil clay loam, eroded undulating phase, but more commercial fertilizer is needed to produce comparable yields. Much of the forested acreage is covered with hardwood sprouts and scrub pine.

Wadesboro clay loam, eroded rolling phase (7 to 12 percent slopes) (Wa).—This soil is similar to the eroded undulating phase, except for slopes. Some areas have slopes up to 20 percent. Surface runoff is medium to rapid, and internal drainage is medium. Sheet erosion damage varies from moderate to severe; deep gullies have formed in some areas.

Use and management.—About 62 percent of this soil is in forest; 23 percent is cultivated, and the rest is divided about equally into idle land and pasture. Workability and conservability are fair. Under ordinary management, productivity is low. The range of use suitability is narrow. The land is used by some farmers for the same kinds of crops that are gown on the eroded undulating phase. Pasture and forests, however, are considered to be the best uses for this land.

Cleared land now idle and possibly some land in cultivation should be converted to pastures. The soil should be disked and then rolled to make a compact seedbed. Orchardgrass, redtop, and Korean lespedeza make a good pasture mixture. Barnyard manure, complete fertilizers, and lime will help establish good pasture sod. Overgrazing should be prevented in early spring.

Wehadkee silt loam (0 to 2 percent slopes) (Wc).—This poorly drained soil was derived from recent alluvial materials deposited on nearly level to level first bottoms along the Appomattox River and some of the larger creeks. It occurs most extensively in the vicinity of Farmville. Surface runoff and internal drainage are very slow. Flooding is frequent and prolonged. Many areas are wet and marshy throughout the year; others are flat-bottomed pockets in the flood plain, adjacent to steep uplands.

Profile description:

Surface soil—
0 to 7 inches, mottled gray, light-gray, and brown friable silt loam; moderate fine granular structure.
Subsoil—
7 to 25 inches, prominently mottled light-gray, strong-brown, and gray friable silty clay; weak medium blocky structure; plastic when wet.
Underlying material—
25 to 35 inches, mottled gray, brown, and yellow friable clay loam; slightly plastic when wet.

The profile varies considerably in depth. In some places it is shallow and underlain by sand and gravel.

The soil is very strongly acid. It is medium to low in organic matter, and of high fertility. It is slowly permeable in the surface soil and very slowly permeable in the subsurface. Water-holding capacity is high.

Use and management.—Most of Wehadkee silt loam is in forest or supports a dense growth of smooth alder, smilax, elderberry, cattails, weeds, and coarse grasses. Forest trees are sycamore, hackberry, willow oak, red maple, and blue beech. Trees grow slowly on this soil. Some partly cleared areas furnish fairly good grazing and browsing for cattle and horses late in summer and in fall. A small percentage of the soil is in crops and open pasture or is idle. Almost all of this soil is poorly suited or entirely unsuited to cultivation because it is so poorly drained.

Wickham fine sandy loam, undulating phase (2 to 7 percent slopes) (We).—This well-drained soil has formed over young alluvial material deposited on narrow stream terraces, principally along the Appomattox River and to a lesser extent along some of the other large streams. The soil occurs in small areas in association with the moderately well drained Altavista and the poorly drained Roanoke soils. Surface runoff is slow to medium and internal drainage is medium. Sheet erosion damage is generally moderate; gullies are uncommon.

Profile description:

Surface soil—
0 to 8 inches, brown friable fine sandy loam; weak fine granular structure.
Subsoil—
8 to 36 inches, red friable clay; moderate medium blocky structure.
Underlying material—
36 to 42 inches, red friable clay loam, overlying a bed of sand and rounded gravel.

A few areas in the vicinity of Farmville have a dark-brown surface soil and a dusky-red subsoil.

The soil is medium acid. It is fairly well supplied with organic matter, and is of medium fertility. Permeability is moderately rapid in the surface soil and moderate in the subsoil. Water-holding capacity is moderate.

Use and management.—About 52 percent of this soil is in cultivation, 34 percent is in forest, and 5 percent in pasture. The rest is idle or has grown up in sassafras sprouts, broomsedge, and briers. Most of this soil is separated by wooded hilly and steep relief from soils on uplands used for cultivated crops. A small part is used for pasture along with bottom-land soils.

Most of this soil is easy to work, but its workability is limited by a tendency to be slightly sticky when wet. It is easily conserved and is medium to high in productivity. The main crops are corn, dark tobacco, small grains, and hay. Yields are somewhat higher than those obtained under similar management on Cecil fine sandy loam, undulating phase.

Wickham fine sandy loam, rolling phase (7 to 12 percent slopes) (Wd).—This soil occurs in small widely scattered areas on stream terraces. It is closely associated with Wickham fine sandy loam, undulating phase, from which it differs principally in having stronger slopes. Surface runoff is medium to rapid and internal drainage is medium. Sheet erosion has moderately damaged the soil; a small acreage is deeply gullied.

Use and management.—About 50 percent of this soil is in cultivation; 42 percent is in forest and the rest is in pasture or is idle. Workability and conservability are good. Productivity under ordinary management is medium. The scattered areas on which this soil occurs usually are cultivated in conjunction with the undulating phase of this soil. Fertilizer treatment for both soils is the same. To control erosion, contour cultivation and stripcropping should be practiced. Rotations should be long and should include 2 or 3 years of close-growing sod crops.

Wilkes sandy loam, undulating phase (2 to 7 percent slopes) (Wn).—This light-colored, moderately coarse textured, shallow soil occurs extensively throughout the county, particularly in the eastern part. It is associated with nearly all the other soils. It occupies narrow ridgetops that break sharply into hilly and steep relief. In most places this phase has very little developed subsoil. The parent rock is granitic but is intricately mixed with bands of dark-colored basic rocks or, in a few places, with light-colored micaceous rock. Surface runoff is medium and internal drainage is rapid to medium. Sheet erosion damage is generally moderate. A few deep gullies have formed in a very small part of the soil area.

Profile description:

Surface soil—
0 to 7 inches, light-gray or light yellowish-brown friable sandy loam; weak fine granular structure.
Subsurface—
7 to 17 inches, yellowish-brown firm clay loam, mottled with light gray and strong brown; plastic when wet.
Parent material—
17 to 25 inches, mottled gray, brown, yellow, and dark-brown soft decomposed granite, gneiss, schist, and dark-colored basic rock.

Rock outcrops are numerous. The surface soil varies in depth and texture. In some places in the southeastern part of the county it is silt loam or loam. In places it is about 12 inches thick with the lower 5 inches consisting of a yellow or brownish-yellow friable sandy loam. In other places the surface soil is a thin layer of very firm clay directly over soft decomposed rock.

The soil is strongly to slightly acid. It is low in organic matter and of low fertility. The rate of infiltration is high. Permeability is rapid in the surface soil and moderate to slow in the subsoil. Water-holding capacity is moderately low.

Other soils that occur in areas too small to be mapped separately are included with this soil. Each of these soils has a better developed subsoil than Wilkes sandy loam, undulating phase, and resembles in many ways soils of the Cecil, Appling, Iredell, Zion, Lloyd, and Madison series.

Use and management.—About 59 percent of this soil is in forest, 29 percent is cultivated, 7 percent is in pasture, and 5 percent is idle. Workability is good, conservability is fair, and productivity is medium to low.

Corn, small grains, hay, bright tobacco, vegetables, and melons are the chief crops.

Corn is grown in a rotation with small grain, usually wheat or barley. After the small grain is harvested the fields may be planted to lespedeza or they may be left fallow for a few years. Most farmers apply barnyard manure before plowing the land for corn. Yields are fairly low under ordinary management. They can be improved by applying complete fertilizer at proper times in the spring and by side dressing with nitrogen when corn is about a foot high. Small grains produce fair yields under present management. Much higher yields are obtained if the crop is grown following corn that has been properly fertilized and is treated in addition with complete fertilizer.

Bright tobacco produces good yields when grown in a rotation with small grains, or if planted after a 2- or 3-year weed fallow.

Many farmers grow vegetables and melons in small home gardens. Yields are greatly improved by liberal use, at planting time, of barnyard manure and commercial fertilizer.

Wilkes sandy loam, eroded rolling phase (7 to 12 percent slopes) (Wg).—This soil is similar in most respects to Wilkes sandy loam, undulating phase. It differs in having stronger slopes and in being gullied more severely and extensively. It occurs below the tops of ridges and above their hilly and steep side slopes.

Use and management.—About 70 percent of this soil is in forest, 19 percent is cultivated, and the rest is in pasture or is idle. Workability is good, conservability fair to poor, and productivity low. Many farmers grow corn and small grains, although the soil is highly erodible when it is cultivated. Soil losses can be reduced by establishing long rotations, cultivating on the contour, and by stripcropping. Forestry is the best use for this soil.

Wilkes sandy loam, eroded hilly phase (12 to 20 percent slopes) (Wf).—This is the most extensive of the Wilkes soils mapped in the county. It differs from Wilkes sandy loam, undulating phase, mainly in having stronger slopes and a shallower profile. It also has been more severely damaged by gully erosion. In many places the parent rock is exposed. Surface runoff and internal drainage are rapid. Fragments of granite, schist, and dark-colored basic rock are numerous on the surface in many places.

Use and management.—About 86 percent of this soil is in forest, the use to which it is best suited. About 8 percent is used for limited cultivation; the remaining 6 percent is divided about equally into pasture and idle land. The soil is difficult to work and very difficult to conserve under cultivation. It is low to very low in productivity.

Some partly cleared areas are used for pasture, generally along with poorly drained bottom land. Pastures are unimproved, and the grazing is scant and of poor quality. Some areas are used for sheep pasture.

Many fields once cleared now support stands of second-growth pine and hardwood sprouts, and dense growths of weeds and briers. The forest trees are principally oak, yellow-poplar, red maple, dogwood, Virginia pine, and shortleaf pine.

Wilkes sandy loam, eroded steep phase (20+ percent slopes) (Wh).—This soil differs from Wilkes sandy loam, undulating phase, in having stronger slopes and a shallower and less distinctly developed profile. Sheet erosion damage is generally moderate. About 60 percent of the total area is deeply but not closely gullied. The soil occurs on areas of broken or choppy relief adjacent to intermittent drainageways. Along the Appomattox River and other larger streams, it occurs on steep areas covered by dense growths of mountain-laurel. Surface runoff is rapid to very rapid and internal drainage is rapid.

Use and management.—About 91 percent of this soil is in forest, 4 percent is cultivated, 3 percent is in pasture, and 2 percent is idle. The pasture land affords only light grazing. The soil is best used for forestry.

Wilkes sandy loam, severely eroded rolling phase (7 to 12 percent slopes) (Wl).—This soil differs from Wilkes sandy loam, undulating phase, in having stronger slopes, more severe gully erosion, and a shallower profile. Nearly all of it is deeply gullied. The soil is shallow and rocks prevent it from being easily worked. Surface runoff and internal drainage are rapid.

Use and management.—About 86 percent of this soil is in forest. The rest is divided about equally into cultivated land, pasture, and idle land. Poor workability, very poor conservability, and very low productivity practically limit the use of this soil to forest.

Wilkes sandy loam, severely eroded hilly phase (12 to 20 percent slopes) (Wk).—This phase has been more severely damaged by gully erosion than Wilkes sandy loam, eroded hilly phase. Nearly all of it is deeply gullied. Much of the surface soil has been lost through sheet erosion. Loose rock fragments are scattered over the surface, and rock outcrops are numerous. Surface runoff and internal drainage are rapid.

Use and management.—About 88 percent of this soil is in forest; the rest is cultivated land, pasture, or idle land. Workability and conservability are very poor; productivity is very low. The best uses for the soil are forestry and wildlife refuges.

Wilkes sandy loam, severely eroded steep phase (20+ percent slopes) (Wm).—This phase occurs principally along the larger creeks and the Appomattox River. Much of the surface layer has been lost through erosion, and in most places the soil has been deeply gullied. Rock ledges are common, and numerous rock fragments are strewn over the surface. Surface runoff is rapid to very rapid and internal drainage is rapid.

Use and management.—About 94 percent of this soil is in forest; small parts are in cultivated land, pasture, or idle land. The soil can be used best for forestry and wildlife refuges.

Worsham sandy loam (2 to 7 percent slopes) (Wo).—This poorly drained soil was derived from local alluvial and colluvial materials washed from all the sandy soils in the county (fig. 5). It occurs throughout the county

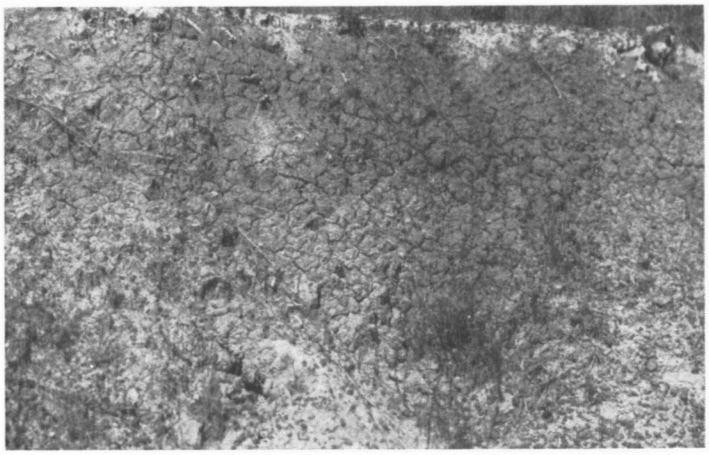

Figure 5.—**An exposure of Worsham sandy loam showing the shrinkage that results from alternate wetting and drying of the clayey subsoil.**

as narrow elongated strips along intermittent drainageways. Surface runoff is slow to medium and internal drainage is very slow. The soil is covered by water most of the time, in many places as the result of seepage.

Profile description:

Surface soil—
0 to 8 inches, light-gray friable sandy loam mottled with dark gray and yellowish brown; weak fine granular structure.

Subsoil—
8 to 28 inches, mottled gray, brownish-yellow, and white firm heavy clay; plastic when wet; moderate medium blocky structure.

Underlying material—
28 inches +, mottled friable colluvium, mainly a mixture of sand, silt, and clay.

The surface soil texture ranges from sandy loam to silt loam. Soil depth varies from 15 to 50 inches. In some places fine gravel and coarse sand are scattered on the surface.

The organic-matter content is low and the soil is strongly acid. Permeability is slow in the surface soil and slow to very slow in the subsoil. Water-holding capacity is moderately low.

Use and management.—About 80 percent of this soil is in forest, 9 percent is cultivated, 5 percent is in pasture, and 6 percent is idle. The forests consist of white and

pin oaks, willow, sycamore, blackgum, and birch. Areas once cleared now support dense stands of broomsedge, horsemint, smilax, honeysuckle, blackberry, cowhage (cowitch), reeds, and many other water-tolerant plants.

Workability is poor and conservability is good. Productivity is very low. The chief crops are corn and hay. The yield of corn under ordinary management is about 10 bushels per acre, but if management is improved it can be increased to 22 bushels an acre. Artificial drainage is not practical.

Pasture lands are mostly unimproved. They have a carrying capacity of 30 cow-acre-days in an average grazing season. Pastures could be improved by constructing shallow open drainage ditches, by applying lime, and by removing weeds.

Capability Groups of Soils

The capability grouping is an arrangement of soils to show relative suitability for crops, grazing, forestry, wildlife, or other uses, and the risks of erosion or other damage. It is widely used in helping farmers plan their practices for soil and water conservation.

Eight broad classes are provided in the capability arrangement, although some of them do not occur in Prince Edward County. Each soil is placed in one of these broad classes after several persons have jointly studied the ways it responds when it is used.

Soils that are easy to farm and have no serious limitations on use are placed in capability class I. Such soils are not subject to more than slight erosion, drought, wetness, or other limitations, and are at least fairly fertile. They are good for many uses. The farmer can use his class I soils for crops without special practices other than those needed for good farming anywhere. He can choose one of several cropping patterns; or if he wishes he may use the soil for pasture, trees, or other purposes.

Soils are placed in class II if they are a little less widely adaptable, and thus more limited than those in class I. For example, a gently sloping soil may have a slight erosion hazard that requires contour tillage or other practices to control runoff. Other soils may be placed in class II because they are too droughty, too wet, or too shallow to be in class I. Climate can also be a limiting factor if too cool or too dry, but it is not a limiting factor in the capability grouping for Prince Edward County.

Class III contains the soils that are suitable for regular cropping but have more stringent management requirements than those in class II. The soils that are even more limited and have narrower crop adaptations than the soils in class III, but are suitable for tillage part of the time or with special precautions, are placed in class IV.

Soils not suitable for cultivation, or in which cultivation is not practical, are in classes V, VI, VII, or VIII. Class V consists of soils not subject to erosion but unsuited to cultivation because of stoniness, standing water, or frequency of overflow. Class VI contains the soils that are steep, droughty, or shallow, but that will produce fairly good amounts of forage, orchard, or forest products. As a rule, class VI soils should not be cultivated, but some of them can safely be disturbed to prepare for planting trees or seeding long-producing forage crops.

Soils in class VII are more limited than those in class VI, require more care in handling, and usually give only fair to poor yields of forage or wood products. Class VIII consists of soils so severely limited that they produce little useful vegetation. They may provide attractive scenery or may be parts of valuable watersheds. Some may have value for wildlife.

Subclasses.—Although the soils within a single capability class present use and management problems of about the same degree, the kinds of problems may differ greatly. These problems and limitations may be caused by erosion, designated by the symbol (e), excess water (w), shallowness, droughtiness, or low fertility (s).

Capability classes and subclasses in Prince Edward County

Capability classes and subclasses in Prince Edward County are given in the following lists. The brief description of each subclass gives the general nature of most, but not all, of the soils included.

Class I.—First-bottom soils that are easy to farm and have no outstanding limitations on use. Class I has no subclasses.

Class II.—Soils that can be used for tilled crops under only slight risk of erosion or under other minor limitations.

IIe: Mostly undulating soils and some rolling soils subject to erosion.

IIw: Alluvial and colluvial soils having medium internal drainage.

Class III.—Soils that can be used for tilled crops but under moderate risk of erosion or under other moderate limitations.

IIIe: Mostly rolling soils and some undulating soils subject to erosion.

IIIw: Soils limited by somewhat poor to poor drainage or frequent overflow.

Class IV.—Soils that have severe limitations for cultivation and that require extreme care under cultivation.

IVe: Mostly undulating eroded soils and rolling to hilly soils.

IVs: Sandy, droughty, bottom-land soils.

IVw: Mixed alluvial soils subject to fairly frequent overflow.

Class V.—Soils not subject to erosion but totally unsuited to cultivation because of standing water or overflow.

Vw: Low wet soils subject to frequent overflow.

Class VI.—Soils too wet, too steep, too eroded, too stony, or too shallow for cultivation, except occasionally to prepare for seeding long-producing pasture or forage or for planting trees.

VIe: Hilly soils.

VIs: Rock outcrops, loose stones, and very shallow soils.

VIw: Poorly drained terrace soils of low fertility.

Class VII.—Soils that are unsuitable for cultivation and usually produce only fair to poor amounts of forage or wood products because they are steep or eroded.

VIIe: Hilly and steep soils and gullied land.

The capability class and subclass for each soil is shown in the following list:

	Capability class and subclass
Altavista fine sandy loam, undulating phase (Aa)	IIe.
Appling fine sandy loam:	
Hilly phase (Ab)	VIIe.
Rolling phase (Ac)	IIIe.
Undulating phase (Ad)	IIe.
Appling sandy loam:	
Hilly phase (Ae)	VIIe.
Rolling phase (Af)	IIIe.
Undulating phase (Ag)	IIe.
Appling and Herndon very fine sandy loams:	
Rolling phases (Ah)	IIIe.
Undulating phases (Ak)	IIe.
Augusta loam (Al)	IIIw.
Bremo loam:	
Eroded hilly phase (Ba)	VIe.
Eroded rolling phase (Bb)	IIIe.
Eroded steep phase (Bc)	VIIe.
Undulating phase (Bd)	IIIe.
Buncombe loamy fine sand (Be)	IVs.
Cecil clay loam:	
Eroded rolling phase (Ca)	IIIe.
Eroded undulating phase (Cb)	IVe.
Severely eroded hilly phase (Cc)	VIe.
Severely eroded rolling phase (Cd)	IVe.
Cecil fine sandy loam:	
Hilly phase (Ce)	IVe.
Rolling phase (Cf)	IIIe.
Undulating phase (Cg)	IIe.
Cecil and Georgeville very fine sandy loams:	
Hilly phases (Ch)	IVe.
Rolling phases (Ck)	IIIe.
Undulating phases (Cl)	IIe.
Chewacla silt loam (Cm)	IIIw.
Colfax fine sandy loam, undulating phase (Cn)	IIIw.
Congaree fine sandy loam (Co)	I.
Congaree silt loam (Cp)	I.
Creedmoor fine sandy loam:	
Eroded rolling phase (Cr)	IVe.
Rolling phase (Cs)	IIIe.
Undulating phase (Ct)	IIIe.
Durham sandy loam, undulating phase (Da)	IIe.
Fluvanna fine sandy loam, undulating and rolling phases (Fa)	IIe.
Gullied land (Ga)	VIIe.
Helena fine sandy loam:	
Rolling phase (Ha)	IVe.
Undulating phase (Hb)	IVe.
Iredell-Zion fine sandy loams:	
Rolling phases (Ia)	IVe.
Undulating phases (Ib)	IIIe.
Lloyd clay loam:	
Eroded hilly phase (La)	VIe.
Eroded rolling phase (Lb)	IVe.
Eroded undulating phase (Lc)	IIIe.
Lloyd loam:	
Eroded hilly phase (Ld)	IVe.
Eroded rolling phase (Le)	IIIe.
Eroded undulating phase (Lf)	IIe.
Louisa fine sandy loam:	
Eroded hilly phase (Lg)	IIIe.
Eroded rolling phase (Lh)	IVe.
Eroded steep phase (Lk)	VIIe.
Eroded undulating phase (Ll)	IIIe.
Severely eroded hilly phase (Lm)	VIe.
Severely eroded steep phase (Ln)	VIIe.
Louisburg sandy loam:	
Eroded hilly phase (Lo)	VIe.
Hilly phase (Lp)	VIe.
Rolling phase (Lr)	IVe.
Undulating phase (Ls)	IIIe.
Madison clay loam:	
Eroded hilly phase (Ma)	VIIe.
Eroded rolling phase (Mb)	IIIe.
Eroded undulating phase (Mc)	IIIe.
Madison fine sandy loam:	
Hilly phase (Md)	IVe.
Rolling phase (Me)	IIIe.
Undulating phase (Mf)	IIe.
Mayodan fine sandy loam:	
Rolling phase (Mg)	IIIe.
Undulating phase (Mh)	IIe.
Mecklenburg loam, undulating and rolling phases (Mk)	IIe.
Mixed alluvium:	
Poorly drained (Ml)	V.
Well drained (Mm)	IVw.
Orange silt loam, undulating phase (Oa)	IIIe.
Roanoke silt loam (Ra)	VIw.
Rock land (Rb)	VIs.
Seneca fine sandy loam (Sa)	IIIw.
Starr loam (Sb)	IIw.
Steinsburg fine sandy loam:	
Eroded hilly phase (Sc)	VIe.
Eroded rolling phase (Sd)	IVe.
Vance fine sandy loam:	
Rolling phase (Va)	IIIe.
Undulating phase (Vb)	IIIe.
Wadesboro clay loam:	
Eroded rolling phase (Wa)	IVe.
Eroded undulating phase (Wb)	IIIe.
Wehadkee silt loam (Wc)	Vw.
Wickham fine sandy loam:	
Rolling phase (Wd)	IIIe.
Undulating phase (We)	IIe.
Wilkes sandy loam:	
Eroded hilly phase (Wf)	VIe.
Eroded rolling phase (Wg)	IVe.
Eroded steep phase (Wh)	VIe.
Severely eroded hilly phase (Wk)	VIIe.
Severely eroded rolling phase (Wl)	VIIe.
Severely eroded steep phase (Wm)	IVe.
Undulating phase (Wn)	IIIe.
Worsham sandy loam (Wo)	V.

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Use and Management of Soils

Certain basic management needs are common to practically all the soils of Prince Edward County. In addition, specific soils may require special management practices or may have particular limitations on use suitability. The general requirements are described in the following paragraphs. Special management requirements are discussed in the section, Management groups. In this section, the soils of the county are arranged in ten groups, each group consisting of soils that are essentially the same in use suitability and require about the same management.

General requirements

Organic matter and fertilizer.—Most of the soils of the county are deficient in organic matter and nitrogen. Nitrogen fertilizers should be applied to all crops except legumes; this will improve yields and increase the quantity of organic matter that can be returned to the soil. Complete commercial fertilizers are usually needed for small grains. Legumes require mineral fertilizers (potassium and phosphorus) at the time of seeding and later as a topdressing. Additional nitrogen fertilizer should be applied to corn as a sidedressing, and to winter wheat and barley as a topdressing, especially when these crops are grown on sandy soils. Farm manure can be applied to furnish both nitrogen and organic matter.

The amount of plant nutrients to be used will depend on what crops are to be grown and on practical considerations of economics—that is, whether improved yields will justify the expenditure.

Soil tests are an aid in determining how much fertilizer and lime should be applied to correct the deficiencies of the soils. Farmers can consult the county agent or representatives of the Virginia Agricultural Experiment Station for assistance in making soil tests.

Crop rotations.—Good crop rotations help to replenish the organic-matter content of the soil and to maintain the supply of plant nutrients. If legume residues and green-manure crops are plowed under, the yields of the crops having the highest acre value—corn and dark tobacco—are improved. The added organic matter also improves the water-holding capacity of the soil and makes it easier to till. Crop rotations also help to control erosion and to check soil-borne diseases.

Erosion control.—More than 75 percent of the county has been moderately damaged by sheet erosion and gullying; of the remaining 25 percent, a little more than half is uneroded and the rest has been seriously damaged. The extent of erosion shows that the land has been improperly used and managed. To repair the damage and prevent further erosion, the steeper areas should be kept in forest or pasture and protected from fire and from overgrazing. On the sloping areas, crop rotations should be followed that will keep the soil covered most of the time. Maintaining the fertility and the organic-matter content of the soil helps to reduce erosion. In some places, contour tillage, stripcropping, and sodding of drainageways may be needed.

Drainage.—Many areas of poorly drained soils in Prince Edward County are now idle but would be excellent for pasture or for crops if artificially drained. Each such area would need to be studied individually, to determine whether drainage is practical.

Management groups

In this section, the soils of the county are arranged in 10 groups, on the basis of suitability for a corn-dark tobacco-small grain-hay type of farming. All the soils of a given group have about the same management requirements.

MANAGEMENT GROUP 1
NEARLY LEVEL WELL-DRAINED TO SOMEWHAT POORLY DRAINED SOILS OF BOTTOM LANDS

The soils in this management group are the somewhat poorly drained Chewacla silt loam and the well-drained Congaree fine sandy loam and Congaree silt loam. They were formed from recently deposited alluvium. Fertility and productivity are high, but the content of phosphorus is deficient. These soils are slightly to strongly acid. They are not extensive but are generally associated with larger areas of less well-drained bottomland soils, mainly Wehadkee silt loam and Mixed alluvium, poorly drained. Many areas of these soils are not suitable for cultivated crops, but they are used for pasture along with the more extensive soils that surround them. Cultivated areas, however, produce excellent yields of corn, dark tobacco, legume hay, and melons.

Suitable management practices.—In some places the soils in this management group are used continuously for corn. Some farmers do not fertilize corn; some apply 200 to 300 pounds per acre of 4–16–8 and get increased yields.

A few farmers grow dark tobacco on the Congaree soils. Yields are high, except in years when the crop is ruined by floods. Many farmers grow legumes for hay—mainly lespedeza—in rotation with corn or tobacco. Yields are increased if lime and phosphorus fertilizers are applied. Good-quality vegetables and melons are grown in small plots on the Congaree soils, mainly for home use but occasionally for nearby markets. These crops are usually fertilized with 300 to 500 pounds an acre of 5–10–5.

The Chewacla soil is used mainly for hay and pasture and to a lesser extent for corn and tobacco. In wet seasons crops are drowned out. A few farmers keep the soil partly drained by open ditches. Hay crops and pasture are especially well suited to this soil. Ladino clover does well in pasture mixtures.

MANAGEMENT GROUP 2
UNDULATING TO GENTLY SLOPING WELL-DRAINED SOILS OF COLLUVIAL LANDS

In this group are Seneca fine sandy loam and Starr loam. These soils have gray to brown or reddish-brown surface soils and yellowish-brown to red or dark-red friable subsurface layers. They occur in small depressions at the heads of drainageways, along the bases of slopes, and adjacent to most of the intermittent streams in the county. They are not important agriculturally because their areas are widely scattered. The profiles vary in depth because of the manner in which the soils were formed. These soils are productive, easily cultivated, and easily conserved. They are well supplied with organic matter and are medium to strongly acid. Soil-moisture relations are good for crops in most places. The subsurface of Starr loam, however, becomes slightly sticky in some places when moist, and the soil is hard to cultivate when it is too wet.

Suitable management practices.—The soils of this management group are well suited to and widely used for corn, hay, and vegetables. They are also well suited to pasture. Corn may be planted year after year in the same fields, or may be grown in rotation with lespedeza, alfalfa, or clover. Corn is usually fertilized with 2–12–12 or 3–9–9 at the rate of 200 or 400 pounds per acre. Clover, alfalfa, and lespedeza hay produce good yields if 1 to 3 tons of lime per acre are applied before seeding. In addition, most farmers apply 300 to 400 pounds per acre of 2–12–12 or 4–16–8 fertilizer to improve the yield and quality of the hay.

These soils are very well suited to potatoes, sweet corn, cabbage, peas, and tomatoes. In addition, the Seneca soil is very well suited to watermelons and cantaloups. Liberal quantities of 5–10–5 or 3–9–9 are applied to obtain good yields of both vegetables and melons.

Good pasture management includes applying lime and superphosphate in small amounts and removing undesirable plants. Quality can also be improved by mowing the pastures.

MANAGEMENT GROUP 3
UNDULATING AND ROLLING WELL-DRAINED SOILS OF UPLANDS AND TERRACES, HAVING RED CLAY SUBSOILS

Soils in this group have a low to moderate supply of organic matter. They are moderately productive and responsive to good management. They are medium to very strongly acid. All are susceptible to erosion and some have lost up to 75 percent of their surface soil. Their capacity to hold moisture and plant nutrients is good.

The soils in this group are—

Cecil fine sandy loam, undulating phase.
Cecil fine sandy loam, rolling phase.
Cecil and Georgeville very fine sandy loams, undulating phases.
Cecil and Georgeville very fine sandy loams, rolling phases.
Lloyd loam, eroded undulating phase.
Lloyd loam, eroded rolling phase.
Madison fine sandy loam, undulating phase.
Madison fine sandy loam, rolling phase.
Wickham fine sandy loam, undulating phase.
Wickham fine sandy loam, rolling phase.

Cecil and Georgeville soils are slightly less productive than the average for the group; Lloyd and Wickham soils are more productive.

Madison soils have open, friable, micaceous subsoils. In some places the Lloyd subsoils are sticky when moist and tend to stick to cultivating machinery.

The soils of this group are productive and will give the best returns when they are used for cultivated crops. Cleared areas are used extensively for corn, dark tobacco, and small grains, and for red clover, lespedeza, or alfalfa hay. The rolling areas are well suited to pasture and to peach and apple orchards.

Suitable management practices.—Crop rotations, fertilization, tillage, and crop adaptability are practically the same for all soils in this management group. Yields, however, may differ somewhat. The following rotations are suitable: (1) Corn or dark tobacco, a small grain, clover or lespedeza hay; or (2) corn, a small grain, and alfalfa hay for 2 or 3 years. Other combinations of crops may be used, but it is best not to grow a clean-cultivated crop more often than once in 3 years.

Enough lime should be used to raise the pH value to the level suitable for the crops to be grown. For general crops, the pH should be 6.0 to 6.5 and for tobacco, 5.0 to 5.5. Corn needs a complete fertilizer applied at the time of seeding. In general, a side dressing of 40 to 80 pounds per acre of nitrogen is also needed when the corn is laid by. Small grains also require a complete fertilizer at seeding time. If the soil is low in organic matter and nitrogen, small grains need a topdressing of 30 to 40 pounds per acre of nitrogen.

Alfalfa needs large quantities of plant nutrients and must be well fertilized every year to assure a good stand. At seeding time alfalfa needs 1,000 to 1,200 pounds an acre of borated 2–12–12. Every year thereafter, a topdressing of 600 to 800 pounds an acre of borated 0–10–20 or 0–14–14 is required. Red clover, lespedeza, and pasture grasses yield good herbage if half this quantity of fertilizer is used.

MANAGEMENT GROUP 4
UNDULATING AND ROLLING WELL-DRAINED SOILS OF UPLANDS AND TERRACES HAVING YELLOWISH CLAY LOAM TO CLAY SUBSOILS

The soils of this group are fairly productive and have surface features favorable for cultivation. Their yellowish subsoils are more open and permeable than the red subsoils of management group 3 soils. They are very strongly to strongly acid and require frequent liming for most crops except tobacco.

The soils in this group are—

Altavista fine sandy loam, undulating phase.
Appling fine sandy loam, undulating phase.
Appling fine sandy loam, rolling phase.
Appling sandy loam, undulating phase.
Appling sandy loam, rolling phase.
Appling and Herndon very fine sandy loams, undulating phases.
Appling and Herndon very fine sandy loams, rolling phases.
Durham sandy loam, undulating phase.
Mayodan fine sandy loam, undulating phase.
Mayodan fine sandy loam, rolling phase.

The undulating soils are easily conserved, but the rolling soils are more difficult to conserve. Contour cultivation and stripcropping are needed in some places to control erosion. Most of the soils are moderately coarse textured and porous. They respond well to fertilizers applied in liberal quantities, but do not retain plant nutrients so well as the soils of management group 3. They have a wide or very wide range of suitability and if properly managed will produce nearly all crops grown in the region.

The Durham and Appling soils of this group are unexcelled as producers of bright tobacco. Corn, small grains, and hay are also grown on them. Altavista fine sandy loam, undulating phase, the only terrace soil in the group, is cropped less intensively in some places because its accessibility is limited and its drainage is slightly restricted. Many small areas of this soil are idle or are used for pasture.

Suitable management practices.—Bright tobacco is the most important crop grown on the soils of this management group. This crop is grown under many kinds of management, but nearly all farmers apply at least 1,200 pounds per acre of 3–9–9 or its equivalent at planting time. This may be supplemented with a side dressing of 5–5–20 before the tobacco ripens. Yields of tobacco average about 1,100 pounds an acre. Bright tobacco is grown by some farmers in rotation with a small grain, which is followed by redtop or mixed grasses grown for hay. Other operators grow tobacco year after year in the same plot. Many farmers allow their tobacco land to grow up in stickweeds and sassafras bushes for a year or so before replanting it to tobacco. Young tobacco plants are set by hand in the field early in May after the land has been listed; the leaves are harvested late in July or early in August.

Corn is usually grown in a 3-year rotation with a small grain and a hay crop. All available barnyard manure is applied. Use of commercial fertilizers varies considerably. Many farmers use 60 to 100 pounds an acre of nitrogen and later apply additional quantities of the same fertilizer as a side dressing. Considerably less fertilizer is used by many farmers. In many places corn is fertilized by the application of only small quantities of phosphorus. Hybrid corn accounts for 90 percent of the crop, but the average yield is slightly less than 40 bushels an acre.

The open sandy soils of this group are soon leached of their plant nutrients. When corn is grown, these soils require large quantities of complete fertilizers and liberal side dressings of nitrogen. At least 500 pounds an acre of 4–16–8 or 4–12–8 are thoroughly disked or harrowed into the soil before corn is planted. In addition, 300

pounds more should be placed in the row at planting time. Two applications of nitrogen fertilizer are also needed for highest yields—one when the corn is 18 inches high and the other when the crop is cultivated for the last time.

Wheat and oats are the most important small grains. Wheat produces about 30 bushels an acre if applications of a complete fertilizer are liberal and are supplemented by barnyard manure. Oats produce slightly less than 50 bushels an acre if manure is used and, in addition, the crop receives at least 300 pounds an acre of 2–12–12 at planting time and a nitrogen topdressing in spring.

The soils of this management group are not so well suited to pasture as those of management group 3. Some farmers, however, are successful in using them for pastures. The soils leach rapidly. Good pastures are maintained by frequent applications of lime and liberal quantities of commercial fertilizers.

The soils of this management group are less well suited to hay crops than those of management group 3. Hay is grown in rotation with corn and tobacco. The most extensively grown hay crop is lespedeza. Less extensively grown are soybeans, cowpeas, clover, and alfalfa. Hay yields are relatively low in many areas because lime and fertilizer are not applied. Fertilizer treatments usually are inadequate where a hay crop is grown following small grains. Liberal annual topdressings of 0–14–14 or 0–16–8 will help increase hay yields. Appling and Durham soils are well suited to hay crops, but the Altavista and Mayodan soils are less well suited. Approximately 4 tons an acre of alfalfa hay have been reported grown on the Appling and Durham soils. These yields were made possible by using 3 tons per acre of ground limestone, applying 1,200 pounds per acre of 0–10–20 at seeding time, and topdressing every year with 1,000 pounds an acre of borated 0–10–20.

The soils of this management group are among the best in the county for vegetables and melons. They warm up early in spring and allow early planting of crops. They are easily tilled and respond readily to concentrated fertilization. Yields are excellent if large quantities of 5–10–5 or similar garden fertilizer are applied and supplemented with manure and proper amounts of lime.

MANAGEMENT GROUP 5
ERODED UPLAND CLAY LOAM SOILS HAVING RED CLAY SUBSOILS

This group of soils is distinguished from those in management group 3 by severe damage from sheet erosion and gullying. The soils have red to yellowish-brown heavy clay loam surface layers. Organic matter is present in appreciable quantity in only a few areas. Productivity ranges from medium to low; workability from good to poor. The soils are fine textured enough to retain plant nutrients. The more nearly level areas can be fairly easily conserved. On the steeper areas the prevention of erosion is more difficult, particularly if the land is being cultivated. Complex structures to control runoff are necessary in some places where the strong slopes are used for crops.

The soils in this management group are—

Cecil clay loam, eroded undulating phase.
Cecil clay loam, eroded rolling phase.
Cecil clay loam, severely eroded rolling phase.
Lloyd clay loam, eroded undulating phase.
Lloyd clay loam, eroded rolling phase.
Madison clay loam, eroded undulating phase.
Madison clay loam, eroded rolling phase.
Wadesboro clay loam, eroded undulating phase.
Wadesboro clay loam, eroded rolling phase.

Corn, small grains, hay, and tree fruits are grown on these soils. Tobacco is planted on a relatively small acreage. Most of the soils are not suited to intensive cultivation, and the most severely eroded ones are better suited to pasture. The management commonly practiced on these soils is essentially the same as that on management group 3.

Suitable management practices.—Proper management on this group of soils requires long rotations that consist of small grains, sod-forming crops, and as little as possible of corn and other cultivated crops. If managed in this way, soils can be cultivated with a minimum of erosion. Good management of cultivated areas includes growing winter cover crops such as crimson clover and rye. A livestock economy is suitable for farms where this group of soils predominates. The manure can be used to improve the soil.

Good pasture can be established by applying 800 to 1,000 pounds per acre of 4–16–8 or its equivalent at planting time and topdressing liberally with 0–16–8 or its equivalent about every 3 years. Enough lime will be needed to make the pH value at least 6.0. Manure applied to pastures helps to maintain a good growth. Orchardgrass, redtop, and lespedeza are suitable as grass mixtures for pastures.

MANAGEMENT GROUP 6
SOMEWHAT POORLY DRAINED UPLAND SOILS HAVING SLOWLY PERMEABLE TO VERY SLOWLY PERMEABLE CLAYPAN SUBSOILS

These soils are commonly called pipe clays. They differ greatly in color, productivity, and type of underlying soil material. Productivity is medium to low, and workability is mostly fair to poor. The undulating soils are conserved without difficulty; the rolling soils erode readily when cultivated. The soils are not good for tilled crops because internal drainage is poor. They are cultivated only when better drained soils are not available.

The soils in this group are—

Colfax fine sandy loam, undulating phase.
Helena fine sandy loam, undulating phase.
Helena fine sandy loam, rolling phase.
Iredell-Zion fine sandy loams, undulating phases.
Iredell-Zion fine sandy loams, rolling phases.
Orange silt loam, undulating phase.

Pastures or undesirable stands of brush and weeds occupy many cleared areas. Bright tobacco, corn, small grains, and hay are the chief field crops. The Helena soils of the group are most widely used for crops. They have a fairly deep, moderately coarse textured surface soil, and a heavy, slowly permeable subsoil that is plastic when wet. The Colfax soil is somewhat similar to the Helena soils. Its subsoil permeability is moderately slow to slow. The Orange soil has a medium-textured silty surface soil and a very slowly permeable subsoil. The subsoil of the Iredell-Zion complex is very slowly to slowly permeable. A gravel layer in many places seriously interferes with normal tillage. In some areas the upper soil layers contain numerous rounded stones and gravel. Iredell-Zion soils have a fairly low lime requirement but are deficient in potassium.

Suitable management practices.—Bright tobacco is grown on soils of this group, mainly on the Helena soils. It may be grown in a rotation with weeds, or in a 2-year

rotation with redtop. Tobacco land sometimes is allowed to "rest" for 1 or 2 years before it is again used for tobacco. Before the crop is planted, the soil is ridged, or listed, to keep the roots of the young plants away from the fine-textured plastic subsoil. Tobacco needs at least 1,000 pounds per acre of 3–9–9 and a side dressing of small amounts of 5–5–20 after the plants have started to grow. It does not grow satisfactorily where surface soils have been severely eroded.

Corn is grown in a rotation with wheat or oats followed by lespedeza or herdsgrass for 1 or 2 years. Cornland needs all the available barnyard manure and large applications of fertilizers that are high in potassium and phosphorus. These amendments should be applied before corn is planted and also at planting time. A side dressing of nitrogen may be needed before the crop is laid by.

Wheat or oats that follow corn or tobacco are usually grown without much additional fertilizer. Better yields, however, can be obtained if at least 300 pounds an acre of 2–12–12 or 4–16–8 is applied at the time small grains are seeded and a light nitrogen topdressing is applied in the spring.

Lespedeza, either alone or in a mixture with grasses, is a main hay crop. Where it is grown on land from which a well-fertilized corn or tobacco crop has been harvested, only a topdressing of nitrogen is added to the soil. Yields are better if the lespedeza is grown in a mixture of grasses rather than alone.

Pastures could be established on idle cleared areas by eliminating the underbrush and weeds and by applying needed lime and fertilizer. Mixtures of redtop and Ladino clover are good for pastures.

Unless there is need for additional cropland, the uncleared areas should remain in forest, as this is their best use. Large tracts of these soils are already in forest and recreational areas.

MANAGEMENT GROUP 7
MODERATELY WELL DRAINED UPLAND SOILS HAVING MODERATELY PERMEABLE TO SLOWLY PERMEABLE SUBSOILS

The soils of this group differ from those in management group 4 in having somewhat retarded drainage in the subsoil. In some places sheet erosion is active and gullies are common. Workability is fair to very good, conservability poor to good, and productivity low to medium.

The soils in this management group are—

Creedmoor fine sandy loam, undulating phase.
Creedmoor fine sandy loam, rolling phase.
Creedmoor fine sandy loam, eroded rolling phase.
Fluvanna fine sandy loam, undulating and rolling phases.
Mecklenburg loam, undulating and rolling phases.
Vance fine sandy loam, undulating phase.
Vance fine sandy loam, rolling phase.

Bright tobacco, corn, small grains, and hay are the principal crops. Vance and Creedmoor soils are the ones most widely used for bright tobacco and corn. Mecklenburg and Fluvanna soils are used more for corn, small grains, and hay.

Suitable management practices.—Bright tobacco is grown either continuously in the same field or in a 2- to 3-year rotation with weeds. The crop gets liberal amounts of 2–10–8 fertilizer and a side dressing of 5–5–20 before the plants mature. If too much fertilizer is used, the tobacco will be of poor quality. The bad effects of too much fertilizer are more pronounced on these soils than on those that have better internal drainage.

Corn is grown in 3- or 4-year rotations with small grains and hay. Cornland is usually manured before it is plowed. Good yields of corn are obtained if 4–16–8 or 4–12–8 fertilizers are applied in liberal amounts. Usually this is supplemented with two side dressings of nitrogen applied before corn is cultivated for the last time. Fertilizer applications for the wheat or barley that follows corn are regulated by the amount of fertilizer used on the corn crop. If the land was manured for corn, or if lespedeza or some other legume was used in the rotation, small grains may need 0–16–8 or 0–14–14 instead of a complete fertilizer, and the nitrogen side dressings should be eliminated so as to reduce the danger of lodging.

Lespedeza is commonly grown for hay on these soils. It is seeded in mixtures with redtop by many farmers. Good stands and good yields have been obtained by using 400 pounds or more an acre of 0–16–8 and enough lime to adjust the pH to the correct level.

These soils can be used successfully for pasture. Mecklenburg and Fluvanna soils are well suited, but the Vance and Creedmoor soils are somewhat less well suited. One or two tons of lime per acre are needed to condition the soil for pasture. In addition, heavy applications of 4–16–8, 2–12–12, or other suitable fertilizer are necessary to obtain good stands of grasses. A good seed mixture for pastures consists of 10 pounds of orchardgrass, 3 pounds of redtop, and 10 pounds of Korean lespedeza per acre. Ladino clover added to the mixture also is good.

MANAGEMENT GROUP 8
UNDULATING AND ROLLING SHALLOW SOILS OF UPLANDS HAVING LITTLE OR NO SUBSOIL DEVELOPMENT

The soils of this group occur in all parts of the county and overlie many different types of rock materials. Under ordinary management, they are medium to low in productivity. Workability ranges from good to fair or poor. Damage from sheet erosion ranges from slight to severe; many areas are deeply gullied. All the soils, however, are fairly easily conserved if properly managed. They warm up early in spring and can be cultivated or plowed soon after rains. Internal drainage is rapid, but some of the soils are sucessfully used for cultivated crops or for pastures.

The soils in this management group are—

Bremo loam, undulating phase.
Bremo loam, eroded rolling phase.
Louisa fine sandy loam, eroded undulating phase.
Louisa fine sandy loam, eroded rolling phase.
Louisburg sandy loam, undulating phase.
Louisburg sandy loam, rolling phase.
Steinsburg fine sandy loam, eroded rolling phase.
Wilkes sandy loam, undulating phase.
Wilkes sandy loam, eroded rolling phase.
Wilkes sandy loam, severely eroded rolling phase.

Economic necessity and the lack of land better suited to cultivation have forced many farmers to use these soils for purposes to which they are not well suited.

Bright tobacco, corn, small grains, and hay are the main crops. Melons, garden vegetables, and small numbers of fruit trees are grown in some places. Even the stronger slopes of the Bremo soils can be cultivated without serious soil losses. They are fair to good for food crops, feed crops, and pasture. The more severely eroded areas of Louisa,

Wilkes, and Steinsburg soils are very poor for feed and food crops and very poor to fair for pasture.

Suitable management practices.—Soils of this management group produce good yields of corn and small grains if managed in the same manner as the soils of management group 4. More lime and fertilizer, however, are needed for group 8 soils.

Side dressings of fertilizer, frequently applied, are probably more beneficial than large amounts applied at one time. Hay crops and pastures need frequent applications of lime. Manure and liberal amounts of 5–10–5 or 6–8–6 are needed on garden vegetables. With some exceptions, bright tobacco can be grown under the same type of management as is used on management group 4 soils.

In general, more fertilizer can be applied at one time to these soils because they leach rapidly. Contour cultivation and diversion channels are needed on these light soils to prevent soil erosion.

Except for the Bremo soils, the soils of this group are not particularly suited to pasture grasses. Few pastures have been improved. Areas that are no longer suitable for crops are used as pastures for dairy and beef animals by some farmers.

MANAGEMENT GROUP 9
POORLY DRAINED TO EXCESSIVELY DRAINED SOILS BETTER SUITED TO PASTURE THAN TO TILLED CROPS

The soils of this group are poorly suited to cultivated crops. Most of them have poor workability, and their productivity is low to very low.

The soils in this management group are—

Augusta loam.
Buncombe loamy fine sand.
Mixed alluvium, well drained.
Mixed alluvium, poorly drained.
Roanoke silt loam.
Wehadkee silt loam.
Worsham sandy loam.

Except for Buncombe loamy fine sand and Mixed alluvium, well drained, the soils of this management group have slow to very slow internal drainage.

Suitable management practices.—Corn and hay are grown on these soils by the same management as is used for them on soils in management group 4. Corn, watermelons, and cantaloups are fertilized with large amounts of 6–8–6 or 5–10–5.

Most of the soils in this group are forested, but a few isolated areas are used for hay and tilled crops. Some areas of Mixed alluvium, well drained, and of Buncombe loamy fine sand, chiefly those along the Appomattox River, are used for corn, watermelons, and cantaloups. In this location crops are in danger of being flooded. A few isolated areas of the Augusta, Buncombe, and Worsham soils, and of Mixed alluvium, poorly drained, are used for corn or hay.

The Worsham soil occurs throughout the county. It is covered by water most of the time. Draining has been attempted, by ditches or other methods, but as a rule it is too expensive to be practical.

Mixed alluvium, poorly drained, occurs along the creeks and smaller streams in the county. Much of this land has been cleared and was once used for cultivated crops, but runoff from the uplands has caused it to become swampy and useless for crops. Natural drainage is now obstructed by meandering stream channels. The vegetation is a tangled mass of alder, sweetgum, willow, cattail, reeds and other water-tolerant plants.

Many areas of the poorly drained Roanoke, Wehadkee, and Worsham soils and of Mixed alluvium, poorly drained, provide good summer grazing for cattle and other livestock. Grubbing and clipping the undesirable vegetation helps to improve the pastures. Where the use of commercial fertilizer is feasible, heavy applications of 4–16–8 or 2–12–12 usually improve the pastures. Enough lime should be used to make the pH value about 6.0. Ladino clover, lespedeza, redtop, or other pasture plants that tolerate wet soil are good plants for pasture mixtures.

MANAGEMENT GROUP 10
HILLY AND STEEP SOILS AND MISCELLANEOUS LAND TYPES BEST SUITED TO FOREST

A large part of the forests in Prince Edward County are on the soils of this management group. The soils are varied in color, depth, extent of erosion, and type of parent material. They are very poor for crops and only fair to poor for pasture. Farmers who have no soils more suitable for crops use the soils of this group for corn, small grains, and tobacco. Tillage is difficult; the use of farm machinery is restricted, and much of the cultivation is done with hand tools. In most places the relief and hazards of cultivation limit the use of these soils to forestry.

The soils in this management group are—

Appling fine sandy loam, hilly phase.
Appling sandy loam, hilly phase.
Bremo loam, eroded hilly phase.
Bremo loam, eroded steep phase.
Cecil fine sandy loam, hilly phase.
Cecil clay loam, severely eroded hilly phase.
Cecil and Georgeville very fine sandy loams, hilly phases.
Gullied land.
Lloyd loam, eroded hilly phase.
Lloyd clay loam, eroded hilly phase.
Louisa fine sandy loam, eroded hilly phase.
Louisa fine sandy loam, eroded steep phase.
Louisa fine sandy loam, severely eroded hilly phase.
Louisa fine sandy loam, severely eroded steep phase.
Louisburg sandy loam, hilly phase.
Louisburg sandy loam, eroded hilly phase.
Madison fine sandy loam, hilly phase.
Madison clay loam, eroded hilly phase.
Rock land.
Steinsburg fine sandy loam, eroded hilly phase.
Wilkes sandy loam, eroded hilly phase.
Wilkes sandy loam, eroded steep phase.
Wilkes sandy loam, severely eroded hilly phase.
Wilkes sandy loam, severely eroded steep phase.

The Cecil, Appling, Lloyd, and Madison soils have deeper profiles and better moisture relations than the others in this group, and they support forests of higher quality. Where severe sheet erosion and gullying have occurred, forests are generally not thrifty. Many areas of Rock land support only a sparse growth of trees and some spots are bare. Some areas along the larger streams are steep bluffs covered by dense stands of laurel and rhododendron.

Suitable management practices.—The hardwood and pine forests on these soils could be improved if they were selectively thinned and harvested. In recent years the forests have been severely overcut for logs and pulpwood. Present forests consist of dense stands of poor-quality trees.

The Cecil, Lloyd, Appling, Madison, and Bremo soils produce fair pasture if properly managed. Lime, large amounts of commercial fertilizers, and barnyard manure are essential to produce good pastures. Bremo soils need less lime than the others, and many farmers in the extreme northwestern part of the county consider them potentially good pasturelands. In most places the Steinsburg, Louisburg, Louisa, and Wilkes soils are not good for pastures because they are too shallow and droughty.

Productivity ratings

Productivity ratings for the soils in Prince Edward County are given in table 4. The productivity rating for each crop is a percentage of the standard yield, which is given at the top of the column for the stated crop. The standard yield is the approximate average yield obtained, without the use of fertilizer or other amendments, on the more extensive and productive soils of the region in the United States where the crop is most commonly grown. For example, the standard yield for corn is 50 bushels an acre. A productivity rating of 60 for corn means that the soil can be expected to produce about 60 percent of 50, or 30 bushels per acre, as an average yield for a number of years.

The figures in columns A show the percentage of the standard yield that can be expected under the level of management common in the county at the time of the survey; those in columns B, the yields that could be obtained under the best management that the majority of farmers could be expected to follow.

The yield data were prepared chiefly from information acquired through field observations and consultations with farmers in the county and with agricultural specialists in the State. Actual crop yield data were used whenever available.

Yield estimates are those obtainable, on the average, over a long period of time. Higher or lower yields may be obtained during a given year, depending on weather conditions for that year.

Figures in table 4 reflect conditions at the time the table was prepared. New crop varieties, improved cultivation and fertilization practices, and better methods of controlling plant diseases and insect pests may change yield levels in the future. The relative productive capacity of the soils, however, is not likely to change.

For the soils of uplands and terraces, the management level of columns A (ordinary management) is based on a 3- to 5-year rotation consisting of corn or dark tobacco, followed by a small grain and a legume hay crop. Corn receives 200 to 400 pounds an acre of commercial fertilizer, such as 4–16–8 or 5–10–10. In addition, available manure is applied to corn or tobacco, and corn is sidedressed with 40 to 80 pounds of nitrate of soda. Small-grain crops receive 200 to 300 pounds of 4–16–8 in addition to a small application of nitrogen fertilizer as a topdressing. Lespedeza, red clover, or some other legume crop is seeded in the small grain, and lime is applied at a rate of from 1 to 3 tons an acre once in each rotation period. When dark tobacco is grown instead of corn, the small grain that follows is seldom fertilized. For dark tobacco the soil is fertilized with 700 to 1,000 pounds of 4–12–8 or 3–9–9 fertilizer.

Figures in columns B (good management) are largely estimates, but they are believed to represent reasonably well the yields to be expected under the best current practices. The 3- to 5-year rotation is satisfactory, in most cases, but larger applications of plant nutrients are necessary. For corn, 400 to 600 pounds of 4–16–8 or 4–12–8 commercial fertilizer will be needed, and 150 to 200 pounds of a good nitrogen fertilizer to be applied at time of last cultivation. An adapted hybrid seed must be used. Manure is applied for corn or dark tobacco. Dark tobacco receives 1,000 to 1,200 pounds of 3–9–9. Small grains following tobacco receive 200 to 300 pounds of 4–12–8; small grains following corn receive 400 to 600 pounds of 4–12–8 and a topdressing of 100 to 150 pounds of a nitrogen fertilizer. Best yields of alfalfa hay require 1,000 to 1,200 pounds of borated 2–12–12 or its equivalent at seeding and 600 to 800 pounds of 0–14–14 or 0–10–20 as a topdressing every year. Other practices required at this level of management include measures to conserve moisture and control erosion, and the application of as much lime as is required to maintain a favorable soil reaction.

Soil Associations

A soil association consists of several soils that occur near each other in a characteristic pattern. The soils that make up an association may differ in physical characteristics and agricultural suitability, but the proportions and distribution, wherever the association occurs, are fairly uniform.

Each of the ten soil associations of Prince Edward County is composed of 2 or 3 dominant soils and from 1 to 4 soils of smaller extent. The geographic distribution of the associations is shown on the colored map at the back of the report, and each of the associations is described in the following pages.

Lloyd-Fluvanna-Wilkes association

This association covers about 5 percent of the county. It is well distributed. Some of the largest areas are in the vicinities of Darlington Heights and Prospect, and south of Elam. The productive but easily eroded Lloyd soils make up about 75 percent of the association. Wilkes soils make up about 15 percent of the association. The Fluvanna soil is less extensive. Seneca, Starr, and Worsham soils of the colluvial lands, and Mixed alluvium, poorly drained, of the bottom lands, are minor soils in the association. They are well distributed and occur in small areas at the foot of slopes, along intermittent drainageways, or in first bottoms along streams.

About 80 percent of this association has been cleared and is used for corn, dark tobacco, small grains, and hay. Many of the steeper Wilkes soils are in forests. The Seneca soil occurs on small undulating or gently sloping areas at the foot of slopes and near intermittent drainageways. It is well suited to vegetables and is used to a considerable extent for gardens. The poorly drained Worsham soil and Mixed alluvium, poorly drained, are seldom used for cultivated crops because moisture relations are unfavorable. They are used mainly for pasture or forest.

TABLE 4.—*Productivity ratings for crops and pasture on the soils of Prince Edward County, Va.*

[Productivity indexes in columns A are for ordinary soil management; those in columns B are for good soil management]

Soil	Corn (100= 50 bu.)		Wheat (100= 25 bu.)		Oats (100= 50 bu.)		Rye (100= 25 bu.)		Barley (100= 40 bu.)		Lespedeza hay (100= 1½ tons)		Alfalfa hay (100= 4 tons)		Clover hay (100= 2 tons)		Dark tobacco [1] (100= 1,000 lb.)	Bright tobacco [1] (100= 1,000 lb.)	Pasture (100= 100 cow-acre-days) [2]	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B	A	B
Altavista fine sandy loam, undulating phase	60	100	60	100	30	70	40	80	50	88	53	87	30	60	50	115	(3)	50	45	105
Appling fine sandy loam:																				
Undulating phase	60	104	60	112	40	90	48	80	75	138	40	87	43	85	75	160	(3)	120	36	70
Rolling phase	52	88	56	104	36	84	40	72	63	118	33	73	38	80	55	130	(3)	100	30	60
Hilly phase	(3)	(4)	48	88	30	78	32	72	38	83	27	60	35	70	(3)	(4)	(3)	(3)	29	53
Appling sandy loam:																				
Undulating phase	64	104	48	112	36	84	48	80	40	90	47	80	38	80	75	160	(3)	110	33	70
Rolling phase	52	88	48	108	32	80	40	68	35	83	33	67	38	80	55	130	(3)	95	33	70
Hilly phase	(3)	(4)	40	80	24	70	32	66	(4)	(4)	33	60	28	58	50	125	(3)	(3)	30	53
Appling and Herndon very fine sandy loams:																				
Undulating phases	40	80	40	80	36	76	40	72	45	95	33	60	38	70	70	130	(3)	80	35	62
Rolling phases	36	76	32	68	36	72	40	72	43	90	27	53	35	65	65	125	(3)	70	33	58
Augusta loam	40	86	(3)	(4)	(3)	(4)	32	68	(3)	(4)	40	67	(3)	(4)	40	100	(3)	(3)	45	105
Bremo loam:																				
Undulating phase	60	90	56	140	40	80	80	152	58	125	67	100	(3)	(4)	75	115	100	(3)	33	62
Eroded rolling phase	50	92	48	132	32	72	52	132	30	83	53	87	(3)	(4)	40	105	60	(3)	35	66
Eroded hilly phase	36	80	40	124	28	68	44	120	25	78	40	80	(3)	(4)	30	90	(3)	(3)	33	60
Eroded steep phase	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	33	67	(3)	(4)	25	85	(3)	(3)	33	62
Buncombe loamy fine sand	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	27	53	(3)	(4)	(3)	(4)	(3)	(4)	36	70
Cecil fine sandy loam:																				
Undulating phase	70	120	56	120	44	110	80	152	55	125	80	120	50	83	45	95	120	78	36	84
Rolling phase	60	116	40	112	44	100	72	144	50	95	47	100	45	75	40	90	110	73	34	75
Hilly phase	(3)	(4)	44	100	36	90	32	80	(4)	(4)	33	80	33	65	30	75	(3)	(3)	30	66
Cecil clay loam:																				
Eroded undulating phase	44	96	64	136	54	100	92	160	38	70	53	107	50	93	45	95	85	(3)	40	105
Eroded rolling phase	40	90	56	128	50	100	80	152	35	63	40	93	45	88	40	85	85	(3)	36	84
Severely eroded rolling phase	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	27	67	25	48	30	50	(3)	(3)	29	60
Severely eroded hilly phase	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	27	60
Cecil and Georgeville very fine sandy loams:																				
Undulating phases	56	100	40	120	40	104	72	124	50	120	40	93	40	78	35	95	100	75	33	70
Rolling phases	50	90	36	112	36	100	64	144	45	115	33	87	35	73	30	85	90	65	31	64
Hilly phases	(3)	(4)	32	100	30	80	56	136	38	100	27	87	(3)	(4)	20	75	(3)	(3)	27	45
Chewacla silt loam [5,6]	80	114	(3)	(4)	(3)	(4)	(3)	(4)	(3)	(4)	67	127	(3)	(4)	60	100	(4)	(4)	60	140
Colfax fine sandy loam, undulating phase	40	76	40	100	30	76	40	64	30	75	47	87	25	63	40	105	(3)	70	30	60
Congaree fine sandy loam [7]	100	136	(3)	(4)	(3)	(4)	(3)	(3)	(3)	(4)	53	120	(3)	(4)	(3)	(4)	110	(3)	51	105
Congaree silt loam [7]	104	138	(3)	(4)	(3)	(4)	(3)	(3)	(3)	(4)	67	133	(3)	(4)	(3)	(4)	120	(3)	60	140
Creedmoor fine sandy loam:																				
Undulating phase	36	70	40	100	30	76	40	92	30	70	40	87	(3)	(4)	35	100	70	65	30	60
Rolling phase	34	66	40	100	30	76	40	80	28	65	33	73	(3)	(4)	30	90	68	63	29	55
Eroded rolling phase	30	60	36	88	28	72	40	92	25	63	33	73	(3)	(4)	30	90	65	60	28	53
Durham sandy loam, undulating phase	50	100	60	120	44	90	56	120	45	100	67	120	(3)	(4)	40	80	(3)	150	33	84
Fluvanna fine sandy loam, undulating and rolling phases	48	98	48	100	36	100	56	104	38	93	47	93	(3)	(4)	50	100	65	(3)	39	80
Gullied land	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Helena fine sandy loam:																				
Undulating phase	40	64	32	56	20	30	40	60	25	40	40	73	(3)	(4)	25	70	(3)	65	27	53
Rolling phase	28	56	28	52	18	28	36	56	20	35	33	67	(3)	(4)	20	65	(3)	60	27	50
Iredell-Zion fine sandy loams:																				
Undulating phases	34	60	36	48	24	34	48	68	25	38	67	127	40	63	65	115	70	(3)	30	60
Rolling phases	30	56	36	48	24	34	44	64	23	33	60	120	35	58	55	105	65	(3)	30	60
Lloyd loam:																				
Eroded undulating phase	72	118	60	140	50	122	60	128	60	130	67	120	50	90	50	100	105	(3)	45	105
Eroded rolling phase	68	112	56	132	46	118	56	120	55	125	60	113	48	85	45	95	90	(3)	43	91
Eroded hilly phase	56	76	40	104	36	100	48	112	40	100	33	67	(3)	(4)	(3)	(4)	(3)	(3)	36	66
Lloyd clay loam:																				
Eroded undulating phase	68	112	52	120	46	116	52	200	55	125	53	100	45	88	45	90	100	(3)	40	84
Eroded rolling phase	64	108	48	112	42	112	48	144	50	120	47	87	40	83	40	160	80	(3)	38	75
Eroded hilly phase	52	72	32	100	32	94	40	92	35	95	27	53	(3)	(4)	(3)	(4)	(3)	(3)	36	66
Louisa fine sandy loam:																				
Eroded undulating phase	34	66	36	68	32	62	32	56	30	63	47	80	(3)	(4)	(3)	(4)	(3)	65	26	53
Eroded rolling phase	30	62	32	64	32	62	32	56	25	58	40	73	(3)	(4)	(3)	(4)	(3)	60	26	53

See footnotes at end of table.

TABLE 4.—*Productivity ratings for crops and pasture on the soils of Prince Edward County, Va.*—Continued

Soil	Corn (100= 50 bu.)		Wheat (100= 25 bu.)		Oats (100= 50 bu.)		Rye (100= 25 bu.)		Barley (100= 40 bu.)		Lespedeza hay (100= 1½ tons)		Alfalfa hay (100= 4 tons)		Clover hay (100= 2 tons)		Dark tobacco [1] (100= 1,000 lb.)	Bright tobacco [1] (100= 1,000 lb.)	Pasture (100= 100 cow-acre-days) [2]	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	B	B	A	B
Louisa fine sandy loam—Con.																				
Eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	28	48	[3]	[4]	27	60	[3]	[4]	[3]	[4]	[3]	[3]	23	44
Eroded steep phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	21	40
Severely eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	21	37
Severely eroded steep phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	20	35
Louisburg sandy loam:																				
Undulating phase	40	78	44	72	32	72	40	68	30	60	47	73	[3]	[4]	[3]	[4]	[3]	100	25	64
Rolling phase	30	60	36	64	28	78	40	68	25	55	40	67	[3]	[4]	[3]	[4]	[3]	100	25	60
Hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	33	67	[3]	[4]	[3]	[4]	[3]	[3]	23	53
Eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	21	47
Madison fine sandy loam:																				
Undulating phase	60	126	48	132	48	116	56	124	50	120	60	107	40	80	45	95	90	[3]	34	75
Rolling phase	44	88	48	128	48	116	52	120	50	120	53	100	38	78	40	90	85	[3]	33	73
Hilly phase	40	80	32	80	32	80	40	100	38	95	20	53	[3]	[4]	[3]	[4]	[3]	[3]	26	53
Madison clay loam:																				
Eroded undulating phase	52	112	40	120	44	112	40	96	45	113	47	93	35	75	30	80	75	[3]	32	68
Eroded rolling phase	48	108	40	112	40	108	32	80	43	110	33	73	28	68	20	65	70	[3]	30	58
Eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	24	47
Mayodan fine sandy loam:																				
Undulating phase	44	88	48	92	34	76	[3]	[4]	43	88	27	60	30	63	30	65	[3]	75	30	60
Rolling phase	38	80	44	88	32	72	[3]	[4]	38	80	27	53	28	60	25	60	[3]	75	29	55
Mecklenburg loam, undulating and rolling phases	40	90	48	100	40	110	[3]	[4]	38	93	53	100	45	70	80	135	80	55	40	84
Mixed alluvium:																				
Well drained	30	60	[3]	[4]	[4]	[4]	[4]	[4]	[3]	[4]	47	87	[3]	[4]	40	75	[4]	[4]	36	70
Poorly drained	[3]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	30	60
Orange silt loam, undulating phase	30	60	28	40	20	30	[4]	[4]	20	30	47	87	[3]	[4]	[3]	[4]	[3]	50	26	53
Roanoke silt loam [6]	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	30	70
Rock land	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]
Seneca fine sandy loam	60	110	40	80	36	70	[4]	[4]	38	88	53	100	[3]	[4]	[3]	[4]	100	[3]	36	84
Starr loam	84	130	56	120	44	90	[4]	[4]	43	100	80	140	50	98	[3]	[4]	100	[3]	47	117
Steinsburg fine sandy loam:																				
Eroded rolling phase	24	56	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	50	30	47
Eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[4]	[3]	[3]	23	32
Vance fine sandy loam:																				
Undulating phase	46	92	52	100	36	82	[4]	[4]	45	93	33	73	33	68	[3]	[4]	[3]	80	30	60
Rolling phase	40	88	48	92	32	78	[4]	[4]	40	88	27	67	35	70	[3]	[4]	[3]	75	28	55
Wadesboro clay loam:																				
Eroded undulating phase	36	84	48	112	46	90	[4]	[4]	45	113	33	80	40	80	[3]	[4]	[3]	[3]	33	78
Eroded rolling phase	30	74	40	104	40	80	[4]	[4]	40	105	27	67	30	75	[3]	[4]	[3]	[3]	31	66
Wehadkee silt loam	[3]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	45	105
Wickham fine sandy loam:																				
Undulating phase	80	128	72	128	50	110	[4]	[4]	55	125	53	120	45	88	50	100	80	[3]	45	105
Rolling phase	60	120	52	120	46	104	[4]	[4]	50	120	47	107	40	80	40	90	75	[3]	43	95
Wilkes sandy loam:																				
Undulating phase	30	74	44	96	32	64	[4]	[4]	25	63	53	87	[4]	[4]	[4]	[4]	[3]	65	26	53
Eroded rolling phase	26	60	40	80	[3]	[4]	[4]	[4]	20	50	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	24	47
Eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	23	42
Eroded steep phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	[3]	[4]
Severely eroded rolling phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	[3]	[4]
Severely eroded hilly phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	[3]	[4]
Severely eroded steep phase	[3]	[4]	[3]	[4]	[3]	[4]	[4]	[4]	[3]	[4]	[3]	[3]	[4]	[4]	[4]	[4]	[3]	[3]	[3]	[4]
Worsham sandy loam	20	44	[3]	[4]	[4]	[4]	[4]	[4]	[3]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	30	60

[1] Productivity indexes for tobacco are given for only one level of management because the best practices known are followed in growing the crop.

[2] Cow-acre-days is a term used to express the carrying capacity of pastures. It represents the number of days a year that 1 animal unit can be supported on 1 acre without injury to the pasture. An animal unit is 1 mature cow, steer, or horse, 5 hogs, or 7 sheep or goats. For example, a soil that would provide grazing for 1 cow or 1 animal unit to the acre for 100 days would rate 100 cow-acre-days; soil that would provide grazing for 1 cow or 1 animal unit to 4 acres for 100 days would rate 25 cow-acre-days. For ratings in column A the grazing period is estimated to be 180 days a year and for those in column B, 210 days.

[3] The crop is not commonly grown.

[4] The crop is not commonly grown, and the soil is considered physically unsuited for it under the management specified.

[5] Floodwater occasionally damages crops on this soil, but the hazard of flooding was not considered in estimating yields.

[6] The productivity indexes for column A are those for average yields to be expected without artificial drainage. Productivity indexes in columns B are those for expectable average yields on adequately drained areas.

[7] Wheat, oats, rye, and barley lodge on this soil.

Medium-sized to small general-purpose farms predominate. Most of the farms are well managed and highly productive.

The Lloyd and Fluvanna soils are moderately to highly erodible, and in many places have lost most of their original surface soil. The remaining surface soils, however, respond to treatment, and if properly managed can be made useful and productive. They need organic matter and nitrogen, and the rotation should consist mostly of close-growing crops. The Wilkes soils are also highly erodible where the relief is hilly or steep, but nevertheless many farmers use them for corn and dark tobacco.

Creedmoor-Mayodan-Steinsburg association

Soils in this association occupy about 6 percent of the county and occur in two small basins, one just south of Farmville and the other south of Worsham. They are underlain by Triassic sandstone and shale.

The Mayodan soils are well drained; the Creedmoor, moderately well drained; and the Steinsburg, excessively drained. The Creedmoor soil has mostly undulating relief; the Mayodan soil is undulating and rolling; and the Steinsburg soil is mostly hilly. All members of the association have fine sandy loam surface soils and firm or friable subsoil or subsurface layers; all are strongly acid and of low fertility.

The minor members of the association are the Wadesboro soils of the undulating and rolling uplands and the Seneca and Worsham soils of the colluvial lands. They occur at the bases of slopes, and in depressions throughout the association.

The soils of this association are poorly suited to farming, particularly those in the vicinity of Farmville. Small subsistence-type farms are the rule. Most of the areas are in home gardens, small plots of corn or tobacco, or poor pastures. Many areas near Worsham are used more intensively for corn, tobacco, small grains, hay, and pasture.

This association is not important agriculturally, because many areas are suited neither to intensive cultivation nor to pasture. Cleared areas can be lightly cultivated and lightly grazed. Uncleared areas should be left in forest.

Iredell-Zion-Wilkes association

Soils in this association occupy about 4 percent of the county area. They occur in scattered areas throughout the county, particularly in the extreme western and southern parts.

The Iredell and Zion soils, mapped as the Iredell-Zion complex, are dark colored and somewhat poorly drained, and generally have undulating relief. The Wilkes soil is lighter colored and excessively drained, and has mostly undulating relief. The Iredell-Zion soils make up at least 80 percent of the association, and the Wilkes soil about 15 percent; the rest is Worsham soil.

The Iredell-Zion soils have fine gravel and numerous stones scattered on the surface; in many places gravel is plentiful in the subsoil. Intensive cultivation of this soil is not practical because it has a fine-textured impervious subsoil. The Wilkes soil is shallow and has very little subsoil development. It occupies areas of choppy relief along drainageways. The Worsham soil occurs in small scattered depressions and along some of the small streams.

About 30 percent of this association is cleared and cultivated. The principal crop is lespedeza hay. Small acreages are in corn or tobacco, or are used for light grazing. A little cleared land is idle. Most of the farms are small and furnish only a subsistence. A considerable part of most farms is in forest.

Bremo-Lloyd association

This association occurs in a small area north of Prospect. Its total area is about 5 percent of the county. At least 70 percent of it consists of the Bremo soils. The minor members of the association, the Seneca, Starr, and Worsham soils of the colluvial lands, occur in well-distributed small areas at the bases of slopes and along intermittent drainageways. Mixed alluvium, another minor component of the association, occurs on first bottoms along the principal streams. Lloyd soils are on the smooth uplands. The Starr soil developed from material washed from Lloyd soils. The Seneca and Worsham soils developed from material washed from Bremo soils. The Seneca, Starr, and Worsham soils are undulating and gently sloping; the Bremo soils are undulating to steep.

The Bremo and Lloyd soils are among the best agricultural soils in the county. The Bremo soils are productive although they are shallow and lack a well-developed subsoil.

The soils in this association are used for crops, pasture, and forest. Large areas are planted to wheat and other small grains. Wheat yields are among the highest in the county. Corn, lespedeza and other legume hay, and dark tobacco are grown on considerable acreages. Large areas are used almost entirely for pastures for beef and dairy cattle. Heavy farm machinery is difficult to use in some places, particularly on the stronger slopes of Bremo soils.

Medium-sized to large general-purpose farms predominate. There are a few large dairy or beef farms on these soils. Most of the farms are well managed and prosperous.

Helena-Wilkes-Vance association

This association occupies about 8 percent of the county. It occurs in all parts of the county, particularly in the vicinities of Abilene, Worsham, and Rice. The soils are sandy and were derived from products that weathered from mixed dark-colored rocks and granite.

The Helena soils comprise about 40 percent of this association; the Wilkes and Vance soils together account for about 50 percent. Seneca and Worsham soils, and Mixed alluvium, poorly drained, make up the rest of the association. Mixed alluvium, poorly drained, occupies large fairly wide areas on the first bottoms along streams that flow through areas of Wilkes soils. These soils are flanked by areas of Helena and Vance soils having a much milder relief.

The Helena and Vance soils have undulating and rolling relief and slow internal drainage. Wilkes soils have hilly and steep relief and rapid internal drainage. The Seneca soil has undulating or gently sloping relief and medium internal drainage. The Worsham soil has undulating or gently sloping relief and very slow internal drainage. Mixed alluvium, poorly drained, has level or nearly level relief and slow to very slow internal drainage.

A large part of this association, and particularly of the Helena and Wilkes soils, is in forest. Around Abilene, about 80 percent of the association is forested. Large parts of the Worsham soil and of Mixed alluvium, poorly drained, are in forest, but some areas have been cleared and are used for light grazing.

Cultivated land is used mainly for corn, bright tobacco, hay, and small grains. The farms are small and are used for general crops or for bright tobacco. Most of the farms are the subsistence type.

The Vance soils, which predominate in the area just north of Rice Depot, are used intensively for bright tobacco and other crops. Uncleared areas of the Helena and Wilkes soils should be left in forest. These soils are not suitable for cultivation. To a large extent, they are occupied by State forests, game preserves, and recreational grounds.

Cecil-Madison-Wilkes association

This is the largest association in the county, covering about 30 percent of the total area. It occurs in all parts of the county, most extensively in the western and southern parts. The soils differ widely in color, texture, drainage, and parent material.

The Cecil soils make up approximately 70 percent of the association. They occur on undulating to hilly slopes and are used for all crops grown in the county. The Madison soils, similar to the Cecil in most characteristics, contain numerous mica flakes throughout the subsoil and parent material; they are known locally as isinglass land. They make up about 15 percent of the association, and are used for the common crops, the same as the Cecil soils. The Wilkes soils are not extensive. They occur on steep slopes adjacent to the rivers and larger creeks. They are shallow and are seldom cleared or cultivated, but are used primarily for forest.

Minor soils in this association are the well-drained Seneca and Starr soils, the poorly drained Worsham soil, and Mixed alluvium, poorly drained. All of these soils have undulating to gently sloping or nearly level relief. They occur at the bases of slopes, along small intermittent drainageways, or on first bottoms of streams that flow through areas of Cecil, Madison, and Wilkes soils. The Seneca and Starr soils occur on colluvial lands and are usually cultivated with the surrounding soils of uplands. The Worsham soil and Mixed alluvium, poorly drained, may be used for light grazing, or they may support dense stands of water-loving shrubs and undesirable reeds and grasses.

Corn, dark tobacco, wheat, barley, oats, lespedeza, alfalfa, red clover, and tree fruits are grown on the Cecil and Madison soils. These soils are easily worked, and have a wide range of suitability. They are well suited to pasture, and are used intensively for grazing on many livestock farms.

The farms in this association range in size from medium to small. Some are well-managed, prosperous, general-purpose farms. Others are small subsistence units, many of which are poorly managed, and consequently are badly eroded and depleted of plant nutrients.

Wilkes-Appling-Cecil association

This association covers about 15 percent of the county. About 75 percent of the association is composed of Wilkes soils; most of the rest is divided about equally between Appling and Cecil soils. The Seneca and Worsham soils and Mixed alluvium, poorly drained, are minor components. The Wilkes soils are hilly or steep. The largest areas are near the Bush and Sandy Rivers between High Bridge and Briery. Other large areas of this soil are on the steep banks along the Appomattox River and Buffalo Creek. The Wilkes soils are shallow over granite bedrock that contains bands of dark-colored, fine-grained basic rock. They are sandy, excessively drained, and highly to very highly erodible under cultivation.

The Appling and Cecil soils have undulating or rolling relief. The colluvial Seneca and Worsham soils occur in depressions and along drainageways. They were formed from materials that washed from the surrounding slopes. Mixed alluvium, poorly drained, occurs in considerable areas on wide bottoms along the rivers and large creeks that flow through the association. The profile is either undeveloped or is only weakly developed; texture and structure are not uniform. This soil is seldom used for cultivated crops, but some parts are used for pasture.

The Wilkes soils are fairly productive and respond to fertilization. They are not intensively used on farms that have available soils better suited to cultivation. However, on many small farms along the Sandy and Bush Rivers, the Wilkes soils are used for corn, bright and dark tobacco, small grains, and lespedeza. On large farms this soil is used only for pasture. It furnishes good grazing if it is well fertilized and otherwise well managed. The steep choppy banks along the principal rivers are seldom cleared. They support good stands of hardwoods in some places and dense growths of laurel in others.

The farms in this association are medium-sized to small general-subsistence units. A few farms specialize in raising livestock. Bright and dark tobacco are grown to a limited extent on the general farms.

Madison-Louisa-Cecil association

This association covers about 14 percent of the county. It occurs in widely scattered areas but is especially extensive in the vicinities of Darlington Heights and Leigh Mountain, and south of Rice. Eighty percent of this association is composed of the upland soils of the Madison, Louisa, and Cecil series. The Starr, Seneca, and Worsham soils of colluvial lands are the minor soils that make up the rest of the association.

The Madison and Louisa soils, particularly the Louisa, are micaceous. Madison soils are fairly deep over bedrock, fairly productive, and susceptible to erosion. They are suited to many different crops and are used for corn, wheat, barley, dark tobacco, lespedeza, alfalfa, red clover, and tree fruits. The Louisa soils for the most part are

hilly and steep and are not intensively cultivated. They are moderately coarse textured, light colored, shallow to bedrock, excessively drained, and low in fertility. Most of the steeper areas are in forest. The Cecil soils differ from the Madison soils chiefly in containing less mica and in being somewhat deeper to bedrock.

The Starr, Seneca, and Worsham soils have small areas that are well distributed through the association. The well-drained Seneca and Starr soils are intensively cultivated; the poorly drained Worsham soil is used for pasture, or supports thick stands of water-loving hardwood trees or undesirable weeds and grasses.

In this association the farms are small and are general-purpose farms. Some are fairly prosperous; others are less so. Many farmers grow dark tobacco in small quantities.

Appling-Louisburg-Durham association

This association occupies about 7 percent of the county. It lies chiefly in the extreme eastern part, and extends from the vicinity of Epps School southwestward to Burks Tavern. A smaller area lies near Double Bridge in the southern part. The major soils in this association are the most important in the county for production of flue-cured tobacco.

The Appling soils are extensive and occupy about 60 percent of this association. The Louisburg and Durham each occupy about 15 percent. Seneca and Worsham soils of colluvial lands make up the rest. The Appling, Louisburg, and Durham soils are sandy and light colored, and they have yellowish permeable subsoil or subsurface layers. They are strongly or very strongly acid, deficient in organic matter, and low in fertility. The Durham and Appling soils have undulating and rolling slopes and well-developed profiles. The Louisburg soils in most places have rolling and hilly slopes and shallow, poorly developed profiles. The Seneca and Worsham soils occur in small areas in depressions and along the intermittent drainageways. These undulating or gently sloping soils have formed from soil materials washed from uplands.

The Appling and Durham soils are used intensively for bright tobacco, corn, lespedeza, small grains, and truck crops. A large part of the hilly Louisburg soils are not cleared. In the vicinity of Morgan a few areas of the Louisburg soils have rolling slopes, and are used for bright tobacco. Many areas of the Seneca soil are used for vegetable gardens, watermelons, and cantaloups.

In this association the farms are of medium to large acreage. On most of the farms, bright tobacco is the important crop. Farms are generally well managed and prosperous. The area of this association near Double Bridge is principally in forest.

Congaree-Wickham-Mixed alluvium association

This association covers about 6 percent of the county. It is composed of bottom-land and terrace soils that are widely distributed along the rivers and larger creeks throughout the county. They differ widely in color, texture, and drainage, and in use suitability. The Chewacla, Wehadkee, Roanoke, Augusta, and Altavista soils are also members of this association.

The Congaree, Wickham, and Altavista members are well drained or moderately well drained, and are used for corn and for cowpea and soybean hay. Soils that are subject to overflow or that have restricted drainage are used for pasture.

Soils of the bottom lands—chiefly the Congaree and Chewacla soils and Mixed alluvium, poorly drained—once were the principal agricultural soils of the county because their natural fertility was high. At present only a small acreage of these soils is used for cultivated crops, largely because of frequent flooding and consequent accumulation of sand and silt. Many areas have grown up in alders, willows, sycamores, and other water-loving plants.

Agriculture

History

Early agriculture in Prince Edward County was confined largely to the bottom lands and flats along the Appomattox River. In colonial days this stream was one of the main routes for pioneers who migrated westward from the early settlements along the Virginia coast. After about 1730, agriculture on the plantations consisted mainly of the growing of corn, small grains, and dark tobacco. These products were transported by boats down the river to markets in Petersburg.

Flue-cured or bright tobacco became an important crop during the Civil War. At present its total production almost equals that of the dark-fired type. Farmville is one of the leading Virginia markets for dark-fired tobacco.

Since the county was first settled, the cultivation of tobacco has been the major agricultural activity, and much of its soil has been at one time or another used for this crop. In the early days farmers did not think of conserving the soil. Fields were laid out without regard to slope and plowed the most convenient way rather than on the contour. The cultivation of tobacco and corn for many years has caused moderate to severe erosion of most of the farmland of the county. Only a few areas are not affected.

Present-day agriculture centers about the production of dark and bright tobacco. In 1947, 1,356,799 pounds of dark tobacco and 1,318,097 pounds of bright tobacco were produced. Average yields of both types have almost doubled in the past 10 years, largely because tobacco varieties have been improved and management has become more efficient.

Since 1900, the sale of dairy products has become the second largest source of farm income in the county. Along with the increase of dairying and livestock raising, there has been a steady increase in pasture acreage. Although pastures have been improved, the average carrying capacity is still low, largely because pastures are overgrazed and inadequately fertilized.

Land Use

In recent years, corn and tobacco acreages have steadily declined, and the acreage used for pasture has increased.

The size of farms has increased in the last 30 years, but the number of farms has decreased.

The approximate land and water area of Prince Edward County is 228,449 acres. According to the 1950 census, 156,370 acres, or 68.4 percent was in farms. The rest of the land is cities, State forests, mines, and miscellaneous.

In 1949, land in farms was distributed as follows:

	Acres	Percent
All cropland	54, 645	34. 9
Harvested	28, 377	18. 1
Used only for pasture	11, 343	7. 3
Not harvested, not pastured	14, 925	9. 5
All woodland	83, 841	53. 6
Pastured	18, 457	11. 8
Not pastured	65, 384	41. 8
All other land pastured	9, 305	6. 0
Wasteland and all other land in farms not cropped, pastured, or in woodlands	8, 579	5. 5

Size and Type of Farms, and Farm Tenure

According to the 1950 census, there were 1,340 farms in the county, and the average size of farms was 116.7 acres. All farms in the county are distributed by size class as follows: Under 10 acres, 5.9 percent; 10 to 49 acres, 22.6 percent; 49 to 139 acres, 44.5 percent; 140 to 219 acres, 13.6 percent; and more than 219 acres, 13.4 percent.

Only 34 farms were more than 500 acres in size, according to the census. Operators of 93.2 percent of the farms live on their farms, but 36.2 percent of all farmers have employment off their farms. Approximately 28.2 percent of all farmers have other income that exceeds the value of agricultural products sold.

Full or part owners operated 83.4 percent of the farms in the county; the rest were operated mainly by tenants. Tenancy decreased from 31.5 percent in 1920 to 16.3 percent in 1950.

In 1950 there were 1,340 farms in Prince Edward County. Of this total, 520 were miscellaneous and unclassified. The remaining farms were classified as follows:

	Number	Percent
Field-crop farms other than vegetable and fruit-and-nut	516	38. 5
Cash-grain	27	2. 0
Other field crop	489	36. 5
Fruit-and-nut farms	12	. 9
Dairy farms	67	5. 0
Poultry	8	. 6
Livestock farms other than dairy and poultry	80	5. 0
General farms	137	10. 2
Primarily crop	39	2. 9
Primarily livestock	35	2. 6
Crop and livestock	63	4. 7

Crops

Tobacco, corn, small grains, and hay are the most important of the wide variety of crops grown in the county. The changes in acreages of the principal crops in recent years are shown in table 5.

Tobacco.—Tobacco, the most important cash crop in the county, is grown on nearly all the soils. The bright, or flue-cured, type is grown principally on the Appling, Durham, Louisburg, Helena, and Vance soils. The dark types are grown on Cecil, Lloyd, Madison, Mecklenburg, Appling, and Wickham soils.

TABLE 5.—*Acreage of principal crops in Prince Edward County, Va., 1929, 1939, 1949*

Crop	1929	1939	1949
	Acres	Acres	Acres
Corn harvested for grain	12, 136	11, 373	8, 321
Corn, silage (cut or fodder)	587	391	415
Small grains, threshed:			
Mixed	(1)	21	114
Oats	113	170	647
Barley	2	138	439
Rye	287	289	75
Wheat	5, 286	4, 477	5, 845
Hay:			
Annual legumes for hay	1, 426	502	78
Alfalfa	785	455	1, 134
Timothy or timothy-clover	875	1, 520	1, 917
Lespedeza	(1)	3, 754	6, 286
Small grains cut for hay	232	169	576
Other hay cut, wild or tame	362	870	297
Clover, alone	1, 469	(1)	(1)
Seed:			
Clover	9	89	234
Lespedeza	(1)	412	571
Soybeans grown alone	976	[2] 330	127
Cowpeas grown alone	678	[2] 521	78
Irish potatoes, for sale or home use	244	224	[3] 62
Sweetpotatoes	161	179	[3] 42
Vegetables harvested for sale (except potatoes)	132	93	52
Tobacco	4, 162	3, 475	2, 255
Trees or vines of bearing age:	Number	Number	Number
Apples	29, 242	15, 600	12, 860
Peaches	14, 190	15, 545	20, 594
Pears	2, 034	1, 336	860
Cherries	1, 117	673	345
Plums and prunes	878	235	248
Grapes	3, 667	1, 884	1, 289
Forest products:			
Firewood, cords	17, 455	(1)	9, 210
Fence posts, number	8, 904	(1)	20, 347
Saw logs, M board feet	7, 265	(1)	745
Pulpwood, cords	3, 422	(1)	4, 780
Piling, numbers	1, 397	(1)	455
Railroad ties	11, 162	(1)	(1)

[1] Not reported.
[2] Excludes acreage plowed under for green manure.
[3] Does not include acres for farms harvesting less than 15 bushels.

Several different rotations are used successfully on tobacco land. A common one is a 3-year rotation of tobacco, wheat, and hay. A 2-year rotation of tobacco and weeds may be used, or the land may be left idle for a year between tobacco crops. Some farmers plant winter cover crops, usually rye or ryegrass, on their tobacco land. Many of the best farmers do not rotate crops, but use the same fields for tobacco every year.

Bright tobacco is generally treated with complete fertilizer at planting time and again before the plants begin to ripen. For dark tobacco, some nitrogen fertilizer may be used, in addition to applications of complete fertilizer.

Corn.—A total of 292,460 bushes of corn was produced in the county in 1949. Corn is grown on all the soils of the county, except the Wehadkee, the Roanoke, and Mixed alluvium, poorly drained. About 90 percent of the corn grown is of hybrid varieties. Most of the crop is cut, shocked, and shucked in the field. Some farmers

pick and shuck the corn by hand. A few use mechanical cornpickers.

Corn is usually grown in a 3-year rotation with small grain and lespedeza or mixed hay. Good yields are obtained by disking in commercial fertilizer before planting, applying more commercial fertilizer at seeding time, side-dressing with nitrogen when the plants are between 1 and 2 feet high, and applying lime once during the rotation. On the smaller farms, little or no fertilizer is used. In some places, corn is grown year after year on the same fields.

Small grains.—Small grains are widely grown in the county, particularly in the western part, in rotation with dark tobacco. Since they usually follow tobacco, which is liberally fertilized, small-grain crops are fertilized only lightly, and in many cases not at all. Small amounts of complete fertilizer may be used, and a little nitrogen fertilizer if the soil is sandy.

Wheat production in 1949 was 109,200 bushels. About half the crop is sold on the Richmond, Lynchburg, and Roanoke markets; the rest is fed on the farms. Wheat is grown on nearly all the soils of the county except the poorly drained. The greater part of the crop is harvested with combines, but many farmers use sickles, either because the fields are small or because they are not accessible to harvesting machinery.

The acreage of other small grains—oats, rye, and barley—is small in comparison to the acreage of wheat. In 1949, the production of oats (threshed) was 20,933 bushels; of rye, 723 bushels; and of barley, 13,853 bushels.

Hay.—The acreage of hay nearly doubled between 1929 and 1949. Total hay production in 1949 was 14,534 tons. More than half—7,538 tons—was lespedeza. Clover, usually in a mixture with grass, is also an important hay crop. Many farmers have difficulty curing hay in the field. A few use hay driers.

Tree fruits.—Apples and peaches are the principal tree fruits. In 1949, 12,940 bushels of apples were harvested on 649 farms; the peach harvest was 19,650 bushels on 426 farms.

Vegetables.—Garden vegetables are grown for home use, and to a lesser extent, for sale. In 1949 vegetables for home use, not including potatoes and sweetpotatoes, were harvested on 1,167 farms. Vegetables for sale, exclusive of potatoes and sweetpotatoes, were harvested on 45 farms. Cucumbers and tomatoes were the principal vegetables sold. Others were cabbage, green beans, green peas, kale, sweet corn, and turnips. Cantaloups and muskmelons for sale were harvested from 7 acres, and watermelons from 4 acres.

Permanent Pastures

Pastures were of secondary importance for many years in Prince Edward County. The trend in recent times has been toward improved pasture management. Many fields are used for pasture after they are eroded or depleted of plant nutrients and are no longer useful for crops. Many of the improved pastures are overgrazed.

The pasture mixtures most commonly used consist of lespedeza, orchardgrass, and redtop. Excellent pasture stands have been established on some of the less well drained soils by including Ladino clover in the pasture mixture. Such pastures require heavy fertilization and can be severely damaged by overgrazing.

Nearly all the soils are used to some extent for pastures. Those best suited to pastures that contain Ladino clover probably are the Cecil, Madison, Lloyd, Altavista, Wickham, Helena, Iredell-Zion, Creedmoor, and Wadesboro soils, and most of the soils of bottom lands. Those not particularly well suited to this type of pasture are the Wilkes, Louisburg, Steinsburg, Durham, Appling, Bremo, and Louisa. To keep pastures in good condition, broomsedge and weeds should be clipped each season before they go to seed, and bushes should be cut back. Farm manure helps to establish and maintain a vigorous pasture growth.

Most pastures are not adequately fertilized. The common practice is to apply small quantities of lime and phosphate. Some of the better dairy and beef-cattle farmers maintain good pastures by applying phosphorus, potassium, and lime.

Livestock and Livestock Products

As a source of cash farm income, livestock products are about equal in value to tobacco, according to the 1950 census. The largest part of this income is derived from the sale of milk and cream. Whole milk is sold on the Norfolk, Richmond, and Petersburg markets, as well as through local channels.

Approximately 75 percent of the dairy cattle are Guernseys. Some of the finest Guernsey breeding stock in the State has been raised in this county. There are a few good-sized herds of beef cattle, principally Herefords and Angus. Many of the beef cattle are sold to markets in Richmond and Baltimore as long yearlings or as 2-year-olds. Others are sold as feeders in the western part of the State, where they are fattened on grass.

Hogs are of the lard types, principally Poland-China, Berkshire, and Chester White. Hogs are raised mostly to supply pork for home consumption. A few are sold in Richmond and in other nearby markets.

Nearly all farms in the county raise chickens for a home supply of eggs and meat. There are about 15 commercial producers of chickens and eggs. White Leghorns are the most popular for egg production; Hampshire Reds and Barred Plymouth Rocks are raised for broilers.

A few herds of purebred goats are kept in the county. Many farmers keep a few goats for milk.

Table 6 gives the number of livestock and beehives on Prince Edward County farms, according to census reports for the stated years.

Forest Products

According to the 1950 Federal census, 690 farms reported the harvest of 9,210 cords (4 x 4 x 8 feet) of firewood and fuelwood in 1949; 168, the harvest of 20,347 fence posts; 64, the harvest of 745,000 board feet of saw logs and veneer logs; 209, the harvest of 4,780 cords of pulpwood; 4, the harvest of 455 pilings and poles; and 48, the sale of standing timber. These forest products accounted for about 3.4 percent of the cash farm income in 1949, according to the 1950 census report.

TABLE 6.—*Number of livestock and beehives on farms in Prince Edward County, Va., 1930, 1940, 1950*

	1930	1940	1950
Horses and mules	2,473	[1] 1,923	1,711
Cattle and calves	4,057	[1] 4,495	7,444
Milk cows	2,282	2,831	3,563
Swine	5,623	[2] 3,984	4,652
Sheep	373	[3] 70	233
Chickens	[1] 45,349	[2] 41,652	[2] 52,457
Beehives	721	283	274

[1] More than 3 months old.
[2] More than 4 months old.
[3] More than 6 months old.

Farm Improvements, Farm Equipment, and Farm Power

Plowing and cultivating are still done mostly by horse- or mule-drawn implements. The 1950 census report shows that about 25 percent of the farms had tractors. The number of tractors more than doubled in the period from 1945 to 1950. Other farm equipment reported in 1950 included 39 upright silos, 36 cornpickers, 119 grain combines, 87 pickup hay balers, and 46 milking machines.

The 1950 census showed that 989 farms were using electricity, 141 had telephones, 367 had motortrucks, and 772 had automobiles. Farms were reported to have the following kinds of electrical equipment: Chicken brooders, 115 farms; feed grinders, 15 farms; water heaters, 117 farms; home freezers, 71 farms; washing machines, 516 farms.

The construction of new farm buildings, mainly dairy barns and poultry houses, and the repair of old ones has increased in recent years.

Farm Expenditures

Farm expenditures in 1949 were reported by 87.6 percent of the farms. The number of farms making stated expenditures are as follows: Hire of machinery and labor, or both, 814 farms; feed for livestock and poultry, 898 farms; purchase of livestock and poultry, 783 farms; purchase of seeds, bulbs, trees, and plants, 912 farms; gasoline and other petroleum fuel and oil, 528 farms; repairs of tractors and other farm machinery, 796 farms.

Forests of Prince Edward County [6]

Forests have been important in the economy of Prince Edward County, and should continue to be because much of the land is too steep and broken for other uses. About 68 percent of the county is forested. How much of an asset these forest lands will be in the future depends on how well they are managed. Heretofore, they have been burned, heavily grazed, and overcut. Many years of good management will be needed to restore their productivity. The market for pulpwood, mine props, and other small timber products provides a chance for systematic culling. Areas where the soil is good and the relief moderate will eventually be cleared.

The virgin upland forests on the better soils consisted of a mixture of oaks and hickories, and a few scattered shortleaf pines (*Pinus echinata*). Toward the eastern edge of the county, loblolly pine (*P. taeda*) grew on the better soils and Virginia pine (*P. virginiana*) on the shallow soils, but shortleaf pine was the dominant species. Shortleaf pine is a valuable tree. It is the only pine that will sprout from the stump when cut or burned. This characteristic gave it a distinct survival advantage in the days when burning the woods to kill broomsedge was a common farm practice.

The scattered shortleaf pines in the virgin forests grew to large size, towering above the hardwood trees, and were usually referred to as forest pines. Only a few of them remain, and it is doubtful if others will take their place because decades are needed for their growth.

On the deeper well-drained Cecil, Appling, Madison, and Lloyd soils, the dominant tree species were the valuable white oak (*Quercus alba*), red oak (*Q. borealis*, *Q. falcata*, or both), and black oak (*Q. velutina*), hickory (*Carya* sp.), yellow-poplar (*Liriodendron tulipifera*), and shortleaf pine. On narrow ridgetops and in other places where the soil was shallow or broken by rock ledges, chestnut (*Castanea dentata*), chestnut oak (*Q. montana*), scarlet oak (*Q. coccinea*), blackgum (*Nyssa sylvatica*), and possibly Virginia pine and redcedar (*Juniperus virginiana*) tended to replace the more valuable species.

On the less well drained Creedmoor, Iredell, Helena, Vance, and Worsham soils, the prominent species probably were post oak (*Q. stellata*), willow oak (*Q. phellos*), blackgum, Virginia pine, and redcedar. On the poorly drained alluvial soils of the bottom lands along the principal streams, were river birch (*Betula nigra*), willow (*Salix* sp.), sycamore (*Platanus occidentalis*), and elm (*Ulmus* sp.). As the elevation increased slightly and drainage became better, beech (*Fagus grandifolia*), yellow-poplar, and sweetgum (*Liquidambar styraciflua*) replaced the trees that dominated the wet bottom lands. At higher elevations, upland trees took the place of the lowland species.

Many of the present-day forests are but poor remnants of the original forest. The timber never was cleared from the excessively drained, less fertile, steep areas. These tracts, however, have been logged, burned, and grazed, and they now bear little resemblance to the original forest. The more valuable species and the better individual trees have been nearly all eliminated from the forests. The culls and the unmerchantable species were left to scatter seed and reproduce. As a result, white oak, red oak, yellow-poplar, and shortleaf pine have been largely replaced by scarlet oak, blackgum, and Virginia pine—all of which occurred in the original forest, but as secondary species.

The better soils were extensively cleared and farmed until most of the surface soil had washed away. Farms were then abandoned and natural seeding reestablished shortleaf pines, which grew to be useful forests. When these second-growth pines were harvested, one of two courses usually was followed: The land either was cleared again and farmed until worn out a second time, or the less valuable species and culls were left growing to monopolize the soil. Where the land was farmed and abandoned the second time, the next cover of trees was likely to be

[6] This section was prepared by J. W. O'Bryne, Extension Forester, Virginia Polytechnic Institute.

Virginia pine, partly because the land was too depleted to support shortleaf pine. In addition, shortleaf pine could not reseed itself because it had been practically eliminated from adjoining woods. Virginia pine, less valuable than shortleaf pine, was left growing and supplied the seed that restocked these twice-abandoned farmlands.

Where only the better second-growth shortleaf pines were cut, mixtures of hardwoods, shortleaf pines, and Virginia pines established themselves in forests that formerly were predominantly shortleaf pine. Later, as the pulpwood market developed, all the pines were cut when they reached marketable size. Pines gradually vanished from the forests and the present stand of timber is almost entirely low-grade hardwood trees.

The origin, composition, and depth of the soils influenced forest growth. From the standpoint of forestry, the major soils of the county can be grouped into five classes.

Deep soils derived from products that weathered from granite, gneiss, and schist, and mixed basic and acidic rocks

In this category are the Cecil, Appling, Madison, Vance, Lloyd, and Fluvanna soils. They are the major part of the county's agricultural soils. They are significant to forestry only where they occur on strong slopes or if they have been depleted by erosion. They once supported the best forests and, if management is reasonably good, are capable of doing so again. These soils have high natural fertility, and most of them ultimately will be used for farming. If forestry appears to be the best use for some areas, pines are probably the species that should be planted. They will grow better in poor soils than the hardwoods, and are a more profitable tree crop for the landowner. If the physical condition of the soil is fair or better and if a moderate quantity of surface soil remains, shortleaf pine is a good species to plant. This species of pine, however, is subject to the littleleaf disease, the cause of which is not known.

The less valuable but hardier Virginia pine is better suited to areas where the soil has been depleted or is eroded badly. This pine will grow in soils that will not support shortleaf pine. It grows rapidly while young and is acceptable for pulpwood.

Shallow soils derived from basic or acidic rock material or mixtures of both

In this group are the Wilkes, Louisa, Bremo, and Louisburg soils. The undulating Bremo soil is among the best farming soils in the county, but the others are less suitable for farming.

The original forests on these soils were probably only fair because the soils were shallow. Most of the smoother areas of Bremo soils have been cleared and will remain so. Some of the smoother areas of Louisburg and Louisa soils are cultivated, but most of these soils are in forest. The Wilkes soils are predominantly hilly and steep and highly erodible. Small areas may be included with other soils in pastures, but the Wilkes soils are primarily forest soils. Shortleaf pine can be grown on these soils because they have favorable internal drainage. Yellow-poplar and red and white oaks seem to thrive on the lower slopes and in the draws.

Somewhat poorly drained soils occurring on flat topography and derived from mixed basic and acidic rock materials or from basic rock material

The main soils in this group are Helena fine sandy loam, undulating phase, and Iredell-Zion fine sandy loams, undulating phases. Each of these has a firm or very firm subsoil through which water moves slowly. The soils are cultivated to a limited extent; they are used mainly for light pasture, hay, and home gardens. These soils are among the least useful in the county, and are not suited to farming or forestry. Redcedar is now a characteristic tree on these soils, and it may have been prominent in the original forest. It is used in cedar chests and for fence posts. Other trees growing on these soils are post oak and poor-quality hickories.

Soils derived from products that weathered from Triassic sandstone and shale

In this group are the Creedmoor, Mayodan, Steinsburg, and Wadesboro soils The Creedmoor soils are moderately well drained; the Mayodan and Wadesboro, well drained; and the Steinsburg, excessively drained. All are strongly acid and low in fertility. The land is used in small plots for home gardens, pastures, and field crops. Forest growth is only of medium quality and probably never will be better. It is suggested that shortleaf pine be encouraged on the Mayodan, Steinsburg, and Wadesboro soils, and Virginia pine and redcedar on Creedmoor soils.

Alluvial and terrace soils

Two of the soils in this group are Wehadkee silt loam, poorly drained, and Mixed alluvium, poorly drained. They are bottom-land soils that consist of materials washed from uplands, and they are subject to frequent and prolonged overflow. The better drained bottom-land soils in the group are the Congaree, Buncombe, and Chewacla soils, and Mixed alluvium, well drained. Also included in this group are the Wickham and Altavista soils of the better drained terraces and the Augusta and Roanoke soils on the less well drained terraces. The well drained soils are intensively used for general crops; the less well drained ones are also largely cleared but are used for pasture. The Worsham soil, consisting of material washed from uplands, is comparatively flat, poorly drained, and subject to frequent and prolonged flooding. These areas are used to some extent for grazing, particularly during dry weather, when upland pastures fail.

The intensively cultivated soils are the only ones in this group capable of producing trees of commercial value. Small-sized, poorly formed trees growing on overflow areas may in time have a value. The best management for these areas is to protect them from fire and utilize them for pasture during periods of drought.

Morphology and Genesis of Soils

Soil is the product of the forces of weathering and soil development acting on the parent material deposited or accumulated by geologic agencies. The characteristics of the soil at any given point depend on: (1) The physical and mineralogical composition of the parent material;

(2) the climate under which the soil material has accumulated and has existed since accumulation; (3) the plant and animal life in and on the soil; (4) the relief, or lay of the land; and (5) the length of time the forces of soil development have acted on the soil material.

Climate and vegetation are the active factors in soil genesis. They act on the parent material accumulated through the weathering of rocks and slowly change it into a natural body having genetically related horizons. The effects of climate and vegetation are modified by relief, by the nature of the parent material, and by age. It is the interaction of these factors that determines the nature of the soil profile.

Factors of Soil Formation

Parent material

Two general classes of parent materials have given rise to the soils of Prince Edward County: Residual material in place, derived from the decomposition of the underlying consolidated rocks; and transported materials that have been moved from their original positions and deposited on lower slopes, in depressions, and along drainageways. Both classes of parent materials were derived from the two major rock systems of the county—the pre-Cambrian and the Triassic.

PRE-CAMBRIAN ROCKS.—An intricate pattern of pre-Cambrian rocks underlies most of the county. These rocks are separated into four divisions, which are, in the order of their extent and their contribution to soil formation, (1) Columbia granite, (2) Wissahickon schists and gneiss, (3) hornblende gneiss and schist, and (4) pegmatite (*2*).

Columbia granite occurs as intrusions in many of the older rock formations. It is very extensive throughout the county. The largest area underlies nearly all the northeastern part of the county. It extends from Farmville south to Redd Shop, and thence eastward to Burks Tavern. This rock is also the main constituent of the multiple rock formations that underlie nearly all of the western part of the county, from Farmville southwestward to Abilene. This western area is divided by a large strip of the Wissahickon formation, and by numerous dikes and sills of hornblende gneiss, kyanite schist, and pegmatite. In the eastern part, Columbia granite is the principal rock formation underlying the Appling, Durham, Cecil, and Louisburg soils and, near the dikes, the Wilkes and Helena soils.

Two distinct facies of Columbia granite are common in the county: (1) Columbia granite injection into hornblende gneiss and schist, and (2) Shelton granite-gneiss facies. The first extends roughly from Farmville to Prospect, thence south to Darlington Heights. It underlies soils of the Cecil, Appling, Durham, Wilkes, Lloyd, and Fluvanna series. The Shelton granite-gneiss facies might be called the native rock formation, because most of the other formations have intruded this one. It extends from Abilene northeast to Redd Shop and south to Briery. The largest area underlies Helena, Wilkes, and Vance soils, in the south-central part of the county.

Wissahickon schists and gneiss probably are the most complex geological formations in the southern Piedmont area. Many different soils have developed from material that weathered from these rocks. They have contributed material to the Madison series, the very fine sandy loams of the Cecil and Georgeville series, the Appling and Herndon undifferentiated soil groups, and the Louisa and Wilkes series. In the extreme southeastern part of the county near Abilene these Wissahickon rocks gradually merge into rocks composed of volcanic materials common in the Virgilina district of Virginia and North Carolina (*3*). Sedimentary rocks of this type are widely distributed east and south of Prince Edward County.

Hornblende gneiss and schist make up the oldest pre-Cambrian intrusive rock formation in the county. They occur in all parts of the county, principally as long narrow dikes, cutting both the Wissahickon and the Columbia granite formations. The dikes are wider and more numerous in the western part than elsewhere. Soils developed over this hornblende gneiss and schist formation include the Bremo, Iredell, Zion, Mecklenburg, Fluvanna, and Wilkes series.

Pegmatite is not extensive in the county. It occurs mainly in the eastern part, but a few small, narrow, crosscutting dikes of it occur throughout the county. The pegmatite is a coarse-grained rock, usually deeply weathered. It supplied the material from which the Louisburg soils developed. In a few places this rock material underlies the coarser textured soils of the Appling, Durham, and Colfax series.

TRIASSIC ROCKS.—Two distinct but inextensive areas are underlain by sedimentary rocks formed from Triassic sediments. This formation consists largely of red arkosic sandstone interstratified with yellow arkosic sandstone and red and gray shale (*5*). The larger of the two areas extends from Farmville southwestward to Kingsville in a belt 1½ miles wide. The smaller extends 3 miles southwestward from Worsham and is about 2 miles wide. The soils that have developed over this sandstone and shale formation are of the Wadesboro, Mayodan, Creedmoor, and Steinsburg series.

Climate

Prince Edward County has a warm continental climate. Average annual rainfall is 40.88 inches, average summer temperature is 76.3° F., and the average winter temperature is 38.7° F. (see table 1). The climate is uniform throughout the county. Rainfall is well distributed throughout the year, but usually June is the wettest month. This type of climate causes rapid leaching, which has removed plant nutrients and organic matter from the A horizons of many of the soils.

All the normal soils show well-developed horizons. The soil is frozen for only short periods and to only shallow depths; consequently, weathering and translocation of insoluble materials are accelerated. Although calcium is present in many of the parent rocks, leaching has prevented the accumulation of free carbonate of lime. Practically all the soils are acid; the degree of acidity ranges from slight to very strong.

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Plant and animal life

The forces of climate alone can produce only the parent materials from which soils develop. The action of plant and animal life is required to transform the parent material into soil. Plants supply organic debris; soil bacteria and other micro-organisms act to decompose plant material and transform it into organic matter that is incorporated into the soil.

Prince Edward County is in the oak-pine subdivision of the southern hardwood forest in the eastern forest region of the United States (*6*). The oak-pine forest consists of a mixture of pines and southern hardwoods. The soils of the county have developed under this type of vegetation.

Organic matter did not accumulate in large quantities because the climate favored rapid decay of plant material, oxidation of organic matter, and leaching. Practically all of the soils of the county have been cultivated for some time; consequently the effects of acquired vegetation are considered constant throughout the county.

Relief

Relief and climate have so modified the effect of the parent material that in many places more than one kind of soil has developed from the same sort of parent material.

Normal soils have developed in undulating to rolling well-drained areas where the rate of geologic erosion is normal.

On some of the strong slopes where surface runoff is rapid, geologic erosion almost keeps pace with rock weathering and soil formation. Soil materials do not remain in place long enough so that a profile of genetically related horizons can develop. In such places, the amount of water that percolates through the soil is small; consequently leaching and translocation of material are slow.

Soils that developed in undulating to level areas where the internal drainage is slightly retarded are faintly or distinctly mottled in the B horizons. Those that developed in poorly drained level or nearly level areas are prominently mottled in the B horizons.

Age

The soils of Prince Edward County cover a wide range in age. Some have been in place for a long time and have developed distinct soil profiles. In some nearly level or undulating areas that have slow internal drainage, the soils are very old; such soils are likely to have severely leached A horizons, mottled B horizons, and very firm or very compact claypans.

Two groups of young, or poorly developed, soils occur in the county. The soils of the colluvial lands and bottom lands have not been in place long enough to have developed distinct horizons. The soils of the steep slopes lack distinct horizons because erosion is constantly removing or depositing soil material.

Classification of Soils

Soils are classified at several levels. The lower three categories—phase, type, and series—are discussed in the section, Soil Survey Methods and Definitions. Soil series are grouped into broader categories called great soil groups. The highest categories of soil classification are the soil orders—zonal, intrazonal, and azonal.

Table 7 shows the classification of the soils of Prince Edward County into soil orders, great soil groups, and soil series. The table also shows the source and kind of parent material, the relief, and the degree of profile development of each soil series. In the section that follows, the morphology of a representative soil of each of the great soil groups is discussed in detail.

Prince Edward County is in the Red and Yellow Podzolic soil region of the eastern United States (*4*). The soils show evidence of both podzolization and laterization. The A horizons are generally loamy and the B horizons generally clayey. In some areas loose rock fragments are scattered over the surface and rock outcrops are common.

As a general rule, soil profiles having distinct to prominent horizons have developed on the gentle to smooth interstream divides and stream terraces. Equally distinct but somewhat different horizons mark the profiles on stream divides, foot slopes, and terraces where relief is mild or nearly level, stream dissection is shallow, and internal drainage obstructed. Poorly developed profiles occur in hilly, steep, or broken areas near drainageways, and on poorly drained first bottoms where new material is deposited by floodwaters.

Morphology of Soils Representing the Great Soil Groups

Zonal soils

Zonal soils have well-developed characteristics that reflect the influence of climate and living organisms on soil development. In the classification of soils, the well-developed, or normal, profile, having distinct A, B, and C horizons, serves as a basis for comparison. In Prince Edward County, this normal profile has a light-colored, moderately coarse textured to moderately fine textured A horizon; a uniformly colored, moderately fine textured to fine textured, firm or friable B horizon; and a light-colored C horizon, or parent material layer, which is usually coarser textured than the B horizon and finer textured than the A horizon. Textures in the A horizon are mainly fine sandy loam, sandy loam, loam, and clay loam, and to a lesser extent silt loam and silty clay loam. The textures in the B horizon are prevailingly clay, clay loam, and fine sandy clay, but there is some silty clay, silty clay loam, or sandy clay. In the C horizon, which begins, as a rule, at depths of from 2 to 4 feet, the materials are variable, depending on the character of the parent rock and the degree of weathering. The texture may be clay loam, silty clay loam, silty clay, sandy clay loam, or sandy loam. The A horizons are from 5 to 12 inches thick, and the B horizons from 14 to 43 inches. The C horizon, which in many cases contains decayed rock material, ranges from a few inches to many feet in thickness.

In this county, the zonal order is represented by the Red-Yellow Podzolic Soils and the Reddish-Brown Lateritic soils.

RED-YELLOW PODZOLIC SOILS

Red-Yellow Podzolic soils are well-developed, well-drained acid soils having thin organic (A_0) and organic-mineral (A_1) horizons over a light-colored bleached (A_2)

TABLE 7.—*Classification of the soil series of Prince Edward County, Va., in higher categories*

ZONAL SOILS

Great soil group and series	Relief	Internal drainage	Parent material	Degree of profile development	Contrast between horizons
Red-Yellow Podzolic soils:					
Cecil	Undulating to hilly	Medium	Residuum from granite, schist, and gneiss	Strong	Strong.
Georgeville [1]	Undulating to hilly	Medium	Residuum from fine-grained schists, granite, and granite gneiss.	Strong	Strong.
Madison	Undulating to hilly; small part steep.	Medium	Residuum from muscovite schist and gneiss, and micaceous quartzite.	Strong	Strong.
Lloyd	Undulating to hilly	Medium	Residuum from granite and gneiss mixed with hornblende gneiss and schist.	Strong	Medium.
Wadesboro	Undulating and rolling; very small part hilly.	Medium	Residuum from Triassic sandstone and shale.	Strong	Strong.
Wickham	Undulating and rolling	Medium	Alluvium consisting of young sedimentary deposits of mixed material.	Medium	Medium.
Appling	Undulating to hilly	Medium	Residuum from granite, gneiss, and schist; some pegmatite.	Strong	Strong.
Herndon [2]	Undulating and rolling; small parts hilly or steep.	Medium	Residuum from fine-grained schists, granite, and granite gneiss.	Strong	Strong.
Vance	Undulating and rolling; small part hilly.	Medium to slow.	Residuum from granite, schist, and gneiss	Strong	Strong.
Durham	Undulating; small part rolling	Medium	Residuum from granite, schist, and gneiss; some pegmatite.	Strong	Medium.
Fluvanna	Undulating and rolling; small part hilly.	Medium	Residuum from granite and gneiss, mixed with hornblende schist and gneiss.	Strong	Strong.
Mayodan	Undulating and rolling; small parts hilly or steep.	Medium	Residuum from Triassic sandstone and shale.	Strong	Strong.
Altavista	Undulating; small part rolling	Medium	Alluvium consisting of young sedimentary deposits of mixed materials.	Strong	Medium.
Reddish-Brown Lateritic soils:					
Mecklenburg	Undulating and rolling	Medium to slow.	Residuum from diabase, diorite, gabbro, and hornblende gneiss and schist.	Strong	Strong.

INTRAZONAL SOILS

Planosols:					
Creedmoor	Undulating and rolling; small part hilly.	Slow	Residuum from Triassic sandstone and shale.	Strong	Strong.
Worsham	Undulating to gently sloping	Very slow	Alluvium and colluvium washed or sloughed mainly from loamy soils of the immediate upland slopes.	Medium	Strong.
Augusta	Undulating	Slow	Alluvium consisting of young sedimentary deposits of mixed materials.	Strong	Strong.
Roanoke	Level or nearly level	Very slow	Same	Strong	Strong.
Colfax	Undulating; small part rolling	Medium to slow.	Residuum from granite, schist, and gneiss; some pegmatite.	Strong	Strong.
Iredell [3]	Undulating and rolling; very small part hilly.	Very slow	Residuum from diabase, diorite, gabbro, and hornblende gneiss and schist.	Strong	Strong.
Zion [3]	Same	Medium to slow.	Same	Strong	Strong.
Helena	Same	Slow	Residuum from granite and gneiss mixed with hornblende gneiss and schist.	Strong	Strong.
Orange	Undulating and rolling	Very slow	Residuum from fine-grained schists, granite, and gneiss mixed with hornblende gneiss and schist.	Strong	Strong.
Low-Humic Gley soils:					
Wehadkee	Level or nearly level	Very slow	Same	Weak	Medium.

TABLE 7.—*Classification of the soil series of Prince Edward County, Va., in higher categories*—Continued

AZONAL SOILS

Great soil group and series	Relief	Internal drainage	Parent material	Degree of profile development	Contrast between horizons
Lithosols:					
Louisburg	Undulating to hilly; small part steep.	Rapid	Residuum from coarse-grained granite and pegmatite.	Weak	Weak.
Louisa	Undulating to steep	Rapid	Residuum from muscovite schist and gneiss and micaceous quartzite.	Weak	Weak.
Bremo	Undulating to steep	Rapid	Residuum from hornblende gneiss and schist.	Weak	Weak.
Wilkes	Undulating to steep	Rapid; rapid to medium in undulating phase.	Residuum from granite, gneiss, and fine-grained schists mixed with hornblende gneiss and schist, diabase, diorite, and gabbro.	Weak	Weak.
Steinsburg	Rolling to hilly; small part undulating or steep.	Rapid	Residuum from Triassic sandstone and shale.	Weak	Weak.
Alluvial soils:					
Seneca	Undulating and gently sloping.	Medium	Sand, silt, clay, and other alluvial and colluvial materials washed or sloughed mainly from yellowish soils of the immediate upland slopes; new materials accumulate in places.	Weak	Weak.
Starr	Undulating and gently sloping.	Medium	Sand, silt, clay, and other alluvial or colluvial materials washed or sloughed mainly from reddish soils on the immediate upland slopes; new materials accumulate in places.	Weak	Weak.
Congaree	Level or nearly level; small part undulating.	Medium to rapid.	Recent alluvium consisting of sand, silt, and clay; new materials added periodically by overflow from streams.	Weak	Weak.
Buncombe	Level or nearly level; very small part undulating.	Very rapid	Recent alluvium consisting of loamy fine sand and fine sand; new materials added periodically by overflow from streams.	Weak	Weak.
Chewacla	Level or nearly level	Slow	Alluvium consisting of recent sedimentary deposits of mixed materials; new materials laid down periodically.	Weak	Medium.

[1] Mapped in this county only in the Cecil-Georgeville soil complex.
[2] Mapped in this county only in the Appling-Herndon soil complex.
[3] Mapped in this county only in the Iredell-Zion soil complex.

horizon, over a red, yellowish-red, or yellow, clayey (B) horizon. Parent materials are all more or less siliceous. Coarse reticulate streaks or mottles of red, yellow, brown, and light gray are characteristic of the deep horizons of Red-Yellow Podzolic soils where parent materials are thick.

Red-Yellow Podzolic soils are developed under deciduous, coniferous, or mixed forest in warm mesothermal or tropical humid to subhumid climates. In cultivated areas the A_0 and A_1 horizons are mixed in the plow layer. In many places, accelerated erosion has removed all or nearly all of the A horizon and the B horizon is exposed. The clay fraction is dominated by kaolinite, but contains considerable quantities of free ferric oxides or hydroxides and, in places, a small amount of aluminum hydroxide. In some soils the clay fraction contains hydrous mica and montmorillonite. The reticulate streaks common in the B horizons of these soils generally occur higher in the profiles that have yellow B horizons than in those that have red B horizons. A few members of the group, especially the very sandy soils, lack this streaked material. Other well-developed, well-drained red and yellow soils, without distinct A_2 horizons, are associated with Red-Yellow Podzolic soils.

Cecil series

The Cecil soils are typical of the red members of the Red-Yellow Podzolic group. The following profile of Cecil fine sandy loam, undulating phase, was observed near State Highway No. 660, half a mile west of its junction with State Highway No. 661.

A_{00} ½ to 0 inch, very dark gray forest litter.
A_2 0 to 8 inches, yellowish-brown friable fine sandy loam; weak fine granular structure; a few small angular quartz fragments.
A_3 8 to 11 inches, reddish-yellow friable heavy sandy loam; weak fine granular structure.
B_2 11 to 27 inches, red firm clay, slightly sticky when wet; moderate medium blocky structure; a few mica flakes.
B_3 27 to 54 inches, red firm to friable clay, containing a moderate number of faint, medium, reddish-yellow mottles; slightly sticky when wet; moderate fine to medium blocky structure.
C 54 to 60 inches, reddish-yellow friable clay loam showing a moderate number of distinct coarse yellowish-brown mottles; moderate medium subangular blocky structure.

Lloyd series

The Lloyd soils grade toward Reddish-Brown Lateritic soils in profile characteristics, possibly in proportion to the quantity of basic rock in the parent material. Lloyd

loam, eroded undulating phase, has the following profile in an area near Prospect, half a mile north of U. S. Highway No. 460.

A_2 0 to 7 inches, dark reddish-brown friable loam; weak fine granular structure.
B_2 7 to 38 inches, dark-red firm heavy clay loam; slightly plastic and sticky when wet and hard when dry; moderate fine to medium subangular blocky structure.
C 38 to 44 inches, dark-red to dark reddish-brown firm clay loam; slightly sticky when wet; some dark-colored highly oxidized rock fragments.

Georgeville series

Georgeville soils are similar to Cecil soils in color, structure, and horizon relationship, but their parent material was derived from finer grained rocks and their profiles usually contain larger quantities of silt.

Madison series

The Madison soils have developed largely from residual material weathered from quartz mica-schist and gneiss. They are shallower than the Cecil soils, and have more mica particles, particularly in the B and C horizons.

Wadesboro series

The Wadesboro soils were derived from residual material weathered from Triassic rocks. Compared to the Cecil soils, the Wadesboro are shallower, darker colored in the A horizon, and finer textured throughout.

Wickham series

The Wickham soils overlie relatively young alluvial deposits on terraces near streams. They are similar to the Cecil soils in color, structure, and profile development, although they are derived from different parent material. They grade toward Gray-Brown Podzolic soils.

Appling series

The Appling series is typical of the yellow members of the Red-Yellow Podzolic group. The subsoil of this series is less red than that of the Cecil series, although the parent material is the same or very similar. The following profile of Appling fine sandy loam, undulating phase, occurs near the junction of State Highways 617 and 620. The forest cover in this area consists of pines and hardwoods.

A_{00} ¼ to 0 inch, dark reddish-gray forest litter.
A_1 0 to 2 inches, gray (7.5YR 6/0) friable fine sandy loam; weak fine granular structure; a few white subangular quartz fragments about ⅛ inch in diameter.
A_2 2 to 7 inches, very pale brown (10YR 7/3) friable fine sandy loam; weak fine granular structure; many small white to yellowish subrounded quartz fragments.
A_3 7 to 12 inches, light yellowish-brown (10YR 6/4) friable heavy fine sandy loam, faintly mottled because of moisture condition and rapid leaching; hard when dry; weak fine blocky structure.
B_2 12 to 17 inches, brownish-yellow (10YR 6/6) firm clay showing a few faint medium mottles of red (7.5YR 7/8); hard when dry; moderate medium subangular blocky structure.
B_3 17 to 33 inches, strong-brown (7.5YR 5/8) firm clay, showing many faint medium mottles of red (10YR 4/6); hard when dry; moderate medium subangular blocky structure.
C 33 to 39 inches, reddish-yellow (7.5YR 7/8) and red (2.5YR 5/8) friable gritty clay loam, slightly hard when dry; weak medium blocky structure; easily crushed to a loose mass; contains small angular and subangular quartz fragments.

Mayodan series

The Mayodan soils are underlain by Triassic rock materials. This series is similar to the Appling series in most physical characteristics, although it developed from different parent material. The following profile of Mayodan fine sandy loam, undulating phase, was observed 1 mile south of Worsham, just off U. S. Highway No. 15.

A_2 0 to 7 inches, pale-brown friable fine sandy loam; weak fine granular structure.
A_3 7 to 10 inches, light yellowish-brown friable fine sandy loam; weak fine granular structure showing evidences of incipient platiness.
B_1 10 to 18 inches, strong-brown firm fine sandy clay loam, hard when dry; moderate medium subangular blocky structure.
B_2 18 to 30 inches, yellowish-red firm fine sandy clay; moderate to strong medium blocky structure.
C 30 to 38 inches, mottled red and brownish-yellow friable clay loam; mottles distinct, common, and medium to coarse; a few fragments of dark-colored Triassic shale.

Herndon series

The Herndon soils are similar to Appling soils in color, structure, and horizon arrangement, but they developed from materials that weathered from finer grained rocks, and they have finer textured A and B horizons and more compact B horizons.

Vance series

The Vance soils are similar to the Appling soils, except that their B horizons are finer textured and more plastic when wet.

Fluvanna series

Fluvanna fine sandy loam is similar in most characteristics to the Appling soils, but it developed from a different kind of parent material, it has slightly darker colored A and B horizons, and a somewhat finer textured B horizon. Its parent material weathered, in part, from hornblende gneiss and schist.

Durham series

The Durham series, along with the Altavista, is one of the most nearly yellow members of the Red-Yellow Podzolic group. This soil developed over granite, schist, and gneiss, and some pegmatite. It has a thick brownish-yellow B horizon, which differentiates it from the mottled red and yellow B horizons of the Appling soils. Durham sandy loam, undulating phase, is the only soil of this series mapped in Prince Edward County. The following profile was observed in an area covered by hardwoods, 1 mile southwest of Burks Tavern.

A_{00} ½ to 0 inch, very dark gray forest litter.
A_2 0 to 12 inches, very pale brown very friable sandy loam; weak fine granular structure.
A_3 12 to 16 inches, yellow friable sandy loam, slightly hard when dry; weak fine granular structure.
B_2 16 to 30 inches, brownish-yellow friable sandy clay loam, hard when dry; weak fine blocky structure.
C_1 30 to 38 inches, mottled reddish-yellow and white friable clay loam; mottles distinct, moderate in number, and medium to coarse in size; material hard when dry.
C_2 38 inches +, soft decomposed granitic material.

Altavista series

Altavista fine sandy loam, undulating phase, developed over young alluvium on low stream terraces. It is less well drained than the Durham soil, and it differs from the Appling series in having a brownish-yellow to yellowish-brown friable B horizon.

REDDISH-BROWN LATERITIC SOILS

Reddish-brown Lateritic soils are a zonal group of soils having dark reddish-brown granular surface soils and friable red clay B horizons. They developed from red or reticulately mottled lateritic parent material, in a tropical climate under a forest vegetation (*10*).

Laterization, accompanied by little or no podzolization, dominated the development of these soils. Laterization is a process by which silica is removed, the alumina and iron content of the soil is increased, and its base-exchange capacity decreased. The Reddish-Brown Lateritic soils do not have the light grayish A_2 horizons characteristic of the geographically associated Red-Yellow Podzolic soils that developed from siliceous parent materials.

Mecklenburg series

The Mecklenburg soils are the only ones in this county placed in the Reddish-Brown Lateritic group. A profile of Mecklenburg loam, undulating and rolling phases, north of Prospect near State Highway No. 652, has the following characteristics:

- A_1 0 to 8 inches, dark-brown friable loam; weak fine granular structure.
- B_2 8 to 28 inches, strong-brown firm clay, plastic when wet; moderate medium blocky structure.
- C_1 28 to 54 inches, mottled strong-brown and very dark gray firm clay; plastic when wet; mottles distinct, common, and medium to coarse; moderate coarse blocky structure.
- C_2 54 inches +, soft decomposed dark-colored basic rock.

Because of the contrast in amount of clay between the A and B horizons and the large amount of clay in the deeper profile, the Mecklenburg soils are considered intergrades to Planosols.

Intrazonal soils

Intrazonal soils have more or less well-developed soil characteristics that reflect the dominating influence of some local factor of relief, parent material, or age over the normal effect of the climate and vegetation (*10*).

PLANOSOLS

Planosols are intrazonal soils having one or more horizons abruptly separated from and sharply contrasting with an adjacent horizon. The contrast is due to the presence of a restrictive layer in the deeper profile. This restrictive layer may be high in clay (claypan), dense and brittle (fragipan), or cemented (hardpan). Claypans are usually B_2 horizons very high in clay (*8*). In occasional profiles, claypans may be, in part, a result of stratification of sediments. Fragipans are commonly of intermediate texture, dense and compact, generally low in clay and the coarser sand separates, and changeable in consistence as they become wet and dry. Distinct fragipans interfere with penetration of water and plant roots. In many profiles they underlie a well developed or moderately well developed B horizon (*8*).

Planosols are formed under forest or grass vegetation in mesothermal to tropical humid or subhumid climates (*10*). Generally, soils of this group have fluctuating water tables, though it is common for the drainage to be restricted to some degree.

The Planosols of Prince Edward County include the Creedmoor, Worsham, Roanoke, Augusta, Helena, Orange, Colfax, Iredell, and Zion series. Some of these soil series have distinct claypans. Others have evident fragipans. Still others have restrictive layers in the deeper profiles that are intermediate in character between claypans and fragipans. None of the Planosols in this county has a hardpan in the profile.

Creedmoor series

Creedmoor fine sandy loam, undulating phase, is representative of Planosols of the uplands. It has the following profile:

- A_1 0 to 3 inches, dark grayish-brown friable fine sandy loam; weak fine to medium granular structure.
- A_2 3 to 7 inches, yellowish-brown friable fine sandy loam; weak fine to medium granular structure.
- A_3 7 to 11 inches, pale-yellow friable fine sandy loam; weak medium granular structure.
- B_2 11 to 26 inches, yellowish-red firm clay or silty clay, slightly plastic when wet; weak fine blocky structure.
- B_3 26 to 38 inches, reddish-yellow firm clay mottled with pale yellow; sticky and plastic when wet; moderate medium to coarse blocky structure.
- C 38 to 43 inches, mottled light-gray, dark grayish-brown, and strong-brown clay mixed with soft decayed fragments of Triassic shale and sandstone.

The Creedmoor soils grade toward the Red-Yellow Podzolic great soil group.

Worsham series

Worsham sandy loam, the only member of the Worsham series mapped in this county, is a poorly drained soil derived from local colluvium and alluvium. The parent material was washed from uplands that are underlain almost entirely by acidic rocks. The A horizon of this soil is a light-gray friable sandy loam, mottled with dark gray and yellowish brown, and of weak granular structure. The B horizon is mottled gray, brownish-yellow, and white firm clay of moderate medium blocky structure. The mottles are prominent, common, and medium to coarse. This layer is plastic when wet. The B horizon is underlain by mottled colluvial or alluvial material.

Roanoke series

Roanoke silt loam, the only member of its series mapped in this county, is a typical Planosol of the low stream terraces. The following profile was observed near the Norfolk and Western Railway, 1½ miles west of Farmville, in a level grove of willow oaks.

- A_2 0 to 7 inches, gray (5Y 6/1) friable silt loam faintly mottled with strong-brown (7.5YR 5/8); soft when dry; weak fine granular structure; slightly stained by decaying organic matter.
- A_3 7 to 9 inches, distinctly mottled light-gray (5Y 6/1), brownish-yellow (10YR 6/6), and strong-brown (7.5YR 5/8) friable silt loam, slightly hard when dry; weak to moderate fine granular structure; a few very small, white, rounded, smooth, quartz fragments.
- B_2 9 to 20 inches, light olive-gray (5Y 6/2) mottled with yellowish-brown (50YR 5/6) firm clay; slightly plastic when wet; mottles distinct, common, and medium; moderate medium to coarse blocky structure; some small rounded white quartz pebbles.
- B_3 20 to 40 inches, light olive-gray (5Y 6/2) very firm clay mottled with strong brown (7.5YR 5/8); plastic when wet; mottles distinct, common, and medium; strong coarse blocky structure.
- C 40 to 45 inches, (wet) light-gray (7.5YR 7/0) plastic gritty clay; moderate coarse blocky structure; numerous small pebbles of white rounded quartz.

Augusta series

Augusta loam, the only representative of this series mapped in the county, developed on low stream terraces over young alluvial deposits. It has a light-gray to light brownish-gray friable A horizon of very weak fine crumb structure. The upper part of the B horizon is pale-brown firm clay to clay loam. The lower part is mottled light grayish brown, brownish yellow, and strong brown. The B horizon has a moderate fine blocky structure. The underlying material is mottled young alluvium.

Helena series

In the Helena series are claypan soils typical of the Planosol group. A profile of Helena fine sandy loam, undulating phase, in an area 2 miles southeast of Redd Shop on State Highway No. 630, is described as follows:

- A_{00} ½ to 0 inch, very dark gray forest litter.
- A_2 0 to 12 inches, pale-yellow fine sandy loam; weak fine granular structure.
- B_1 12 to 17 inches, yellow friable fine sandy clay loam, hard when dry; moderate medium blocky structure.
- B_2 17 to 25 inches, pale-brown firm clay mottled with pale yellow; plastic when wet; mottles are distinct, common, and medium; moderate coarse blocky structure.
- B_3 25 to 30 inches, mottled pale-brown and light-gray firm clay, plastic and sticky when wet; mottles distinct, common, and medium; moderate coarse blocky structure.
- C 30 to 37 inches, mottled yellow, yellowish-brown, and white firm clay loam; mottles distinct, common, and medium to coarse; moderate medium blocky structure.

Orange series

Orange silt loam, undulating phase, another claypan soil, has a profile similar to that of Helena fine sandy loam, undulating phase, but is noticeably finer textured. It grades toward the Red-Yellow Podzolic group. Both Orange and Helena soils developed from mixed acidic and basic rocks.

Colfax series

Colfax fine sandy loam, undulating phase, was formed from residuum that weathered from granite, acid schist, and gneiss; in some places pegmatite was included. The profile is comparable to that of the Helena soils. The A horizon is dark-gray friable fine sandy loam in the upper part and brownish-yellow friable fine sandy loam in the lower part; the structure is weak fine granular. The B horizon is mottled light-gray, brownish-yellow, and strong-brown firm fine sandy clay, of moderate coarse blocky structure. The C horizon is soft disintegrated rock. The Colfax soil grades toward the soils of the Red-Yellow Podzolic group.

Iredell series

Iredell fine sandy loam, undulating phase, has a distinct claypan, and was formed from residual products that weathered from basic rocks. A characteristic profile is as follows:

- A_1 0 to 6 inches, dark-gray friable fine sandy loam; weak fine granular structure.
- A_2 6 to 10 inches, gray or light-gray friable fine sandy loam; weak fine granular structure; numerous small black and brownish-black manganese and iron concretions.
- B_2 10 to 28 inches, dark yellowish-brown heavy very firm clay; very plastic when wet and hard when dry; massive structure
- C 28 inches +, olive and black soft decomposed diorite rock.

Zion series

The Zion series has a profile similar to that of Iredell fine sandy loam, undulating phase, except that it has a gravelly or concretionary pan above the B_2 horizon. It occurs in a complex with the Iredell series. Zion soils grade toward the soils of the Red-Yellow Podzolic group.

LOW-HUMIC GLEY SOILS

"Low-Humic Gley" is a name proposed for an intrazonal group of poorly drained soils having very thin surface layers that are moderately high in organic matter. The mottled gray and brown, or gleyed, mineral horizons may or may not differ appreciably in texture.

The soils range in texture from sand to clay. They are derived from parent materials that vary widely in physical and chemical properties. Most of these soils are medium to very strongly acid; very few are neutral or alkaline (*9*). The natural vegetative cover is swamp forest, mixed in some areas with marsh plants.

The Wehadkee soil is the only Low-Humic Gley in the county. These soils occupy first bottoms and are intermittently overflowed by adjacent streams.

Wehadkee series

Wehadkee silt loam, the only soil in this series mapped in the county, is a Low-Humic Gley soil derived from alluvial sediments. It is a poorly drained soil having a high water table. The water table fluctuates seasonally, but many areas are wet and marshy the year round. A profile is described as follows:

- A_g 0 to 6 inches, mottled light-gray, gray, and brown silt loam; mottles are fine and medium, distinct, and common; weak fine granular structure; friable when moist; very strongly acid.
- C_g 6 to 24 inches, mottled light-gray, gray, and strong-brown silty clay loam or silty clay; mottles are fine and medium, distinct, and many; very weak medium blocky structure; friable when moist, slight plastic when wet; very strongly acid.
- D_g 24 to 40 inches, mottled gray, brown, and yellow clay loam to sandy clay loam; mottles are fine and medium, distinct, and many; massive; friable when moist, plastic when wet; very strongly acid.

The Wehadkee profile shows the effects of gleying, but otherwise the soil is much like the Alluvial soils. It is, therefore, considered a Low-Humic Gley soil that intergrades toward the Alluvial group.

Azonal soils

Azonal soils have imperfectly developed profiles, either because the soils are young or because some condition of parent material or relief prevents the formation of well-developed profile characteristics (*10*).

LITHOSOLS

Lithosols have poorly expressed morphology in masses of freshly and imperfectly weathered rock fragments, almost always on steeply sloping land. They occur extensively throughout Prince Edward County. They are associated with zonal and intrazonal soils. Classed as Lithosols are the Louisburg, Louisa, Bremo, Wilkes, and Steinsburg series. All of these soils grade toward those of the Red-Yellow Podzolic group.

Louisburg series

The Louisburg soils developed over coarse-grained granite and pegmatite; they have shallow profiles. The

following profile of Louisburg sandy loam, undulating phase, occurs under a mixture of Virginia pine and hardwood trees ½ mile from Epps School, near State Highway No. 620:

A_2 0 to 7 inches, gray (5Y 6/1) very friable to loose sandy loam; dark yellowish brown (10YR 4/4) when wet; weak fine granular structure; numerous small roots and worm casts; a few smooth quartz pebbles ½ inch to 3 inches in diameter.

C 7 to 20 inches, pale-yellow (5Y 8/4) very friable sandy loam to loamy sand; light yellowish brown (10YR 6/4) when dry; very weak fine granular structure; pebbles up to 3 inches in diameter and cobblestones 3 to 4 inches in diameter are numerous; a few small dark-colored particles of biotite mica.

Louisa series

The Louisa soils were derived from products that weathered from muscovite schist and gneiss, and from micaceous quartzite. Their profiles are similar to those of the Louisburg series in depth, but they differ somewhat in color and are highly micaceous throughout.

Bremo series

The Bremo soils have formed from residual material that weathered from hornblende gneiss and schist. They are darker colored than the Louisburg soils. The A horizon is olive-gray loam. The subsurface layer or parent material is firm clay loam mottled with dark yellowish brown, olive, and gray. Bluish-green hornblende schist fragments are mixed in this material.

Wilkes series

The Wilkes soils are among the most extensive Lithosols in the county. They developed from very complex parent materials, and vary considerably in profile characteristics from place to place. They are darker colored than the Louisburg soils, and have finer textured surface layers. They also have, in some places, a very firm subsurface layer that does not occur in the Louisburg soils.

A profile of Wilkes sandy loam, undulating phase, in an area along State Highway No. 15, 1 mile south of Farmville, has the following characteristics:

A_2 0 to 5 inches, light yellowish-brown friable heavy sandy loam to fine sandy loam.

A_3 5 to 12 inches, yellow or brownish-yellow friable sandy loam.

C_1 12 to 20 inches, mottled brownish-yellow and light-gray very firm heavy clay; plastic when wet; hard when dry.

C_2 20 to 30 inches, distinctly mottled brown, yellow, and gray soft decomposed rock material, containing fragments of dark-colored basic rock and of lighter colored granite or gneiss rock.

Steinsburg series

The Steinsburg soils developed from parent material derived from Triassic sandstone and shale. These soils are dusky red, weak red, and olive, and are much finer textured than the Louisburg soils.

ALLUVIAL SOILS

Alluvial soils are an azonal group of soils developed from transported and relatively recently deposited materials (alluvium), and characterized by little modification (or none) of the original material by soil-forming processes (*10*). They include soils derived from both local colluvial and alluvial materials. Climate, plant and animal life, and time have had very little effect on the formation of these soils. The differences among them result principally from differences in parent materials and natural drainage.

The soils derived from local colluvial materials are the Seneca and Starr series; those from local alluvial materials are the Congaree, Buncombe, and Chewacla series.

Seneca series

The Seneca soils have formed from soil materials that washed or sloughed from yellowish loamy uplands and accumulated at the bases of slopes, in depressions, and along intermittent drainageways. The soil has undulating or gently sloping relief and is well drained. In places new materials from the higher slopes are continually deposited. The frequent additions of materials prevent the development of a mature profile. In most places, horizons are not distinctly differentiated.

Seneca fine sandy loam, the only member of its series in the county, has the following profile characteristics:

1. 0 to 8 inches, gray friable fine sandy loam; weak fine granular structure.
2. 8 to 23 inches, yellowish-brown friable loam to silty clay loam; very weak fine blocky structure.
3. 23 to 30 inches, yellowish-brown friable silty clay loam; moderate number of distinct light-gray mottles of medium size.

Starr series

Starr loam, the only member of its series mapped in the county, is similar to the Seneca soil except that red and reddish colors are dominant. The parent material of this soil originated chiefly from reddish loamy upland soils.

Congaree series

The Congaree soils occur on first bottoms along streams that periodically overflow. A profile of Congaree fine sandy loam in an area along the Appomattox River, 2 miles east of Farmville, has the following characteristics:

1. 0 to 10 inches, brown (10YR 5/3) friable fine sandy loam; soft when dry; weak fine crumb structure; small quantity of organic matter and some small mica flakes.
2. 10 to 35 inches, yellowish-brown (10YR 5/4) to light yellowish-brown (10YR 6/4) friable heavy fine sandy loam or fine sandy clay loam; weak fine crumb structure; some small mica flakes.
3. 35 to 50 inches, mottled brown (10YR 5/3), yellowish-brown (10YR 5/4), and light-gray (7.5YR 7/0) friable alluvial material consisting of fine sandy loam and fine sandy clay loam; mottles distinct, common, and medium; small flakes of muscovite mica.

Buncombe series

Buncombe loamy fine sand is the only soil of the Buncombe series mapped in this county. This excessively drained soil occurs on the flood plain of the Appomattox River. Although the relief is level or nearly level, the surface is broken in places by low ridges or hummocks. The surface layer is light brownish-gray very friable loamy fine sand about 9 inches thick. Below this is a layer of light yellowish-brown loose loamy fine sand 18 inches or more in thickness.

Chewacla series

Chewacla silt loam is the only member of this series mapped in the county. This somewhat poorly drained soil has a moderately high water table. Formed from the

same parent materials, it is intermediate in drainage and in profile features between the Congaree and the Wehadkee series. The soil therefore has some characteristics of the Alluvial group and some characteristics of the Low-Humic Gley group. For the present, however, the series is classified as Alluvial and considered an intergrade toward the Low-Humic Gley group.

The surface layer is light yellowish-brown to brown friable silt loam about 12 inches thick. Below this are mottled materials, generally finer in texture, that grade to stratified sediments at depths of several feet.

Soil Survey Methods and Definitions

The scientist who makes a soil survey examines soils in the field, classifies the soils in accordance with the facts that he observes, and maps their boundaries on an aerial photograph or other map.

FIELD STUDY.—The soil surveyor 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 plant growth.

Color is usually related to the amount of organic matter. The darker the surface soil, 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 amount of sand, silt, and clay, is determined by the way the soil feels when rubbed between the fingers, and is later checked by laboratory analysis. Texture determines how well the soil retains moisture, plant nutrients, and fertilizer, and whether it is easy or difficult to cultivate.

Structure, which is the way the individual soil particles are arranged in larger grains and the amount of pore space between grains, gives us clues to the ease or difficulty with which the soil is penetrated by plant roots and by moisture.

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

Other characteristics observed in the course of the field study and considered in classifying the soil 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 all these characteristics, soil areas that are much alike in the kind, thickness, and arrangement of their layers are mapped as one soil type. Some soil types are separated into two or more phases. For example, if a soil type has slopes that range from 2 to 12 percent, the type may be mapped in two phases, an undulating phase (2 to 7 percent slopes) and a rolling phase (7 to 12 percent slopes); or a soil that has been eroded in places may be mapped in two or more phases, an uneroded or normal phase, an eroded phase, and perhaps a severely eroded phase. A soil type will be broken into phases primarily because of differences in the soil other than those of kind, thickness, and arrangement of layers. The slope of a soil, the frequency of outcropping bedrock, the extent of erosion, or artificial drainage are examples of characteristics that might cause a soil type to be divided into phases.

Two or more soil types may have similar profiles, that is, the soil layers may be nearly the same, except that the texture, especially of the surface layer, will differ. As long as the other characteristics of the soil layer are similar, these soils are considered to belong in the same soil series. A soil series, therefore, consists of all the soil types that have about the same kind, thickness, and arrangement of layers except for texture, particularly of the surface layer. The number of such soil types may be only one or several.

The name of a place near where a soil series was first found is chosen as the name of the series. Thus, Madison is the name of a soil series first mapped in Madison County, Ga., in 1918. Two types of this series are found in Prince Edward County: Madison fine sandy loam and Madison clay loam. These types differ in the texture of the surface soil, as their names show. The Madison series is divided into 6 phases or mapping units because of differences in slope or erosion.

The following shows how the Madison series in Prince Edward County is separated into types and the types, in turn, into mapping units:

Series	*Types*	*Mapping units*
Madison	Madison fine sandy loam.	Madison fine sandy loam, undulating phase.
		Madison fine sandy loam, rolling phase.
		Madison fine sandy loam, hilly phase.
	Madison clay loam.	Madison clay loam, eroded undulating phase.
		Madison clay loam, eroded rolling phase.
		Madison clay loam, eroded hilly phase.

When very small areas of two or more kinds of soil are so intricately mixed that they cannot be shown separately on a map of the scale used, they are mapped together and the areas of the mixture are called a soil complex. Iredell-Zion fine sandy loams, undulating phases, is a complex of Iredell fine sandy loam, undulating phase, and Zion fine sandy loam, undulating phase.

Areas that have little true soil, such as bare rocky mountainsides, coastal beach, or dune sand, are not designated with series and type names. They are considered to be land types, and are given descriptive names, such as stony rough land, coastal beach, dune sand, tidal marsh, riverwash, gravel pits, and so on. Rock land is a land type in Prince Edward County.

The soil type, or if the soil type is subdivided, the soil phase, is the unit of mapping in soil surveys. It is the unit or the kind of soil that is most nearly uniform and has the narrowest range of characteristics. For this reason land use and soil management practices can be more definitely specified for it than for broader groups of soil that contain more variation. One can say, for example,

that soils of the Cecil series need lime for alfalfa; but Cecil fine sandy loam, undulating phase, has gentle slopes and is suited to row crops in a rotation with small grain and hay, whereas Cecil fine sandy loam, hilly phase has slopes that fall 12 to 20 feet in 100, is hard to work with heavy machinery, erodes easily, and is best used as forest land.

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Glossary

Acidity—The degree of acidity of the soil mass, technically expressed in pH values or in words as follows (*8*):

	pH
Extremely acid	below 4.5
Very strongly acid	4.5–5.0
Strongly acid	5.1–5.5
Medium acid	5.6–6.0
Slightly acid	6.1–6.5
Neutral	6.6–7.3
Mildly alkaline	7.4–7.8
Moderately alkaline	7.9–8.4
Strongly alkaline	8.5–9.0
Very strongly alkaline	9.1 and higher

Alluvium—Fine material, such as sand, mud, or other sediments, deposited on land by streams.

Bedrock—The solid rock underlying soils.

Clay—The small mineral soil grains, less than 0.002 mm. (0.000079 in.) in diameter. (Formerly included the grains less than 0.005 mm. in diameter.)

Claypan—A layer of stiff, compact, and relatively impervious clay.

Colluvium—Deposits of rock fragments and soil material accumulated at the bases of slopes through the influence of gravity. It includes creep and local wash.

Complex, soil—Two or more soil series, types, or phases mapped as a unit because they occur together in such an intricate pattern or in such small individual areas that they cannot be shown separately on maps of the scale used.

Consistence, soil—The degree of cohesion and adhesion of soil particles or their resistance to separation or deformation of the aggregate. Soil consistence is commonly described as firm, friable, hard, loose, plastic, sticky, very firm, or very friable.

Firm—Soil material crushes under moderate pressure between thumb and forefinger but resistance is distinctly noticeable.

Friable—Soil material crushes easily under gentle to moderate pressure between thumb and forefinger, and coheres when pressed together.

Hard—Moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Loose—Noncoherent.

Plastic—Wire formable; moderate pressure required for deformation of the soil mass.

Sticky—After pressure, soil material adheres to both thumb and forefinger and tends to stretch somewhat and pull apart rather than pulling free from either digit.

Very firm—Soil material crushes under strong pressure; barely crushable between thumb and forefinger.

Very friable—Soil material crushes under very gentle pressure but coheres when pressed together.

Contour tillage—Furrow plowed at right angles to the direction of slope, at the same level throughout, and ordinarily at comparatively close intervals.

Erosion, soil—The wearing away or removal of soil material by water or wind.

Fertility, soil—The inherent capability of a soil to support plant growth; measured by the quantity of compounds provided for proper or balanced growth.

First bottom—The normal flood plain of a stream; land along the stream subject to overflow.

Genesis—Mode of origin of the soil referring particularly to the processes responsible for the development of the solum (horizons A and B) from the unconsolidated parent material.

Great soil group (soil classification)—A broad group of soils having common internal soil characteristics.

Horizon, soil—A layer in the soil profile, approximately parallel to the land surface and having well-defined characteristics.

Horizon A—The upper horizon of the soil mass from which material has been removed by percolating waters; the eluviated part of the solum; the surface soil. It is generally subdivided in 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 of deposition, to which materials have been added by percolating waters; the illuviated part of the solum; the subsoil. This horizon may also be divided into several subhorizons, depending on the color, structure, consistence, or character of the material deposited. These layers 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.

Internal drainage—The rate of movement of water through the soil profile. It is affected by the texture of the surface soil and subsoil, and by the height of the ground-water table, either permanent or perched. Relative terms for expressing internal drainage are as follows: Very rapid, rapid, medium, slow, very slow, and none.

Leaching, soil—Removal of materials in solution.

Massive—Large uniform masses of cohesive soil, sometimes with ill-defined and irregular breakage, as in some of the fine-textured alluvial soils; structureless. (See Structure, grade.)

Morphology—The physical constitution of the soil expressed in the kinds of horizons, their thickness and arrangement in the profile, and the texture, structure, consistence, porosity, and color of each horizon.

Mottles, soil—Contrasting color patches that vary in number and size. Descriptive terms are as follows: Contrast—faint, distinct, and prominent; number—few, common, and many; and size—fine, medium, and coarse. The size measurements are as follows: Fine, commonly less than 5 mm. [about 0.2 in.] in diameter along the greatest dimension; medium, commonly ranging between 5 and 15 mm. [about 0.2 to 0.6 in.] along the greatest dimension; and coarse, commonly more than 15 mm. [about 0.9 in.] along the greatest dimension (*7*).

Natural drainage—Conditions that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be due to other causes, as sudden deepening of channels or sudden blocking of drainage outlets. The following relative terms are used to express natural drainage: Excessively drained, somewhat excessively drained, well drained, moderately well drained, imperfectly or somewhat poorly drained, poorly drained, and very poorly drained.

Normal soil—A soil having a profile in equilibrium with the two principal forces of the environment—native vegetation and climate—usually developed on the gently undulating (but not strictly level) upland, with good drainage, from any parent material, not of extreme texture or chemical composition, that has been in place long enough for biological forces to exert their full effect.

Nutrients, plant—The elements taken in by the plant, essential to its growth, and used by it in the elaboration of its food and tissue. These include nitrogen, phosphorus, calcium, potassium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps others obtained from the soil; and carbon, hydrogen, and oxygen, obtained largely from the air and water.

Parent material—The unconsolidated mass from which the soil profile develops. (See also Horizon C, Profile, and Substratum).

Permeable—Easily penetrated, as by water.

Phase, soil—A subdivision of the soil type, based on minor variations; a mapping unit. The variations are chiefly in such external characteristics as relief, stoniness, or erosion. (Example: Lloyd loam, eroded hilly phase.)

Productivity, soil—The capability of a soil to produce a specified plant (or plants) under a given system of management.

Profile, soil—A vertical section of the soil, from the surface into the parent material.

Reaction—See Acidity.

Relief—The elevations or inequalities of the land surface, the slope gradient, and the pattern of these.

Sand—Small rock or mineral fragments, from 0.05 mm. (0.002 in.) to 1.0 mm. (0.039 in.) in diameter. The term "sand" is also applied to soils containing 90 percent or more of sand.

Series, soil—A group of soils having the same profile characteristics except for surface texture. They have the same general range in color, structure, consistence, and sequence of horizons, and the same general conditions of relief and drainage. Usually they are of common or similar origin and mode of formation.

Silt—Small mineral soil grains ranging from 0.05 mm. (0.002 in.) to 0.002 mm. (0.000079 in.) in diameter.

Soil—An organized natural body occurring on the surface of the earth characterized by conformable layers resulting from modification of parent material by physical, chemical, and biological forces through various periods of time.

Soil textural classes—Classes of soil based on the relative proportion of soil separates. The principal classes, in increasing order of the content of the finer separates, are as follows: Sand, loamy sand, sandy loam, loam, silt loam, clay loam, silty clay, and clay.

Soil separates—The individual size groups of soil particles, as sand, silt, and clay.

Solum—The genetic soil developed by soil-building forces. In normal soils, the solum includes the A and B horizons, or the upper part of the soil profile above the parent material (*8*).

Stripcropping—A practice of growing ordinary farm crops in long strips of variable widths across the line of slope, approximately on the contour. Close-growing crops are seeded in alternate strips with clean-tilled crops.

Structure, soil—The morphological aggregates in which the individual soil particles are arranged. It may refer to their natural arrangement in the soil when in place and undisturbed. Soil structure is classified according to grade, class, and type.

Grade—Degree of distinctness of aggregation; expresses the differential between cohesion within aggregates and adhesion between aggregates. 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 soil aggregates. Terms: Platy, prismatic, columnar, blocky, nuciform or nutlike, granular (nonporous), and crumb (porous). (Example of soil-structure grade, class, and type: Moderate coarse blocky.)

Subsoil—Technically, the B horizon; roughly, that part of the profile below plow depth.

Substratum—Material underlying the subsoil. (See also Horizon C and Parent Material).

Surface runoff—This term refers to the amount of water removed by flow over the surface of the soil. The amount and rapidity of surface runoff are affected by factors such as texture, structure, and porosity of the surface soil; the vegetative covering; the prevailing climate; and the slope. Relative degrees of surface runoff are expressed in six classes as follows: Very rapid, rapid, medium, slow, very slow, and ponded (*8*).

Surface soil—Technically, the A horizon; commonly, the part of the upper profile usually stirred by plowing.

Terrace (for control of surface runoff, erosion, or both)—A broad surface channel or embankment constructed across the slope, on or approximately on contour lines, at specific intervals. The terrace intercepts surplus surface runoff and retards it so the water will infiltrate or will flow to an outlet at nonerosive velocity.

Terrace (geologic)—An old alluvial plain, usually flat or smooth, bordering a stream; frequently called a second bottom to distinguish it from the flood plain; seldom subject to overflow.

Texture—Size of individual particles making up the soil mass. The various soil separates are the size groups, as sand, silt, and clay. A coarse-textured soil is one high in sand; a fine-textured soil has a large proportion of clay.

Type, soil—A group of soils having genetic horizons similar as to the differentiating characteristics, including texture and arrangement in the soil profile, and developed from a particular type of parent material.

Upland (geologic)—Land consisting of material unworked by water in recent geologic time and lying in general at higher elevations than the alluvial plain or stream terrace.

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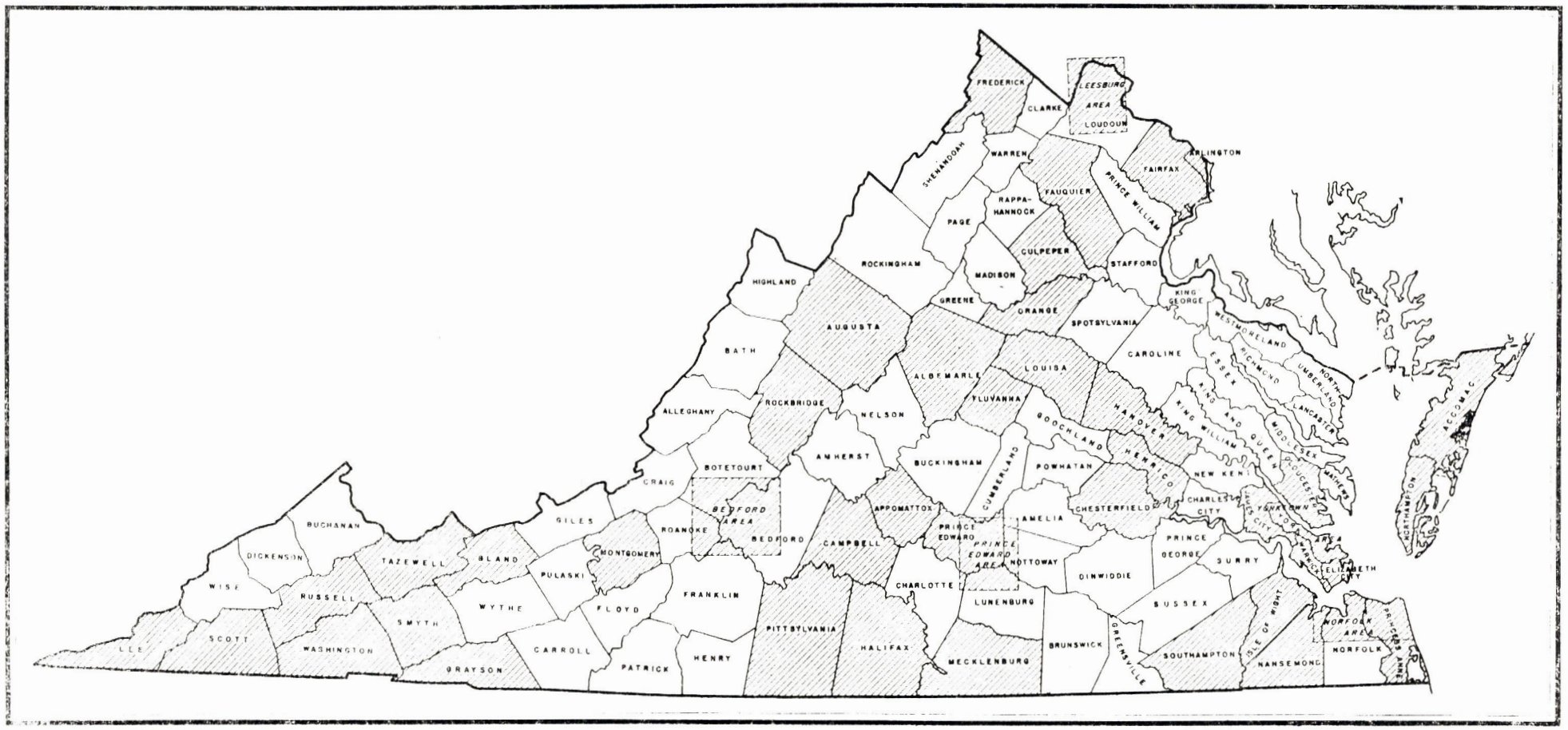

Areas surveyed in Virginia shown by shading. **Part of Prince Edward County was included in the Prince Edward Area, which was surveyed in 1901.**

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